APPENDIX G

BASELINE HUMAN HEALTH RISK ASSESSMENT PREPARED BY THE SCIENCE COLLABORATIVE

THE SCIENCE COLLABORATIVE
~ environmental science & public health ~ NORTH SHORE

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November 8, 2007

Bradley A. Green, P.G.
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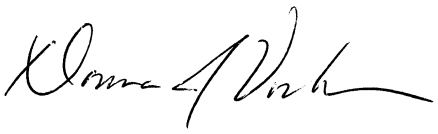
Re: Draft Version 03f Baseline Human Health Risk Assessment (BHHRA) for the Blackburn & Union Privileges Superfund Site, Walpole, Massachusetts

Dear Mr. Green:

The Science Collaborative – North Shore is pleased to provide draft Version 03f Baseline Human Health Risk Assessment (BHHRA) for the Blackburn & Union Privileges Superfund Site, Walpole, Massachusetts. This report is a revision of the July 27, 2007 draft Version 03 BHHRA, which has been modified in accordance with USEPA's comments provided in September 2007 letter to you.

Sincerely,



Donna J. Vorhees, Sc.D.

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Version 03f Draft

Baseline Human Health Risk Assessment
Deliverable III

Blackburn & Union Privileges Superfund Site
Walpole, Massachusetts

November 8, 2007

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ACRONYMS

AOC	Area of Containment
ARAR	Applicable or relevant and appropriate requirement
AST	Above ground storage tank
AT	Averaging time
ATSDR	Agency for Toxic Substances and Disease Registry
BHHRA	Baseline Human Health Risk Assessment
Br	Bioconcentration Factor
BW	Average body weight
CDC	Centers for Disease Control and Prevention
CDE	Chronic Daily Exposure
CDI	Chronic Daily Intake
CF	Conversion Factor
COPC	Chemical of concern
CSF	Cancer slope factor
CT	Central tendency
DAD	Dermal Absorbed Dose
ED	Exposure duration
EF	Exposure frequency
EP	Exposure period
EPC	Exposure point concentration
HEAST	Health Effects Assessment Summary Tables
HI	Hazard index
HQ	Hazard quotient
IEUBK	Integrated Exposure Uptake Biokinetic
IRIS	Integrated Risk Information System
IR	Ingestion Rate
LMS	Linearized multistage model
LOAEL	Lowest Observed Adverse Effect Level
MADEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
MF	Modifying factor
MUL	Modified Upper Limit
NA	Not applicable (as specified in tables)
NCEA	National Center for Environmental Assessment
ND	Not detected (as specified in tables)
NEH	New Environmental Horizons, Inc.
NOAEL	No observed adverse effect level
NRWQC	National Recommended Water Quality Criteria
PAH	Polycyclic aromatic hydrocarbon
PEF	Particulate emission factor
PRG	Preliminary remediation goal
RAF	Relative absorption factor
RAGS	Risk Assessment Guidance for Superfund

RBC	Risk-based concentration
RfC	Reference Concentration
RfD	Reference Dose
RME	Reasonable Maximum Exposure
SHA	Sanborn, Head & Associates, Inc.
SMCL	Secondary Drinking Water Standard
STSC	Superfund Technical Support Center
SVOC	Semi-Volatile Organic Chemical
TARA	Technical Approach to Risk Assessment
TCE	Trichloroethene
TRW	Technical Review Workgroup
UCL	Upper Concentration Limit
UL	Tolerable Upper Intake Level
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Chemical

EXECUTIVE SUMMARY

This baseline human health risk assessment (BHHRA) describes cancer risk and non-cancer hazard from exposure to chemicals assessed in conjunction with the Remedial Investigation (RI) of the Blackburn & Union Privileges Superfund Site (Site), located in Walpole, Massachusetts. Chemicals of Potential Concern (COPCs) to human health were detected in a range of environmental media that people might contact including: soil, soil gas, groundwater, surface water, sediment, and edible fish tissue. To conduct this assessment, personnel from the Science Collaborative evaluated potential human health effects from exposure to chemicals detected in these media at the Site.

Following standard approaches used for Human Health Risk Assessments completed under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), this document describes baseline potential human health risk only. It does not draw conclusions about whether an adverse effect may be due to a chemical that is present in the environment because of Site-related activities or whether it is there because of a background condition unrelated to the Site. This document does not draw conclusions about whether chemicals are elevated in the environment over concentrations that may be expected to be naturally occurring, or whether an adverse effect is of sufficient magnitude to warrant remedial action. These matters of perspective, and the risk-management decisions that ensue, will be addressed in the forthcoming Feasibility Study (FS).

Overview of Risk Analyses

Potential cancer risks, non-cancer hazard indices, and probabilities of exceeding a blood lead concentration benchmark were calculated for hypothetical exposure scenarios that represent the exposure patterns summarized below. In addition, a qualitative evaluation was conducted for pH in soil, groundwater, sediment and surface water.

Cancer risks and non-cancer hazard indices were calculated for each scenario. Total cancer risks for child and adult were summed to yield a cancer risk for the current and hypothetical future residential scenarios and for the current/future fisher scenario (fish consumption only). Cancer risks were compared to EPA's cancer risk range (1E-06 to 1E-04). Non-cancer effects were described with total hazard indices (HIs), which are calculated by summing hazard quotients (HQs) across all COPCs, and with target organ-specific HIs, which are calculated by dividing total HIs in accordance with each COPC's target organ. Total and target organ-specific HIs were compared to a benchmark HI of 1. Predicted probabilities of blood lead concentrations exceeding 10 ug/dL were compared to a benchmark of 5%. Measurements of pH in sediment, soil, surface water, and groundwater were compared to federal and state pH benchmarks and criteria applicable to each of these media.

Exposure Scenario	Exposure Pathways by Environmental Medium					
	Soil	**Soil Gas**	**Groundwater**	**Surface water**	**Sediment**	**Fish**
Current						
Resident (adult/child)	Ingestion, dermal contact, ingestion of garden produce, inhalation of indoor air	Inhalation of indoor air	Inhalation of indoor air (not used for tap water)	-	-	-
Trespasser (older child)	Ingestion, dermal contact	-	-	-	-	-
Site Worker (adult)	Ingestion, dermal contact, inhalation of indoor air	Inhalation of indoor air	-	-	-	-
Current/Hypothetical Future						
Fisher (adult/child)	-	-	-	Dermal contact (adult)	Dermal contact, ingestion (adult)	Ingestion (adult/child)
Wader (older child)	-	-	-	Dermal contact	Dermal contact, ingestion	-
Hypothetical Future						
Resident (adult/child)	Ingestion, dermal contact, ingestion of garden produce, inhalation of indoor air	Inhalation of indoor air	Inhalation of indoor air, use as tap water	-	-	-
Site Worker (adult)	Ingestion, dermal contact, inhalation of indoor air	Inhalation of indoor air	Inhalation of indoor air	-	-	-
Construction Worker (adult)	Ingestion, dermal contact, fugitive dust, inhalation of trench air	Inhalation of trench air	Dermal contact, inhalation of trench air	-	-	-

" –" signifies that the medium of exposure is not applicable

Summary of Key Findings

Table ES-1 summarizes cancer risks that exceed USEPA's risk range, non cancer hazard indices that exceed 1, lead hazard with a probability of exceeding a blood lead benchmark of 5%, and those areas where elevated pH conditions in groundwater or surface water could present potential risk. In addition, these risks/hazards are summarized on the following figures:

- Figure ES-1 - Current Scenarios
- Figure ES-2 – Future Residential and Wader Scenarios (not including tap water)
- Figure ES-3 – Future Residential Tap Water Scenarios
- Figure ES-4 – Future Site Worker or Construction Worker Scenarios

The cancer risks and non-cancer hazards summarized in Table ES-1 and Figures ES-1 through ES-4 are due to current or potential future exposures of receptors to COPCs in groundwater, surface water, soil, and soil gas. With the exception of a wader in the Former Mill Tailrace, and a resident on lot 257, those areas where cancer risks are greater than 1E-4, non cancer hazard indices are greater than 1, lead hazards have a probability of exceeding a blood lead benchmark of 5%, and those areas where pH conditions are elevated, involve potential future receptors, not current receptors (as there is not risk or hazard greater than the above benchmarks for current receptors). We provide additional discussion of our findings below.

Groundwater and Surface Water Cancer Risks and Non-Cancer Hazards

This subsection summarizes general findings regarding potential risks/hazards from Site groundwater:

- *Elevated pH conditions* in the Former Mill Tailrace, West of South Street On-Facility area and Lot 208/209 area pose a potential hazard to a construction worker or wader coming into contact with groundwater or surface water with elevated pH conditions, based on a comparison of pH measurements to regulatory guidelines.

All other areas where groundwater presents a potential risk and/or hazard to receptors (i.e., future residents) arise from the unrealistic assumption that groundwater will be used as tap water. As described in Section 1.4.1, the potential future use of Site groundwater as tap water is highly unlikely.

Soil and Soil Gas Cancer Risks and Non-Cancer Hazards

This subsection summarizes general findings regarding potential risks/hazards from Site soil and soil gas:

- *Lead* concentrations in soil on Residential Lot 257 pose a potential hazard from direct contact with soil for a current resident, hypothetical future resident, and hypothetical future construction worker. However, this estimate of hazard is based on just two soil samples collected on this lot. SHA/Tyco proposed additional delineation of lead as part of the RI to improve our estimate of lead exposures; however, the property owner denied access to SHA/Tyco to perform this sampling.
- *Carcinogenic PAHs and arsenic* concentrations in soil pose a potential cancer risk from direct contact with soil for a hypothetical future resident at three exposure points (East of South Street On-Facility ["SB-09 area" and "non-SB-09 area"] and Old Railroad and Former Lower Mill Pond). In addition, arsenic concentrations in soil pose potential non-cancer hazard from direct contact with soil and ingestion of garden produce for a potential future resident at Old Railroad and Former Lower Mill Pond. However, unrestricted residential development is not a reasonably anticipated future use of these three areas of the Site based on the current zoning By-Laws.

- *Trichloroethene* concentrations in soil gas pose potential carcinogenic risk from inhalation of indoor air at one exposure point (East of South Street On-Facility "SB-09 area") for a potential future resident or site worker. However as indicated above, unrestricted residential development is not a reasonably anticipated future use of this portion of the Site.

Uncertainties

The exposure assumptions, modeling (e.g., chemical uptake in home garden plants and subsurface vapor intrusion modeling), and toxicity information used to estimate exposure are subject to uncertainty, the more important of which are discussed in the uncertainty analysis section (See Section 6). These uncertainties were addressed by using conservative assumptions so that the exposures and risks presented in this assessment are more likely to be overestimated than underestimated.

Asbestos is present at the Site in soil and sediment; however, this BHHRA does not include an assessment of potential risk due to asbestos. Current USEPA guidance documents do not present a clear methodology for evaluation of risk from asbestos. Therefore, USEPA has elected to assess risk due to asbestos-impacted soil and sediment. The results of this assessment will be integrated into the RI and considered in the FS.

An early life evaluation of carcinogenic risk from PAHs was conducted and summarized in the Uncertainty Analysis. Inclusion of this evaluation increases the baseline cancer risk estimates for most areas for the current and hypothetical future residents, the current trespasser, and the current/future wader and fisher. However, only one scenario with a baseline cancer risk within USEPA's risk range changes to a cancer risk above the risk range with inclusion of the early life evaluation (i.e. the cancer risk for a future resident at West of South Street On-Facility increases from 8E-05 to 2E-04 from ingestion and dermal contact with soil and ingestion of garden produce).

Table ES-1
Summary of Risks and Hazards Exceeding USEPA's Risk Range and/or Hazard Index Limit, PBL > 5%, or Elevated pH Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

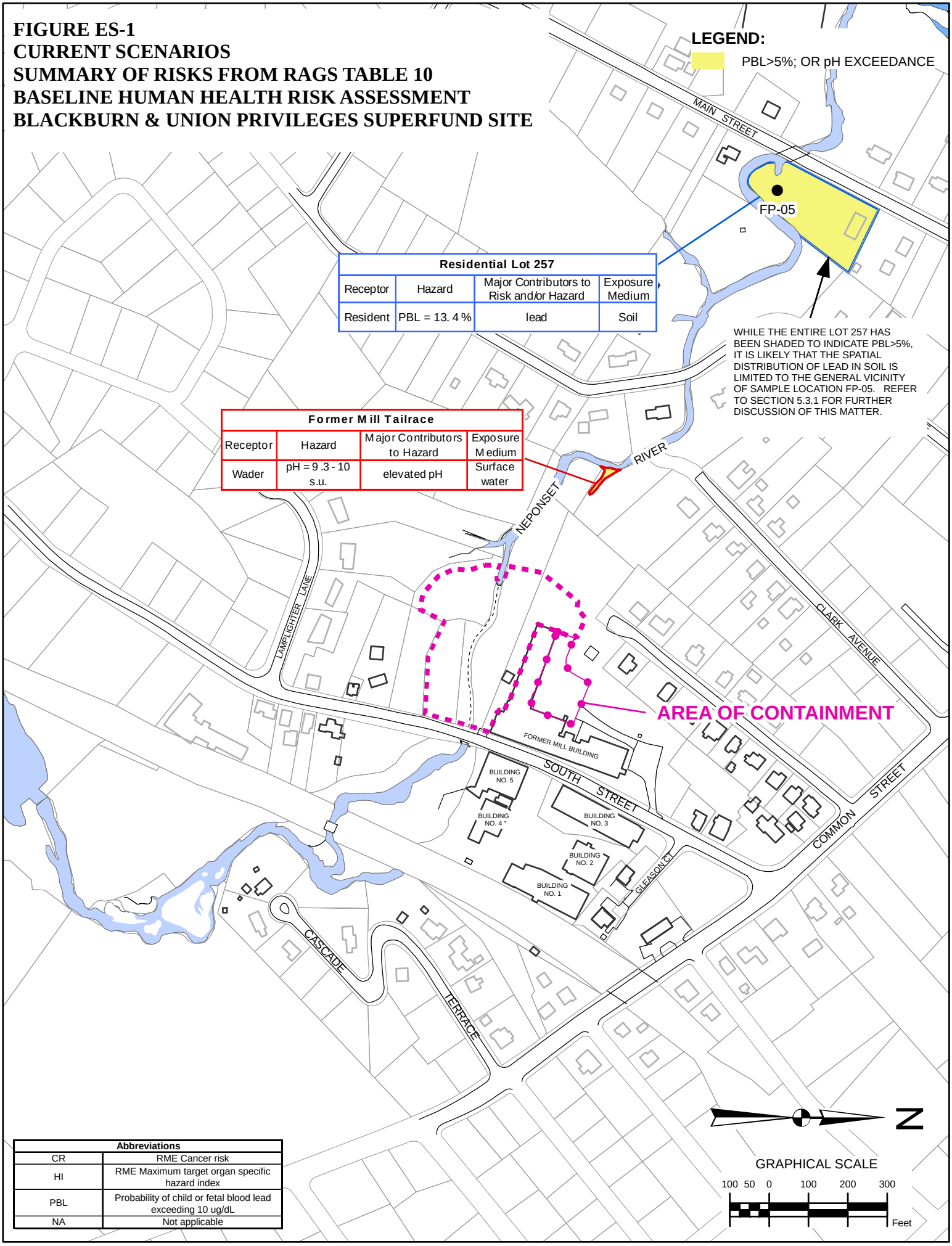
Exposure Area	Timeframe	Receptor	Exposure Type	Cancer Risk	Max Target Organ Specific HI	PBL	Exposure Medium	Major Contributors [(1)] to Risk and Hazard
Residential Lot 257	Current/Future	Resident	RME	---	---	13.40%	Soil	Lead
	Future	Construction Worker	RME	---	---	6.50%	Soil	Lead
Former Mill Tailrace	Current/Future	Wader	---	---	---	---	Surface Water	Elevated pH (9.3 to 10 s.u.)
West of South Street On-Facility	Future	Construction Worker	---	---	---	---	Dermal Contact with Groundwater	Elevated pH (9.7 to 11.99 s.u.)
East of South Street On-Facility (SB-09 area)	Future	Resident	RME	8.E-04	---	---	Soil	Benzo(a)pyrene
							Indoor Air from Soil Gas	Trichloroethylene (TCE)
		Site Worker	RME	3.E-04	---	---	Indoor Air from Soil Gas	Trichloroethylene (TCE)
East of South Street On-Facility (non-SB-09 area)	Future	Resident	RME	3.E-04	2	---	Soil	Benzo(a)pyrene
Old Railroad and Former Lower Mill Pond Area	Future	Resident	RME	5.E-04	4	---	Soil	Arsenic
							Plant tissue from Soil	Arsenic
Off-facility groundwater Lot 208 / Lot 209	Future	Resident	RME	2.E-03	20	8.08%	Tap Water from Groundwater	Arsenic; Manganese; Vanadium
								Lead
							Shower Vapor from Groundwater	Naphthalene
			CT	---	4	---	Tap Water from Groundwater	Arsenic
			---	---	---	---	Tap Water from Groundwater	Elevated pH (10.1 to 11.9 s.u.)
		Construction Worker	---	---	---	---	Dermal Contact with Groundwater	Elevated pH (10.1 to 11.9 s.u.)
Off-site groundwater east of Neponset River (SH-27)	Future	Resident	RME	---	2	---	Tap Water from Groundwater	Trichloroethylene (TCE); Manganese
Off-site groundwater east of Neponset River (SH-28)	Future	Resident	RME	---	3	---	Tap Water from Groundwater	Manganese

Table ES-1
Summary of Risks and Hazards Exceeding USEPA's Risk Range and/or Hazard Index Limit, PBL > 5%, or Elevated pH Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Area	Timeframe	Receptor	Exposure Type	Cancer Risk	Max Target Organ Specific HI	PBL	Exposure Medium	Major Contributors (1) to Risk and Hazard
On-Site Groundwater	Future	Resident	RME	2.E-02	300	---	Tap Water from Groundwater	Benzene; 2-Methylnaphthalene; Naphthalene; Benzo(a)pyrene; 4-Methylphenol; Antimony; Arsenic; Chromium VI; Manganese; Nickel; Vanadium; Zinc
							Shower Vapor from Groundwater	Benzene; 2-Methylnaphthalene; Naphthalene
			CT	3.E-04	10	---	Tap Water from Groundwater	Arsenic; Manganese; Vanadium
							Shower Vapor from Groundwater	Naphthalene
			---	---	---	---	Tap Water from Groundwater	Elevated pH (8.8 to 14.1 s.u.)

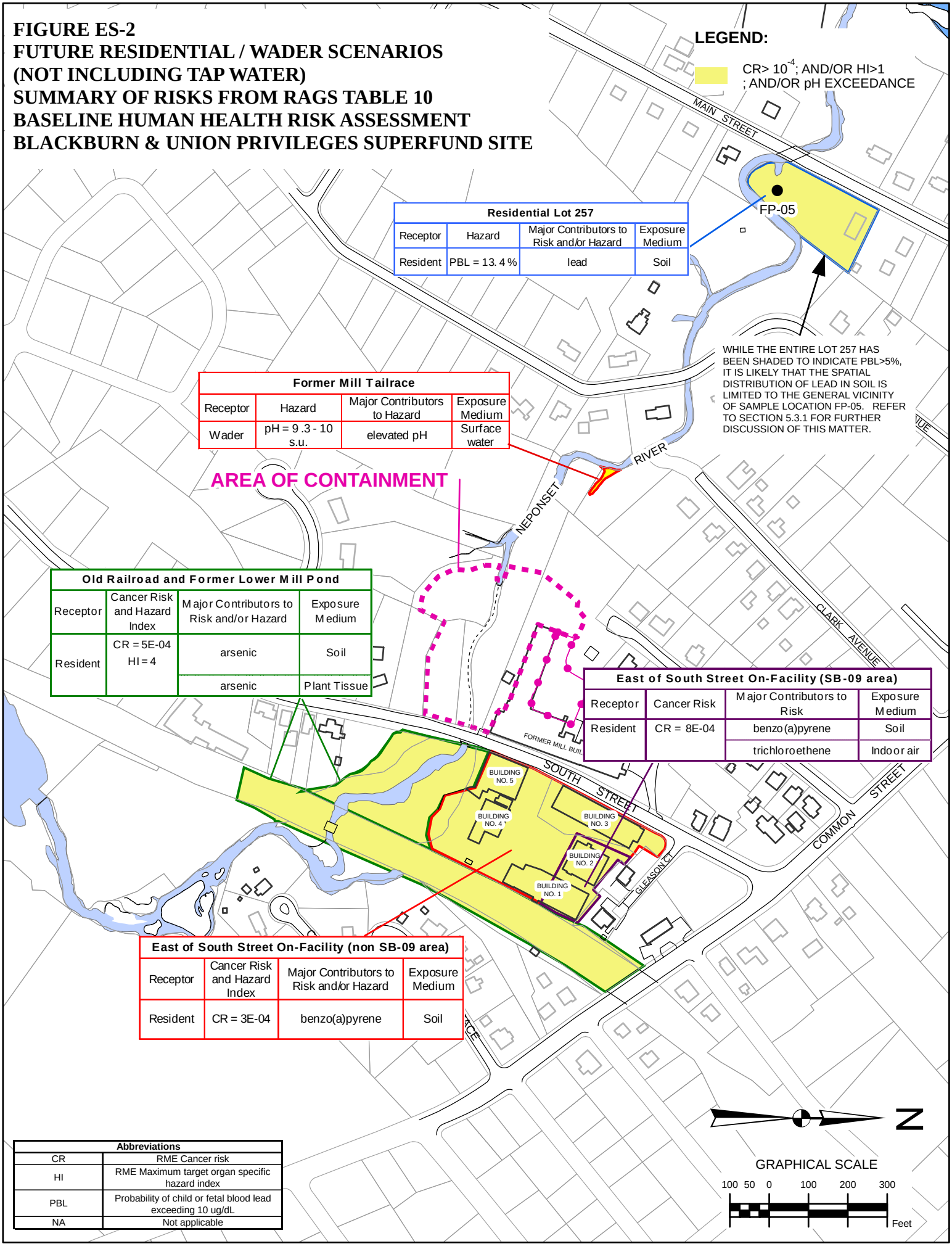
Note:
RME = Reasonable Maximum Exposure
CT = Central Tendency Exposure
(1) Chemicals that contribute non-cancer hazard > 1 and/or cancer risk > 10-4 for the given exposure medium are included.
(2) "--" means cancer risk is less than 10^{-4}, maximum target organ HI is less than 1, no chemicals have an HQ >1, PBL < 5%, or exposure type is neither RME or CT.
(3) PBL = Percent probability of child or fetal blood lead exceeding 10 ug/dL.

FIGURE ES-1
CURRENT SCENARIOS
SUMMARY OF RISKS FROM RAGS TABLE 10
BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE



Abbreviations	
CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

FIGURE ES-2
FUTURE RESIDENTIAL / WADER SCENARIOS (NOT INCLUDING TAP WATER)
SUMMARY OF RISKS FROM RAGS TABLE 10
BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE



Residential Lot 257			
Receptor	Hazard	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	PBL = 13. 4 %	lead	Soil

Former Mill Tailrace			
Receptor	Hazard	Major Contributors to Hazard	Exposure Medium
Wader	pH = 9 .3 - 10 s.u.	elevated pH	Surface water

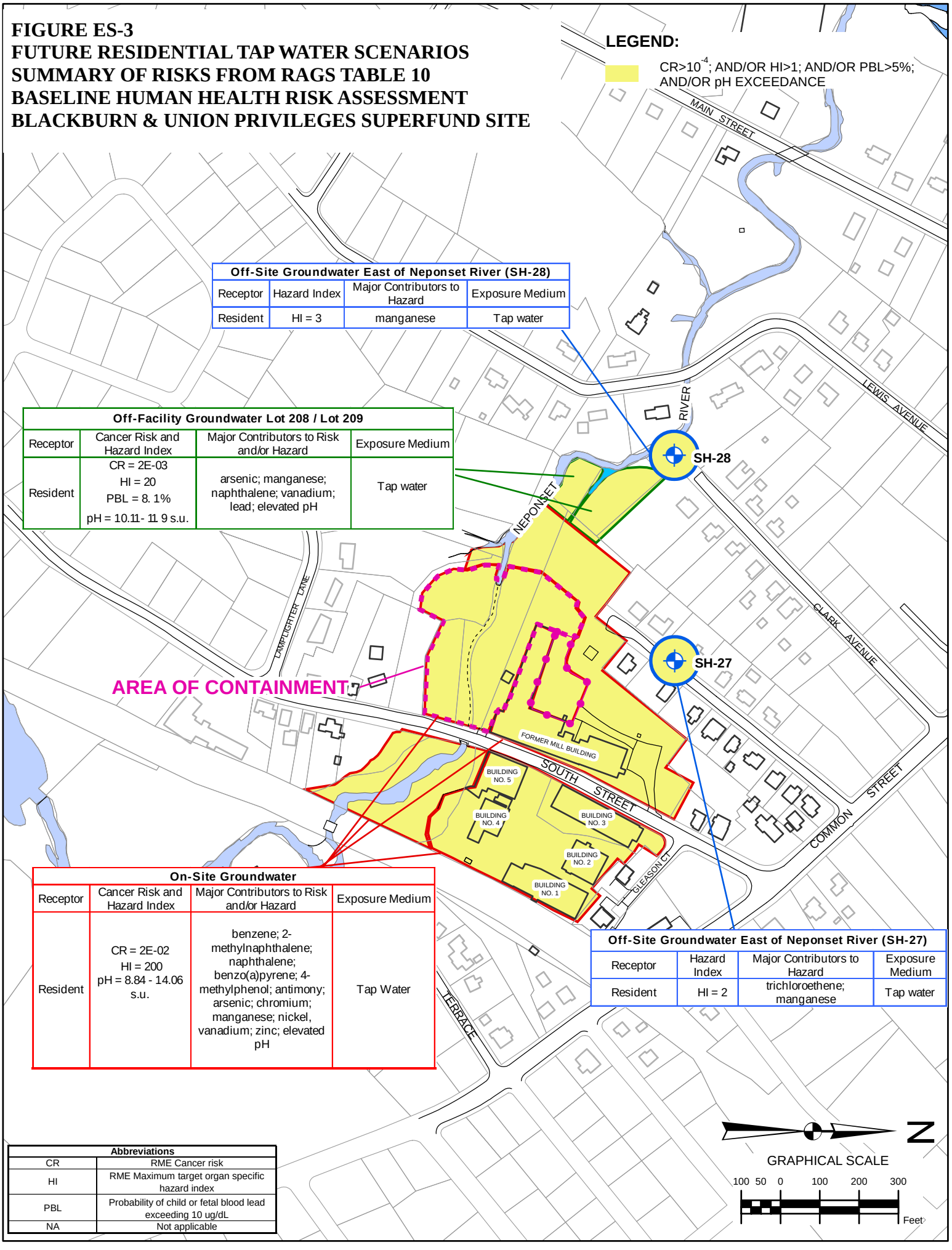
Old Railroad and Former Lower Mill Pond			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 5E-04 HI = 4	arsenic	Soil
		arsenic	Plant Tissue

East of South Street On-Facility (SB-09 area)			
Receptor	Cancer Risk	Major Contributors to Risk	Exposure Medium
Resident	CR = 8E-04	benzo(a)pyrene	Soil
		trichloroethene	Indoor air

East of South Street On-Facility (non SB-09 area)			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 3E-04	benzo(a)pyrene	Soil

Abbreviations	
CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

FIGURE ES-3
FUTURE RESIDENTIAL TAP WATER SCENARIOS
SUMMARY OF RISKS FROM RAGS TABLE 10
BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE



Off-Site Groundwater East of Neponset River (SH-28)			
Receptor	Hazard Index	Major Contributors to Hazard	Exposure Medium
Resident	HI = 3	manganese	Tap water

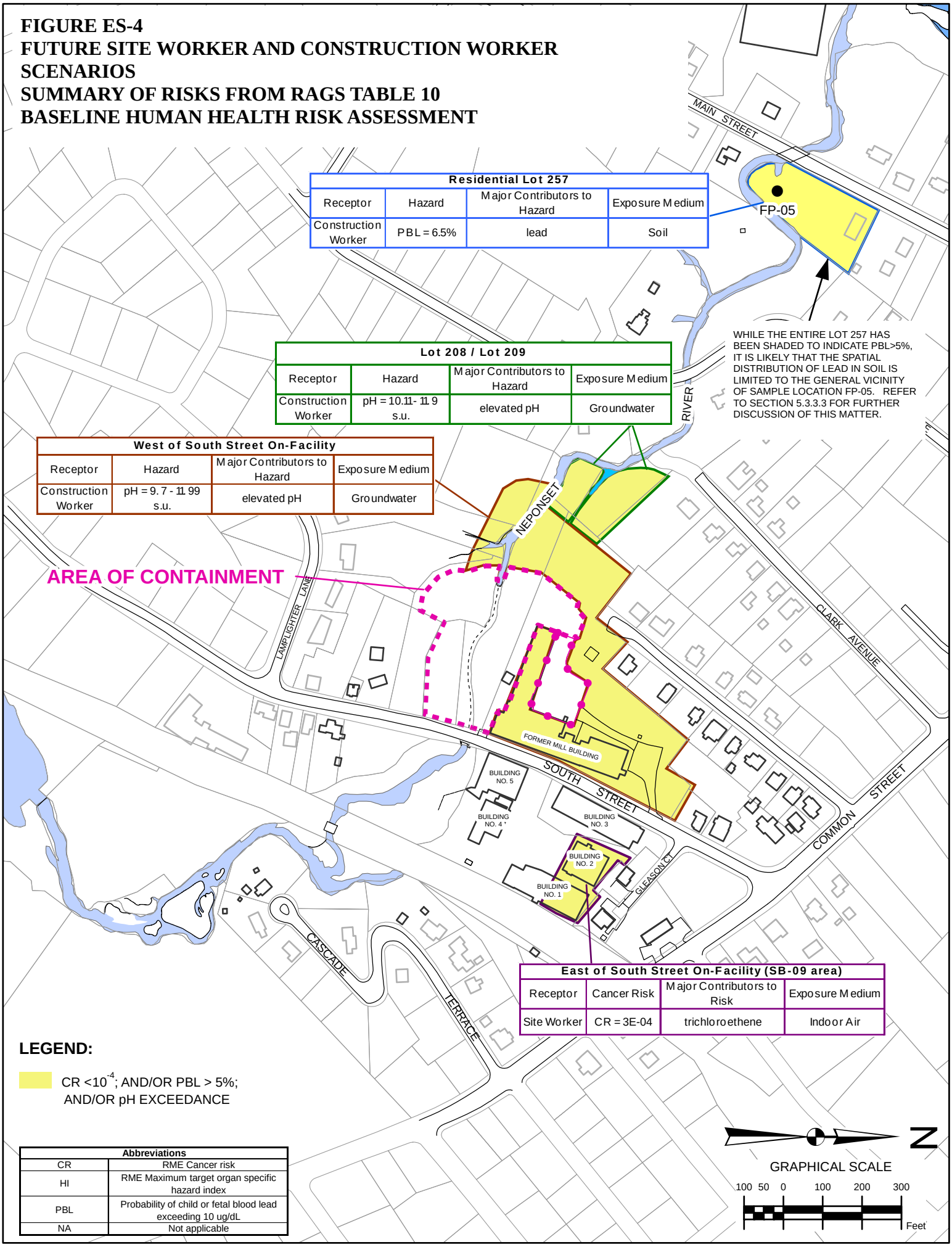
Off-Facility Groundwater Lot 208 / Lot 209			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-03 HI = 20 PBL = 8. 1% pH = 10.11- 11 9 s.u.	arsenic; manganese; naphthalene; vanadium; lead; elevated pH	Tap water

On-Site Groundwater			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-02 HI = 200 pH = 8.84 - 14.06 s.u.	benzene; 2-methylnaphthalene; naphthalene; benzo(a)pyrene; 4-methylphenol; antimony; arsenic; chromium; manganese; nickel, vanadium; zinc; elevated pH	Tap Water

Off-Site Groundwater East of Neponset River (SH-27)			
Receptor	Hazard Index	Major Contributors to Hazard	Exposure Medium
Resident	HI = 2	trichloroethene; manganese	Tap water

Abbreviations	
CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

FIGURE ES-4
FUTURE SITE WORKER AND CONSTRUCTION WORKER SCENARIOS
SUMMARY OF RISKS FROM RAGS TABLE 10
BASELINE HUMAN HEALTH RISK ASSESSMENT



Residential Lot 257			
Receptor	Hazard	Major Contributors to Hazard	Exposure Medium
Construction Worker	PBL = 6.5%	lead	Soil

WHILE THE ENTIRE LOT 257 HAS BEEN SHADED TO INDICATE PBL>5%, IT IS LIKELY THAT THE SPATIAL DISTRIBUTION OF LEAD IN SOIL IS LIMITED TO THE GENERAL VICINITY OF SAMPLE LOCATION FP-05. REFER TO SECTION 5.3.3.3 FOR FURTHER DISCUSSION OF THIS MATTER.

Lot 208 / Lot 209			
Receptor	Hazard	Major Contributors to Hazard	Exposure Medium
Construction Worker	pH = 10.11- 11.9 s.u.	elevated pH	Groundwater

West of South Street On-Facility			
Receptor	Hazard	Major Contributors to Hazard	Exposure Medium
Construction Worker	pH = 9.7 - 11.99 s.u.	elevated pH	Groundwater

East of South Street On-Facility (SB-09 area)			
Receptor	Cancer Risk	Major Contributors to Risk	Exposure Medium
Site Worker	CR = 3E-04	trichloroethene	Indoor Air

LEGEND:

CR <10^{-4}; AND/OR PBL > 5%; AND/OR pH EXCEEDANCE

Abbreviations	
CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

N

GRAPHICAL SCALE

100 50 0 100 200 300

Feet

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1.0 INTRODUCTION

This report presents the Interim Deliverable III Baseline Human Health Risk Assessment (BHHRA) for the Blackburn & Union Privileges Superfund Site (the Site) in Walpole, Massachusetts. The risk assessment incorporates data collected during the Remedial Investigation completed by Sanborn, Head & Associates, Inc. (SHA), is consistent with the *Work Plan for the Phase 1A Remedial Investigation* for the Site (SHA, 2002b), and complies with applicable United States Environmental Protection Agency (USEPA) guidance (USEPA, 1989; USEPA, 1997a; USEPA, 1997b; USEPA, 1997c; USEPA, 2002b; USEPA, 2004g; USEPAReg9, 2004), USEPA Region 1 Guidance (USEPAReg1, 1994; USEPAReg1, 1995; USEPAReg1, 1999b) and the Massachusetts Contingency Plan (MCP) 310 CMR 40.00 (MADEP, 2006).

The Site risk assessment identification information is in RAGS D Table 0 in Appendix A. In addition, the Technical Approach to Risk Assessment (TARA) Schedule Worksheet in Appendix A provides a summary of the schedule for other associated deliverables related to this Site.

Human health risk assessment proceeds in five steps: Hazard Identification, Exposure Assessment, Dose-Response Assessment, Risk Characterization, and Uncertainty Analysis. The *Hazard Identification* briefly describes the extent of Site contamination and specifies the chemicals of potential concern (COPCs). The *Exposure Assessment* identifies potential exposure pathways for both current and future land use at the Site, estimates exposure point concentrations, and specifies exposure assumptions for estimating daily COPC intakes. The *Dose-Response Assessment* describes the available toxicity values for COPCs at the Site, any adjustments to toxicity values made in this assessment, and methods for evaluating toxicity for special case COPCs (i.e. PAHs, lead, and other metals). The *Risk Characterization* summarizes quantitative risk estimates and presents qualitative evaluations by exposure scenario. The *Uncertainty Analysis* highlights uncertainties in the risk assessment that one should consider when interpreting and using results of this assessment. This BHHRA deliverable includes results from all five steps.

1.1 Report Organization

The BHHRA is organized into six sections:

- Introduction
- Hazard Identification
- Exposure Assessment
- Dose-Response Assessment

- Risk Characterization
- Uncertainty Analysis

The BHHRA follows the USEPA RAGS Part D format (USEPA, 2001a). RAGS Tables and Worksheets are organized as follows:

RAGS D Table or Worksheet	Location
RAGS D Tables	
Table 0	Appendix A
Table 1	Main Report Table 1
Table 2 Series	Appendix C
Table 3 Series	Appendix F
Table 4 Series	Appendix G
Table 5 and 6	Appendix J
Table 7 Series	Appendix K
Table 9 Series	Appendix L
Table 10 Series	Appendix M
RAGS D Worksheets	
TARA Worksheet	Appendix A
Data Usability Worksheet	Appendix B
Dermal Worksheet	Appendix H
Lead Worksheets	Appendix I

Summary tables and figures are presented in the main body of the report.

1.2 Objective of the Baseline Human Health Risk Assessment

The BHHRA is the final interim deliverable designed to provide an estimate of risk to human health for current and hypothetical future exposures to contaminated media at the Site. The BHHRA incorporates all changes to the BHHRA-III (submitted on June 20, 2006) agreed upon by the government parties and includes risk estimates for all the agreed-upon scenarios.

1.3 Site Description and Background

The following is a brief description of the Site and its background and history. Additional information regarding the Site and Site history can be found in SHA's *Version 03 Draft of the Remedial Investigation Report* (SHA, 2007a) and *Existing Data Review and Analysis Report* (SHA, 2000a).

As shown in Figure 1, the Blackburn & Union Privileges Site is located approximately one mile from the center of Walpole, Massachusetts, just south of the intersection of Common Street and South Street. South Street runs through the center of the Site in a north/south direction. The Neponset River runs through the southern portion of the Site in an east/west direction. Lewis Pond, present as a result of the dam at West Street, is located approximately 2,000 feet northwest

of the Site (Figure 2 - Site Vicinity Plan). Groundwater at the Site flows in an east to west direction as shown on Figure 3.

The Site is approximately 22 acres, consisting of 23 parcels of land, some "On-Facility" and some "Off-Facility." As defined in the Administrative Order for the Site (USEPAReg1, 1999a), in general, "On-Facility" areas have been the locus of various industrial activities spanning several hundred years, and "Off-Facility" areas have historically been undeveloped or residential lots. The Site includes residential lots (Off-Facility), vacant lots (Off-Facility and On-Facility), and industrial facilities (On-Facility) (Figure 2).

The portion of the Site East of South Street consists of On-Facility and Off-Facility areas (Figure 2). The currently occupied Cosmec, Inc. (Cosmec) area ("East of South Street On-Facility") is mostly paved and consists of five buildings that currently are used for foundry-related and associated support operations. Peripheral to the Cosmec property is the "Old Railroad and Former Lower Mill Pond Area" (the Former Lower Mill Pond portion is "On-Facility" and the Old Railroad portion is "Off-Facility"), and three residential and one vacant "Gleason Court Lot" (Off-Facility).

The portion of the Site West of South Street consists of the Area of Containment (AOC), the "West of South Street On-Facility" area, and three Off-Facility areas (Figure 2). The "West of South Street On-Facility" area, including the former mill building (currently unoccupied, shown on Figure 2), was previously owned by several industrial facilities. The former mill building was used for a number of industrial purposes, including the Standard Woven Fabric Company, later called Multibestos Corporation, a manufacturer of "multibestos and rubber specialties." Also formerly housed in the mill building was the Kendall Company, a cotton mercerizing operation. In 1992, asbestos-containing soil was excavated from various areas of the Site and consolidated with existing asbestos containing material on-Site south of the former mill building. Excavated asbestos-containing soil from the former mill tailrace (shown on Figure 2) was consolidated in a containment cell west of the former mill building. These areas, along with existing asbestos-containing soil to the north of the former mill building, have been designated the AOC. To the south and west of the mill building, the AOC has been capped with six inches of topsoil, placed over 24 inches of sand. To the north, the AOC is covered with asphalt. The AOC is subject to a deed restriction (i.e., future excavation and building construction is restricted); an eight-foot barbed-wire security fence surrounds its perimeter.

Although asbestos was detected in soil samples from limited areas of the Site, as presented in Figure 15 of the *Existing Data Review and Analysis Report* (EDRA) (SHA, 2000a), during the 1992 Asbestos Removal Action, the asbestos-containing soil on the Site (On-Facility) was effectively removed to less than or equal to 1% via analysis by Polarized Light Microscopy (PLM). In Off-Facility residential and undeveloped lots, asbestos was either not detected, or detected in soil samples at less than 1%; see (SHA, 2007a) for lot designations. Therefore, asbestos testing was not performed on Site soils located in the East and West of South Street On-Facility areas or Off-Facility residential and undeveloped lots. During monthly progress meetings with USEPA Region 1 in the Spring of 2005, it was agreed that given the public health concerns expressed in USEPA's OSWER Memorandum (9345.4-05 Aug.10, 2004) regarding 1%

asbestos in soil, an asbestos risk evaluation would be placed on hold until further guidance is received from USEPA Region 1. The Memorandum indicates that USEPA Regions should develop risk-based, site-specific action levels to determine if response actions should be taken when materials containing less than 1 percent asbestos are found on site. Therefore, this BHHRA does not address human health risk from asbestos. Uncertainties associated with asbestos risk assessment are presented in Section 6.4.3.

Areas peripheral to the "West of South Street On-Facility" area and the "Area of Containment (AOC)" are mostly residential (Figure 2). "Vacant Lot 209," "Residential Lot 208," and the "Orlando Property" residential lot are considered On-Site but Off-Facility. Other residential lots along the Neponset River, located west of the Site up to and including lots near Lewis Pond (Lot 283, Lot 282, Lot 210, Lot 230, Lot 257, Lot 342, Lot 360), and commercial Lot 350 are considered "Off-Site." In addition, because this assessment applies USEPA's Vapor Intrusion Guidance (USEPA, 2002b, see discussion later in this report), four additional off-Site areas with currently occupied residential buildings are evaluated in this assessment (see Figure 2) for the indoor air pathway only: "Off-Site Residential Building 1," "Off-Site Residential Building 2," "Off-Site Residential Building 3," and "Off-Site Residential Building 4." In addition, although the currently-occupied residential buildings in "Lots South of the AOC" (also shown in Figure 2) are farther than 100 feet from any groundwater or soil sample within the AOC, the area is evaluated for future indoor air exposures because samples in the AOC could be within a 100-foot lateral distance to future buildings on these lots.

Sodium hydroxide was used in association with the cotton mercerizing operations in the former mill building. Soil and groundwater in the vicinity and downgradient of the historical sodium hydroxide storage and use area (in the AOC near the Former Mill Building) have elevated pH (greater than pH 9 standard units, and as high as 14.1]). In the former mill tailrace area, downgradient and west of the AOC, elevated pH levels (as high as 10.3) have been observed in sediment and surface water.

Based on the Site history discussed above, East of South Street On-Facility, West of South Street On-Facility, and the AOC are considered the contamination source areas of the Site. The primary chemicals detected at the Site, in soil, groundwater, sediment, and surface water, include metals, polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs). Although not evaluated in this assessment, asbestos was detected in sediment and surface water in Lewis Pond and the former mill tailrace, and in some Neponset River floodplain soil samples collected on residential properties.

1.4 Exposure Scenarios Considered

Table 1 (RAGS D Table 1), Selection of Exposure Pathways, presents the rationale for inclusion or exclusion of current and future exposure pathways for the Site at each exposure area shown in Figure 2.

Currently, Cosmec occupies the eastern industrial portion of the Site ("East of South Street On-Facility"), so a current site worker is evaluated at this parcel. The former rail bed to the east of

Cosmec ("Old Railroad and Former Lower Mill Pond Area") is currently accessible to trespassers. Gleason Court Lots 122, 124 and 125 are residential. The vacant lot to the north of Cosmec ("Gleason Court Vacant Lot") is currently accessible to nearby residents who live on Gleason Court. The AOC is considered inaccessible. However, areas peripheral to the AOC and further north and west of the AOC are residential (Residential Lot 208, Lot 283, Lot 282, Lot 210, Lot 230, Lot 257, Orlando Property, Lot 342, and Lot 360) or accessible to trespassers (West of South Street On-Facility, Vacant Lot 209, and Lot 350).

As discussed above, five additional off-Site areas are evaluated in this assessment (see Figure 2) for the indoor air pathway only: "Off-Site Building 1," "Off-Site Building 2," "Off-Site Building 3," "Off-Site Building 4," and "Lots South of the AOC."

People may be exposed to Site contamination in the Former Mill Tailrace, Lewis Pond, and Neponset River sediment and surface water. In addition, people may ingest fish from Lewis Pond and the Neponset River; therefore a current fish ingestion pathway is evaluated in these areas. The former mill tailrace has two physically distinct habitats separated by a 1.5-foot high concrete weir that restricts flow in and out of the tailrace. Downey (2003) conducted a fish habitat survey of the former mill tailrace upstream of the weir and found that this area provides little habitat for supporting a permanent resident fish population; therefore fish ingestion from the former mill tailrace is not evaluated in the main report. However, although there is not a permanent fish population in the tailrace, fish are present in the former mill tailrace area downstream of the weir and adjacent to the Neponset River and fishing may occur in this area. Therefore, in the uncertainty section of the report, we evaluate a fisher exposed to sediment and surface water throughout the former mill tailrace.

In the future, some but not all portions of the Site may be developed for residential use. We evaluate risk to a future construction worker and future resident at all locations outside of the AOC, even on some parcels zoned for Limited Manufacturing where unrestricted residential use is not reasonably foreseeable. A future site worker is also evaluated at the East and West of South Street On-Facility areas. An evaluation of reasonably foreseeable future uses at the Site will be completed as part of the forthcoming Feasibility Study.

1.4.1 Groundwater Classification

Although the majority of the Site's groundwater is classified as GW-3 according to Massachusetts groundwater classification system (see discussion in the next paragraph), a small westerly portion of the Site (in the vicinity of on-Site Lots 208 and 209, and off-Site wells just west and north of this area) was mapped by the United States Geological Survey (USGS) as a potentially productive aquifer, which would be classified as GW-1. Groundwater transmissivity data collected during the remedial investigation indicate that the Site is not underlain by a viable aquifer that could be realistically utilized by a future resident for a water supply. Further, properties in this area of Walpole are serviced by public drinking water. Therefore, future exposure of residents to ingestion, dermal contact, or inhalation of volatiles from tap water during household use is highly unlikely. However, based on EPA's concern over evaluation of risk from exposure to tap water by potential future receptors, in the November 30, 2005 monthly

progress meeting, USEPA, MADEP, and SHA agreed that the risk assessment would include an evaluation of hypothetical risk from tap water exposure for a potential future receptor from these off-facility and off-Site areas, in addition to on-facility groundwater. Refer to Section 4.1.3 of SHA's Draft RI Report for further discussion regarding groundwater classification.

Other than the potential GW-1 area discussed in the previous paragraph, groundwater on all portions of the Site meets the MADEP GW-2 and/or GW-3 classification. In accordance with the MCP (310 CMR 40.0932), the exposure pathway of concern for a GW-2 classification is inhalation of volatiles in indoor air from groundwater. The GW-2 classification applies to groundwater at depths of 15 feet or less and within 30 feet of an existing occupied building. In accordance with the USEPA Vapor Intrusion Guidance (USEPA, 2002b), groundwater within 100 feet of an occupied building (100 feet below ground surface or a 100-ft lateral distance) is considered to have the potential to impact indoor air. All groundwater analyzed at the Site is within 100 feet of the ground surface. Each well cluster consists of a shallow, deep, and bedrock well screen; the shallow well screen is most representative of the concentration in groundwater at the water table, and is the concentration most appropriate for use in evaluating the indoor air pathway, as discussed in the Draft Vapor Intrusion Guidance (USEPA, 2002b) for data usability. Therefore only groundwater data from shallow well screens are classified as GW-2 and are included for the vapor intrusion pathway. All groundwater in Massachusetts is classified as GW-3 since all groundwater is assumed to discharge to surface water; therefore, all groundwater at the Site is classified as GW-3.

2.0 HAZARD IDENTIFICATION

This section summarizes available data for quantifying risk at the Site and presents selection of COPCs.

2.1 Data Summary

This BHHRA relies on analytical data presented in Version 03 Draft of the RI Report (SHA, 2007a) and the forthcoming Addendum to the RI Report – Phase 1B-4 / Phase 1B-5 Investigations prepared by Sanborn, Head & Associates, Inc. (2007b). We considered the following Site data:

- Soil (surface soil and subsurface soil)
- Soil gas collected at East of South Street On-Facility (near soil sample SB-09)
- Groundwater
- Lewis Pond, Neponset River and Former Mill Tailrace sediment
- Neponset River and Former Mill Tailrace surface water
- Lewis Pond and Neponset River fish tissue (fillets)

See Table 2 for a summary of samples used in this BHHRA for each exposure area. Soil, groundwater, sediment, and surface water samples were analyzed for 23 metals, cyanide, 41 volatile organic compounds (VOCs), and 66 semi-volatile organic compounds (SVOCs) (including polycyclic aromatic hydrocarbons; PAHs). Soil samples in the East and West of South Street On-Facility areas were also analyzed for polychlorinated biphenyls (PCBs) and pesticides. Soil and groundwater samples in the East and West of South Street On-Facility areas were also analyzed for petroleum fractions. The soil data set for East of South Street On-Facility includes two samples collected and analyzed for VOCs to define the extent of an elevated TCE concentration (4.5 mg/kg) detected in soil sample SB-09 (2 to 6 feet below ground surface). In addition, ten soil gas samples were collected and analyzed for VOCs to define the potential for VOC contamination of trench air and indoor air in the SB-09 area. Fish tissue was analyzed for 23 metals and 25 SVOCs (including PAHs). See COPC selection tables (discussed below) for summary statistics for all chemicals analyzed in each area. Data are not tabulated in this report but are available in Version 03 Draft of the RI Report and the forthcoming Addendum to the RI Report – Phase 1B-4 / Phase 1B-5 Investigations (SHA, 2007a and 2007b).

See Figures 4 and 5 for soil and soil gas sampling locations, Figure 6 for groundwater sampling locations, and Figure 7 for sediment, surface water, and fish sampling locations.

Monitoring well SH-23S, in the Old Railroad and Former Lower Mill Pond area, is excluded from the risk assessment because it is upgradient of contamination source areas of the Site (see Figure 3 for groundwater flow direction and Figure 6 for location of SH-23S), and is therefore considered a "background" well. As discussed in the RI Report (SHA, 2007a), the Neponset River acts as a barrier to contaminant migration from the Site. Since WP-03 and SH-24 are on the southwestern side of the Neponset River (i.e., opposite the Site; see Figure 6), these samples

are excluded from the risk assessment for all scenarios except the future tap water scenario, for which a tap water exposure point (off-Site groundwater west of Neponset River) at these two wells was evaluated for comparison to tap water scenarios on the Site side of the river. Only one SVOC (dibenz[a,h]anthracene) and a few metals were detected in these wells. Of the detected metals, only arsenic and manganese concentrations exceed the Region IX tap water PRGs; these concentrations are similar to or lower than the lowest concentrations in other wells in the West of South Street exposure areas, and are similar to background well SH-23S.

As indicated in the Phase 1A Work Plan (SHA, 2000b), surface water was not collected in Lewis Pond because it was assumed that surface water collected upstream in the Neponset River would best represent potential concentrations discharging to surface water from on-Site sources. Downstream, between the Site and Lewis Pond (and in the vicinity of Lewis Pond), considerable urban, commercial, and light industrial development exists, which may contribute contaminants ubiquitous to the environment (e.g., metals and PAHs) to surface water (via surface runoff, for example).

An assessment of potential fish communities conducted by Aquatec Biological Sciences (Downey, 2003) indicates that there are two distinct habitats of the former mill tailrace separated by a 1.5-foot concrete weir, which restricts flow in and out of the tailrace. The Lower Former Mill Tailrace (downstream of the weir) is a shallow but continuous portion of the Neponset River downstream of the "On-Facility" portions of the Site, and likely supports forage fish. The Upper Former Mill Tailrace (upstream of the weir) is not generally accessible to fish from the Neponset River and the Lower Former Mill Tailrace due to the presence of the concrete weir; hence, it is unlikely that fish permanently reside in this area. Therefore, fish tissue was not collected in the Upper Former Mill Tailrace.

New Environmental Horizons, Inc. (NEH) performed a validation and usability review of the Phase 1A and Phase 1B RI data. NEH's individual Data Usability Reports for each sample delivery group (SDG) are presented in Appendix B of the *Data Usability Reports* (SHA, 2002a; SHA, 2004b). In this assessment, we did not use data that were rejected by NEH (i.e. "R" qualified) as a result of their data validation. All other "qualified" data were considered suitable for risk assessment purposes. Although every effort was made to achieve reporting limits below applicable screening criteria and ARARs, some VOCs, SVOCs and metals were infrequently or never detected, but have maximum reporting limits greater than screening criteria. However, the majority of the data met reporting limit requirements. The reader should consult the Data Usability Worksheets (Appendix B in this report) and the *Data Usability Reports* (SHA, 2002a; SHA, 2004b) for a summary of the data and their usability.

2.2 Selection of Chemicals of Potential Concern (COPCs)

COPCs are chemicals identified for further evaluation in the risk assessment. Appendix C provides the RAGS D formatted tables (and supporting tables) detailing the COPC selections for each medium (RAGS D Tables 2.1 and 2.2 for soil, Tables 2.5 and 2.6 for groundwater, Tables 2.3, 2.4, 2.7, 2.8 and 2.8a for indoor air and trench vapor, Table 2.9 for sediment, Table 2.10 for surface water, and Table 2.11 for fish tissue).

Calcium, sodium, potassium, and magnesium are not included as COPCs in accordance with USEPA Region I guidance since they are considered essential nutrients and present little hazard to humans. USEPA Region 1 does not endorse quantitative evaluation of risk for iron, copper, aluminum and cobalt [(USEPAReg1, 1999b); and personal communication, USEPA Region I risk assessor, Sarah Levinson]. Copper, aluminum, and cobalt are not evaluated in the risk assessment. Iron is evaluated quantitatively along with sodium (see Section 4.9). A qualitative evaluation is conducted for pH in soil, groundwater, sediment and surface water at the Site.

If the maximum detected concentration of a chemical exceeds the available screening criteria, it is included as a COPC (even if the detection frequency was less than 5%). Chemicals not detected, or with maximum concentrations less than available screening criteria are excluded from the list of COPCs for each medium and pathway as described below. Chemicals not detected, but with maximum detection limits exceeding the applicable screening values, are noted as such in the COPC selection tables in Appendix C. If no screening value was available but the chemical was detected, and toxicity information is available for calculating a risk estimate, the chemical was included as a COPC. If screening criteria are not available for a particular chemical, but are available for a structurally similar chemical, we use the screening criterion for the similar chemical. Chemicals for which we substituted these "surrogate" screening criteria are indicated in the footnotes of each COPC screening table (Appendix C). Field duplicates are treated as separate samples for the purposes of selecting COPCs.

Table 1 (RAGS D Table 1) and conceptual model Figures 8 through 11 summarize the exposure pathways for each scenario evaluated. Figures 8 through 11 also note what exposure areas and pathways had no COPCs and therefore were eliminated from further evaluation in the risk assessment. Tables 3 through 23 summarize the samples used and final list of COPCs for each exposure point for each medium. Tables 24 through 27 summarize the pH of soil, groundwater, sediment, and surface water samples, respectively (elevated pH is not discussed further in this section).

2.2.1 Soil COPC Selection

As summarized in Table 1 (RAGS D Table 1) and conceptual model Figures 8, 9, and 10, exposure to COPCs present in soil may occur via:

- Direct Contact (i.e., dermal contact and incidental ingestion) (resident, site worker, construction worker, and trespasser)
- Ingestion of homegrown produce grown in contaminated soil (resident)
- Inhalation of fugitive dust (construction worker)
- Inhalation of vapors in indoor air (resident and site worker)
- Inhalation of vapors in an outdoor trench (construction worker)

Soil COPCs were screened separately for each of these exposure media by comparing the maximum concentrations in soil at each exposure point to risk-based screening criteria. In addition, soil gas COPCs were screened for the inhalation pathways by comparing the maximum

concentrations in soil gas at each exposure point to risk-based criteria. Soil sampling locations are shown in Figures 4 and 5, and soil gas sampling locations are shown in Figure 4.

2.2.1.1 COPC Selection for Soil (Direct Contact and Fugitive Dust)

Maximum chemical concentrations at current and future soil exposure points were screened against the following screening criteria:

> EPA Region IX Preliminary Remediation Goals (PRGs) for exposure to soil, (residential PRGs for the resident and trespasser, and industrial PRGs for the site worker and construction worker) (USEPAReg9, 2004)
>
> Massachusetts Department of Environmental Protection (MADEP) Method 2 direct contact S-1 soil standards (MADEP, 2006)

Region IX PRGs based on non-cancer effects are adjusted to account for a hazard index of 0.1.

Samples taken between 0 and 1 foot and not covered by asphalt, concrete, or a building, are included in the COPC screening for current soil exposure. Table 3 summarizes the soil samples included in each area for selection of current soil COPCs. RAGS D Table 2.1 in Appendix C shows the current soil COPC selection, and Table 4 summarizes current soil COPCs.

Samples collected between 0 and 10 feet from all areas of the Site, including those currently covered by asphalt, concrete, or a building, are included in the COPC screening for future soil exposure based on USEPA Region I guidance (USEPAReg1, 1995). Table 5 summarizes the soil samples included in each area for selection of future soil COPCs. RAGS D Table 2.2 in Appendix C shows the future soil COPC selection, and Table 6 and 7 summarize soil COPCs for the future resident, and construction and site workers, respectively.

As shown in Table 4, Table 6, and Table 7, current and future soil COPCs for direct contact and fugitive dust include several metals, several PAHs, one VOC (trichloroethene, TCE) on the East of South Street On-Facility area, and cyanide on Lot 208.

2.2.1.2 COPC Selection for Soil from Homegrown Produce (Plant Tissue)

We use the residential soil samples presented on Table 3 for current and on Table 5 for future residential exposure to soil from homegrown produce.

Since screening criteria are not available for the garden produce ingestion pathway, we used the same screening criteria for produce ingestion as we did for residential direct contact with soil (Region IX residential PRGs and MCP Method 2 direct contact S-1 standards; discussed above); this screening is presented on RAGS Tables 2.1 and 2.2 in Appendix C for the current and future resident. Since soil to plant uptake factors are only available for arsenic, cadmium, chromium, lead, mercury, nickel, and zinc (Appendix D), we only include these chemicals as COPCs for the garden produce ingestion pathway if they are included as a COPC on RAGS Tables 2.1 and 2.2.

Current soil to homegrown produce COPCs include arsenic, chromium, lead, and nickel (Table 4). Since there is no current residence on the Gleason Court Vacant Lot, we do not include it as an exposure point for the current produce ingestion pathway.

Future soil to homegrown produce COPCs include arsenic, chromium, lead, mercury, nickel, and zinc (Table 6).

2.2.1.3 COPC Selection for Current Soil and Soil Gas to Indoor Air

We followed the Draft USEPA Vapor Intrusion Guidance (USEPA, 2002b) for the soil to indoor air pathway and the soil gas to indoor air pathway evaluations.

All soil samples collected at the Site are less than 100 feet deep. We included all soil samples where the depth to the top of the soil sample was above the water table and that are within 100 feet of an occupied building. Soil gas samples were collected within 100 feet of soil sample SB-09 at the East of South Street On-Facility area (See Table 8 for soil gas sampling depths). Figures 12 and 13 illustrate the 100-foot distance from buildings on and near the Site relative to the locations of Site soil and soil gas samples used to evaluate currently occupied buildings. Soil gas samples were collected near Buildings 1 and 2 at the East of South Street On-Facility area. Only those samples collected beneath Building 1 (i.e. SV-07 and SV-08) and Building 2 (i.e. SV-09 and SV-10) were used to evaluate the current soil gas to indoor air pathway for these buildings. Soil gas samples collected nearest the property lines for Gleason Court Lot 124 (i.e. SV-02, SV-03, and SV-05) and Gleason Court Lot 125 (i.e. SV-02, SV-04, and SV-05) were used to provide an upper bound estimate of the soil gas to indoor air pathway for these lots.

Based on our understanding of the Site and consultation with SHA, several buildings on and near the Site are known to be currently occupied and within 100 feet of a Site soil or soil gas sample. Table 8 summarizes soil samples and soil gas samples associated with currently occupied buildings that were included in the current soil to indoor air and soil gas to indoor air COPC selection.

Maximum soil concentrations were screened at each exposure point against target soil concentrations back-calculated from target indoor air concentrations from USEPA's Draft Vapor Intrusion Guidance (USEPA, 2002b). These target soil concentrations were derived using the Johnson & Ettinger model for indoor air as described in Appendix E1. Soil concentrations were entered into the model, with conservative site-specific soil parameters and depth to contamination, until the modeled infinite source building concentration corresponded to the target indoor air concentrations presented in USEPA's Draft Vapor Intrusion Guidance. Appendix E1 shows the target indoor air concentrations, model inputs, and the resulting target soil concentrations. Target soil concentrations derived based on non-cancer effects are adjusted to account for a hazard index of 0.1 for COPC screening. Target soil concentrations were developed for chemicals detected at least once in soil in a current or future (discussed below) soil to indoor air exposure point, and which have chemical properties consistent with volatility as described in the Johnson & Ettinger model (USEPA, 2003b) and the Draft Vapor Intrusion Guidance (USEPA, 2002b). Note that use of the 2004 version of the Johnson and Ettinger model

(version 3.1) (USEPA, 2004d) would not increase our list of soil COPCs, nor change the baseline risk conclusions for this pathway. (See Appendix E for further discussion).

Maximum soil gas concentrations were screened at each exposure point against soil gas screening values from USEPA's Draft Vapor Intrusion Guidance (Table 2c in USEPA, 2002b). Soil gas screening values were adjusted to account for a hazard index of 0.1 for COPC screening.

RAGS D Table 2.3 in Appendix C shows the current soil to indoor air and soil gas to indoor air COPC screening, and Table 9 summarizes the COPCs. Soil COPCs for exposure points where indoor air concentrations were modeled from soil data (i.e. Off-Site Residential Buildings 1, 2 and 3; Lot 283, Orlando Property, and East of South Street On-Facility Buildings 3, 4, and 5) include benzene, chloroform, ethylbenzene, heptachlor, 2-methyl naphthalene, naphthalene. All are COPCs at three or fewer exposure points except for naphthalene, which is a COPC at all exposure points where soil data were used to model indoor air concentrations. Soil gas COPCs for exposure points where indoor air concentrations were modeled from soil gas data include naphthalene, TCE, 1,2,4-trimethylbenzene, and 1, 3, 5-trimethylbenzene at two residential lots (Gleason Court lots 124 and 125); benzene, carbon tetrachloride, methylene chloride, and TCE at East of South Street On-Facility Building 1; and benzene, naphthalene, tetrachloroethene, TCE, and 1,2, 4-trimethylbenzene at East of South Street On-Facility Building 2.

2.2.1.4 COPC Selection for Future Soil and Soil Gas to Indoor Air

The same methodologies that were applied for the current soil to indoor air pathway and current soil gas to indoor air pathway were applied to the future soil to indoor air pathway and future soil gas to indoor air pathway. However, since the location of future buildings is not known, we assume a building may be located anywhere on the Site in the future except in the AOC. For each exposure area, we only included soil samples within the exposure area as shown in Figures 4 and 5 (i.e., for a given exposure area, we did not include samples within 100-ft of the perimeter of the exposure area if those samples are included for the adjacent exposure area). Samples within the AOC, however, were included in the West of South Street On-Facility Area and for the Lots South of the AOC because samples in the AOC could be within a 100-foot lateral distance to future building locations in these two areas, and these samples would not be included otherwise. The East of South Street On-Facility area was divided into two future exposure points for the indoor air pathways: The area represented by the soil gas sampling program conducted near soil sample SB-09 (i.e. the "SB-09 area"), and the rest of the approximately 2-acre parcel (i.e. the "non-SB-09 area") for which soil data were used to assess potential indoor air concentrations. Table 10 summarizes soil and soil gas samples included in each area for the future soil and soil gas to indoor air COPC selection for the resident and site worker.

Maximum soil gas concentrations were screened at each exposure point against soil gas screening values from USEPA's Draft Vapor Intrusion Guidance (Table 2c in USEPA, 2002b). Soil gas screening values were adjusted to account for a hazard index of 0.1 for COPC screening.

Maximum soil concentrations at each exposure point were screened against target soil concentrations back-calculated from target indoor air concentrations from USEPA's Draft Vapor Intrusion Guidance (USEPA, 2002b), as we did for current soil to indoor air, described in Appendix E1. Note that use of the 2004 version of the Johnson and Ettinger model (version 3.1) (USEPA, 2004d) for COPC screening would not increase our list of COPCs, nor change the baseline risk conclusions for this pathway.

RAGS D Table 2.4 in Appendix C shows the future soil to indoor air and future soil gas to indoor air COPC screening, and Table 11 summarizes the COPCs. COPCs include several VOCs and SVOCs for the Lots South of the AOC, Gleason Court lots 124 and 125, the East of South Street On-Facility area, and the West of South Street On-Facility. Naphthalene is the only COPC in Lot 257, Lot 360, Lot 350, Lot 208, and the Orlando Property. In addition to naphthalene, chloroform is a COPC in Lot 283, and methylene chloride is a COPC in the Old Railroad Former Lower Mill Pond Area.

2.2.1.5 COPC Selection for Future Soil and Soil Gas to Trench Vapor

We use the same Site data for evaluating potential exposure via the trench vapor pathway for a construction worker as we do for the future resident indoor air pathway. All soil samples collected at the Site at a depth above the water table are included in the COPC selection. Since the location of future excavation activities is not known, we assume construction may occur anywhere on the Site in the future except in the AOC. Therefore, for each area we used the same samples for the future trench vapor COPC selection as we did for the future soil to indoor air and soil gas to indoor air COPC selection described above (Table 10).

Maximum chemical concentrations for the future soil to trench vapor and soil gas to trench vapor exposure points were screened against target soil and soil gas concentrations calculated using the J&E model, modified for exposure of a construction worker to trench vapor as described in Appendix E2. The model is used to calculate risk-based soil and soil gas concentrations corresponding to a hazard index of 0.1 and cancer risk of 1E-06, based on an exposure frequency of 156 days per year and one-year exposure duration. Appendix E2 shows the J&E model inputs and the resulting target soil and soil gas concentrations.

RAGS D Table 2.4 in Appendix C shows the future soil and soil gas to trench vapor COPC selections, and Table 12 summarizes the COPCs selected. COPCs for the soil to trench vapor and soil gas to trench vapor pathways include several VOCs and SVOCs for the Lots South of the AOC, the East of South Street On-Facility area (non-SB-09 area), the West of South Street On-Facility area, and Old Railroad Former Lower Mill Pond. TCE is the only COPC for East of South Street On-Facility (SB-09 area). Naphthalene is the only COPC in Lot 282, Lot 210, Lot 230, Lot 342, Lot 350, and Gleason Court Vacant Lot. In addition to naphthalene, chloroform is a COPC in Lot 283, trichlorofluoromethane is a COPC in Lot 208, and 2-methylnaphthalene is a COPC in Lot 257, Lot 360, and Orlando Property.

2.2.2 Groundwater COPC Selection

As summarized in Table 1 (RAGS D Table 1) and in conceptual model Figures 8, 9, and 10, exposure to COPCs present in groundwater may occur via:

- Ingestion of tap water (resident)
- Dermal contact (resident tap water and construction worker groundwater)
- Inhalation of vapors during household use (resident)
- Inhalation of vapors in indoor air (resident and site worker)
- Inhalation of vapors in an outdoor trench (construction worker)

COPCs were screened separately for each of these exposure media by comparing the maximum groundwater concentrations at each exposure point to risk-based screening criteria. Groundwater sample locations are shown in Figure 6.

The Phase 1B groundwater sampling effort included groundwater samples northwest of the "West of South Street On-Facility" area. This area is referred to as the "West of South Street Off-Facility / Off-Site Groundwater Exposure Area," shown in Figure 6. This area includes all Off-Facility lots west of South Street where groundwater was analyzed and all Off-Site lots with currently occupied buildings within 100-ft of any groundwater monitoring well or well point (see discussion below and Figure 10). This area is screened as one exposure point for future residential exposure to indoor air and future construction worker dermal exposure to groundwater and exposure to trench vapor.

In addition, all monitoring wells and well points on and off the Site, including WP-03 and SH-24 but not SH-23 (see discussion in Section 1.0), are evaluated for future residential exposure to tap water. See Figure 21 for tap water exposure points.

- "Off-Site Groundwater West of the Neponset River" - well point WP-03, and monitoring wells SH-24S and SH-24R
- "Off-Site Groundwater East of the Neponset River (SH-27)" - monitoring wells SH-27S, SH-27D, and SH-27R, off-Site and sidegradient of the industrial portions of the Site
- "Off-Site Groundwater East of the Neponset River (SH-28)" - monitoring wells SH-28S, SH-28D, and SH-28R, off-Site and downgradient of the industrial portions of the Site
- "Off-facility Groundwater Lots 208 and 209" – on-Site/off-Facility well points WP-05, WP-06, and WP-07, and monitoring wells SH-15S, SH-15D, and SH-26S
- "On-Site Groundwater" – all remaining well points and monitoring wells, except SH-23, which is a background well

2.2.2.1 COPC Selection for Future Groundwater (Residential Tap Water)

Maximum concentrations in groundwater were screened against the USEPA Region IX Preliminary Remediation Goals (PRGs) for residential exposure to tap water (USEPAReg9, 2004). Noncarcinogenic PRGs are adjusted to account for a Hazard Index of 0.1. Since tap water

PRGs are not available for the MADEP petroleum fractions, the MADEP GW-1 standards are used for screening these fractions (MADEP, 2006).

Table 13 shows the wells included at each exposure point and the depth to water in each well.

The results of the tap water screening for a future resident are shown in RAGS D Table 2.5 in Appendix C, and are summarized in Table 14. COPCs for the tap water pathway include metals, PAHs, and several SVOCs and VOCs. Since elevated pH (greater than the Federal SMCL pH range of 6.5 to 8.5) has been observed in groundwater in the vicinity and downgradient of the historical sodium hydroxide above ground storage tank (AST) area (Table 25), pH is a COPC for ingestion and dermal contact with groundwater for the future resident.

2.2.2.2 COPC Selection for Future Groundwater (Construction Worker Dermal Contact)

Screening criteria protective of the groundwater dermal pathway are not available, so tap water PRGs are used as the screening criteria for the construction worker groundwater dermal pathway. Maximum concentrations in groundwater were screened against the USEPA Region IX Preliminary Remediation Goals (PRGs) for construction worker dermal exposure to groundwater (USEPAReg9, 2004). Noncarcinogenic PRGs are adjusted to account for a Hazard Index of 0.1. Since tap water PRGs are not available for the MADEP petroleum fractions, the MADEP GW-1 standards are used for screening these fractions (MADEP, 2006).

Table 15 shows the wells included at each exposure point and the depth to water in each well. To screen COPCs in groundwater, we used wells where the depth to groundwater is 10 feet or less. Ten feet is assumed to be the depth of excavation based on the general depth of frost penetration in New England soil (USEPAReg1, 1995). If a well was sampled on more than one date, and the depth to groundwater was less than 10 feet during at least one of the sampling events, then the results of the samples collected from this well during all sampling events are included in the evaluation. WP-01 is excluded from evaluation of the groundwater dermal pathway because this sample is in a wetland area where future development is unlikely; therefore, exposure to WP-01 during construction activities is not expected. WP-02, located across the Neponset River in the Old Railroad Former Lower Mill Pond Area, is near several upland portions of the area that one could potentially develop in the future. Therefore, WP-02 could represent the groundwater in these upland portions of the Site and is therefore included in the assessment. WP-04, WP-05, WP-06, and WP-07 are well points in the Neponset River but are included in the assessment as they likely represent concentrations in groundwater on the Site side of the river.

The results of the groundwater screening for a future construction worker are shown in RAGS D Table 2.6 in Appendix C, and summarized in Table 16. COPCs for the groundwater dermal contact pathway include several metals, several PAHs, bis(2-ethylhexyl)phthalate and five VOCs (benzene, ethylbenzene, 2-hexanone, trichloroethene and m,p-xylene). Since elevated pH (greater than the Federal SMCL pH range of 6.5 to 8.5) has been observed in groundwater in the vicinity and downgradient of the historical sodium hydroxide AST area (Table 25), pH is a COPC for dermal contact with groundwater for the construction worker in the West of South Street On-Facility and West of South Street Off-Facility/Off-Site Groundwater Exposure areas.

2.2.2.3 COPC Selection for Current Groundwater to Indoor Air

The same general methodology that was applied for the soil and soil gas to indoor air pathways was applied to the groundwater to indoor air pathway; we followed the Draft USEPA Vapor Intrusion Guidance (USEPA, 2002b). For the current groundwater to indoor air pathway, the COPC selection includes all groundwater samples from shallow wells that are within 100 feet lateral distance from an existing occupied building. Figure 14 illustrates the 100-foot distance around currently occupied buildings on and near the Site relative to Site groundwater sample locations. Based on our understanding of the Site and consultation with SHA, the only currently occupied buildings within 100 feet of Site groundwater samples are: commercial buildings on the East of South Street On-Facility area, and several off-Site residential buildings to the north and west of the West of South Street On-Facility area, in the "West of South Street Off-Facility / Off-Site Groundwater Exposure Area." As discussed above and presented on Table 1 (RAGS D Table 1), groundwater samples in the West of South Street Off-Facility / Off-Site Groundwater Exposure Area were evaluated as a group as an initial screen for the current groundwater to indoor air pathway. Table 17 summarizes groundwater samples associated with currently occupied buildings that were included in the current groundwater to indoor air COPC selection. We screened maximum groundwater concentrations at each exposure point against target groundwater to indoor air concentrations from Table 2c of USEPA's Draft Vapor Intrusion Guidance (USEPA, 2002b). Target groundwater concentrations derived based on non-cancer effects are adjusted to account for a HI of 0.1 for COPC screening. Since target groundwater concentrations are not available for the MADEP petroleum fractions, the MADEP GW-2 standards are used for screening these fractions for the indoor air pathway (MADEP, 2006).

RAGS D Table 2.7 in Appendix C shows the current groundwater to indoor air COPC screening. As shown in this table, there are no COPCs for the current groundwater to indoor air pathways; therefore, contributions from the groundwater to indoor air pathway are concluded to be minimal compared to the soil to indoor air pathway.

2.2.2.4 COPC Selection for Future Groundwater to Indoor Air

The same methodology that was applied for the current groundwater to indoor air pathway was applied to the future groundwater to indoor air pathway, except that all shallow groundwater samples in each area of the Site were included in the evaluation (see Figure 6). Since the location of future buildings is not known, all areas of the Site where groundwater was analyzed were evaluated for future exposure. For each exposure area, we only included groundwater samples within the exposure area as shown in Figure 6 (i.e., for a given exposure area, we did not include samples within 100-ft of the perimeter of the exposure area if those samples are included for the adjacent exposure area). Samples within the AOC, however, were included in the West of South Street On-Facility area and the Lots South of the AOC because groundwater samples in the AOC could be within a 100-foot lateral distance to future building locations in these two areas, and these samples would otherwise not be included. Table 18 summarizes groundwater samples included in the future groundwater to indoor air COPC selection for the future resident and site worker. We screened maximum groundwater concentrations at each exposure point against target

groundwater to indoor air concentrations from Table 2c of USEPA's Draft Vapor Intrusion Guidance (USEPA, 2002b), as we did for the current groundwater to indoor air pathway.

The future groundwater to indoor air COPC screening is presented in RAGS D Table 2.8 in Appendix C, and summarized in Table 19. COPCs for the future groundwater to indoor air pathway include benzene, 2-hexanone, and naphthalene for the West of South Street On-Facility area, and benzene and naphthalene for the West of South Street Off-Facility / Off-Site Groundwater Exposure Area. Note that for the West of South Street Off-Facility / Off-Site Groundwater Exposure Area, COPCs are from groundwater concentrations on Lots 208 and 209. All concentrations of these chemicals in the other samples in the West of South Street Off-Facility / Off-Site Groundwater Exposure Area are below screening values. See discussion in Section 3.2.6.2.

Note that use of the 2004 version of the Johnson and Ettinger model (version 3.1) (USEPA, 2004d) for COPC screening would not increase our list of COPCs, nor change the baseline risk conclusions for this pathway.

2.2.2.5 COPC Selection for Future Groundwater to Trench Vapor

We use the same samples for evaluating potential exposure via the trench vapor pathway for a construction worker as we do for the future resident indoor air pathway. All shallow groundwater samples collected at the Site are included in the COPC selection. Since the location of future excavation activities is not known, all areas of the Site where groundwater was analyzed were evaluated for future exposure. For each area, we used the same samples for the future groundwater to trench vapor COPC selection as we did for the future groundwater to indoor air COPC selection described above, as shown in Table 18.

Step 1

Maximum chemical concentrations for the future groundwater to trench vapor exposure points were first screened against USEPA Region IX Preliminary Remediation Goals (PRGs) for exposure to tap water (USEPAReg9, 2004). Since tap water PRGs are not available for the MADEP petroleum fractions, the MADEP GW-1 standards are used for screening these fractions for the groundwater to trench vapor pathway (MADEP, 2006). The Region IX tap water PRGs and MADEP GW-1 standards are protective of the tap water ingestion pathway. The Region IX PRGs are also protective of the vapor inhalation pathway from use of household water for showering, bathing, dishwashing, etc. The first step of the future groundwater to trench vapor COPC selections is presented in RAGS D Table 2.8 in Appendix C. COPCs for the first screening step include several VOCs and PAHs in each area.

Step 2

As a second screening step, maximum concentrations of chemicals highlighted in RAGS Table 2.8 were compared to target groundwater concentrations for the trench vapor pathway. These target groundwater concentrations were developed using the J&E model, modified for exposure

of a construction worker to trench vapor as described in Appendix E2. The model was used to calculate risk-based groundwater concentrations corresponding to a hazard index of 0.1 and cancer risk of 1×10^{-6} based on an exposure frequency of 156 days per year and an exposure duration of one year. Appendix E2 shows the model inputs and the resulting target groundwater concentrations.

As shown in RAGS D Table 2.8a in Appendix C, there are no COPCs for the future groundwater to trench vapor pathway after this second screening step; therefore, this pathway is eliminated from evaluation.

Note that use of the 2004 version of the Johnson and Ettinger model (version 3.1) (USEPA, 2004d) for COPC screening would not increase our list of COPCs, nor change the baseline risk conclusions for this pathway.

2.2.3 Sediment COPC Selection

As summarized in Table 1 (RAGS D Table 1) and in conceptual model Figure 11, exposure to COPCs present in sediment may occur via dermal contact and incidental ingestion for the current/future wader and fisher.

Table 20 shows the sediment samples included at each exposure point, the depth of each sample, and the depth of water above sediment on the date of sampling. Sediment sample locations are shown in Figure 7.

We screened maximum chemical concentrations at current and future sediment exposure points against the following screening criteria. Since screening criteria for sediment exposures are not available, residential soil PRGs and MADEP soil standards are used to screen COPCs:

> USEPA Region IX Preliminary Remediation Goals (PRGs) for residential soil (USEPAReg9, 2004); and
>
> Massachusetts Department of Environmental Protection (MADEP) Method 2 direct contact S-1 soil standards (MADEP, 2006).

Region IX PRGs based on non-cancer are adjusted to account for a HI of 0.1.

Sediment COPC screening is shown in RAGS Table 2.9 of Appendix C, and summarized in Table 23. COPCs for the sediment pathways include several metals and several PAHs.

2.2.4 Surface Water COPC Selection

As summarized in Table 1 (RAGS D Table 1) and in conceptual model Figure 11, exposure to COPCs present in surface water may occur via dermal contact for a wader and a fisher. Table 21 shows the samples included at each exposure point.

Dermal contact is the only direct contact pathway that is quantified for surface water. Screening criteria protective of the surface water dermal pathway are not available; therefore, tap water PRGs are used as conservative screening criteria for this pathway. Maximum concentrations in surface water were screened against the USEPA Region IX Preliminary Remediation Goals (PRGs) for residential exposure to tap water (USEPAReg9, 2004). Non-cancer PRGs are adjusted to account for a Hazard Index of 0.1.

Surface water COPC screening is shown in RAGS Table 2.10 of Appendix C, and summarized in Table 23. COPCs for the surface water pathways include several metals and PAHs. Dermal contact with PAHs (USEPA, 2004g) in surface water are evaluated qualitatively.

2.2.5 Fish Tissue COPC Selection

As summarized in Table 1 (RAGS D Table 1) and in conceptual model Figure 11, exposure to COPCs present in fish tissue may occur from ingestion of fish tissue. Table 22 shows the samples included at each exposure point for fish tissue.

We screen maximum concentrations in fish fillets against USEPA Region III Risk-Based Concentrations (RBCs) for fish tissue (USEPAReg3, 2004). Non-cancer RBCs are adjusted to account for a HI of 0.1.

The fish COPC screening results are shown in RAGS D Table 2.11 of Appendix C, and are summarized in Table 23. COPCs for the fish ingestion pathway include four metals, three PAHs, and bis(2-ethylhexyl)phthalate. Note that the most recent revisions to the Region III RBCs (USEPAReg3, 2006) were reviewed and found to not change our list of COPCs for fish tissue.

3.0 EXPOSURE ASSESSMENT

The exposure assessment evaluates potential exposure of humans to impacted media under current and potential future land use conditions. The exposure profiles, or scenarios, describe potential receptors, activities through which receptors may be exposed to COPCs, the media and routes through which exposure may occur, and the frequency and duration of exposure.

Table 1 (RAGS D Table 1) summarizes the selection of exposure pathways. Conceptual model Figures 8 through 11 summarize all exposure pathways evaluated and what pathways were eliminated subsequent to COPC selection. Exposure areas evaluated, subsequent to COPC selection, are depicted on Figures 15 through 22.

As shown in Figures 15 through 19, risk is evaluated for the following current exposure scenarios:

- Current Resident living near and west of the facility (Figures 15a and 15b)
- Current Trespasser exposed on or near the facility (Figure 16)
- Current Site Worker East of South Street On-Facility (Figure 17)
- Current Wader in the Former Mill Tailrace, Lewis Pond, and Neponset River East and West of South Street (Figure 18)
- Current Fisher and Child Fish Consumer ingesting fish from Lewis Pond and Neponset River East and West of South Street (Figure 19)

The following potential future exposure scenarios are evaluated:

- Future Resident living on and near the facility (Figures 20a, 20b, and 21)
- Future Construction Worker performing excavation work on and near the facility (Figures 20a and 20b)
- Future Site Worker East and West of South Street On-Facility (Figure 22)
- Future Wader in the Former Mill Tailrace, Lewis Pond, and Neponset River East and West of South Street (Figure 18)
- Future Fisher and Child Fish Consumer ingesting fish from Lewis Pond and Neponset River East and West of South Street (Figure 19)

We evaluated indoor air risks for all currently-occupied buildings, and these current indoor air risks also can be assumed to be future indoor air risks. However, we also assume that a future building can be built anywhere on Site. Given the large number (19) of exposure areas evaluated for future residential indoor air exposure, we attempted to simplify evaluation of this future exposure pathway by only including groundwater and soil samples collected within each exposure area (Note: soil gas samples were collected only in close proximity to occupied buildings; therefore, they are not relevant to this discussion). That is, for lots evaluated for future indoor air risk, we did not include samples within 100 feet of the perimeter of the lot, with two exceptions ("Lots South of the AOC", and "West of South Street On-facility," for which soil and groundwater samples in the AOC were included in the future indoor air risk calculation; the

AOC samples would otherwise not be included in any future indoor air risk calculation because there is a restriction on future building on the AOC). Following this criterion, future indoor air risk was not evaluated for Off-Site Buildings 1 through 4 because there were no soil or groundwater samples collected on these lots; however, these exposure points were evaluated for current indoor air exposure.

This assessment evaluates risk from Reasonable Maximum Exposures (RME), used to estimate high levels of exposure (protective of the 90th or 95th upper percentile of the exposed population), and Central Tendency (CT) exposures, used to estimate average levels of exposure (protective of the 50th percentile, or median, of the exposed population) for all exposure scenarios. The RME is defined as the highest exposure reasonably expected to occur at a site (USEPA, 1989), and is intended to provide a conservative estimate of exposure, well above the average case, that is still within the range of possible exposures. RME levels are estimated by setting ingestion and contact rates, exposure frequency, and exposure duration at the high end of possible values, while setting the remaining variables (body weight and body surface area) at central tendency values. CT exposure is defined as the average exposure and is achieved by setting all exposure parameters at the central tendency values. The CT exposure assumptions are used to calculate a central tendency or average risk for the Site for scenarios with RME risks that exceed regulatory limits.

The following sections discuss how RME and CT exposure point concentrations (EPCs) are calculated, and summarize the exposure assumptions for each scenario. EPCs are presented in Appendix F (RAGS D Table 3 Series), and exposure assumptions are presented in Appendix G (RAGS D Table 4 Series). Exposure assumptions and EPCs are combined to calculate the chronic daily intakes and exposures from all pathways evaluated, using equations presented in the RAGS D Table 4 series in Appendix G.

3.1 Exposure Point Concentrations

Exposure point concentrations are concentrations of COPCs in various media to which receptors are exposed. They are defined by the exposure point, or location where a receptor may contact contaminants. Therefore, EPCs are media-specific and may differ depending on the exposure scenario. Most of the EPCs used in this assessment are based on measured data, except for homegrown produce EPCs modeled from soil concentrations, and indoor air and trench vapor EPCs modeled from soil, soil gas, and groundwater concentrations.

Except for the case discussed below, the samples used to calculate EPCs for each exposure point are the same samples that were used to select COPCs for each exposure point. Samples are shown in Tables 3 and 5 (current and future soil direct contact and produce), Tables 8 and 10 (current and future soil and soil gas to indoor air and trench vapor), Table 13 (future resident exposure to groundwater as tap water), Table 15 (future construction worker dermal contact with groundwater), Tables 17 and 18 (future groundwater to indoor air), Table 20 (sediment), Table 21 (surface water), and Table 22 (fish tissue). The RAGS D Table 3 series in Appendix F summarize pathway-specific EPCs for all scenarios and all COPCs at the Site. Modeled plant, indoor air, and trench vapor EPCs, shown as supporting tables in Appendix F, are calculated

from 95% UCLs based on measured concentrations in environmental media (e.g., soil, soil gas, or groundwater).

For the groundwater to indoor air exposure pathway in the West of South Street Off-Facility / Off-Site Groundwater Exposure Area, groundwater concentrations were compared to the indoor air target groundwater screening levels from the Draft USEPA Vapor Intrusion Guidance (USEPA, 2002b); see comparison to screening values in RAGS Table 3.9a (supporting table). The only samples where the concentrations (in at least one sampling round for at least one COPC) exceed a screening level are SH-15S, SH-26S, and WP-07. These samples are located in the same general area on the Site near Residential Lot 208 and Vacant Lot 209 (Figure 6); therefore it is appropriate to limit the groundwater to indoor air evaluation to these two lots. Since WP-06 is close to these lots, it is also included as part of the EPC. Samples included in the groundwater EPC calculation are shaded in RAGS Table 3.9a.

3.1.1 Adequacy of the Data Set for Development of Exposure Point Concentrations

As discussed in the *Work Plan for Phase 1A Remedial Investigation* (SHA, 2000b), except for the AOC, information regarding source areas on the Site from previous investigations was limited. Therefore, a targeted sampling approach for soil was deemed inappropriate for all areas of the Site outside of the AOC. Instead, to determine an appropriate number of sample locations on the Site, a statistical sampling approach was adopted. A grid was superimposed on each area of the Site outside of the AOC (industrial on-facility areas east and west of South Street, and on the peripheral off-facility areas east and west of South Street). One soil boring was completed as close to the center of each grid node as possible.

A stratified random sampling approach was used for sampling of historically residential and undeveloped lots. The statistical analysis indicated that two sampling locations for each developed lot (Lot 122, 124, and 125) and undeveloped lot (Lot 123) in the Gleason Court area would provide an adequate data set to meet the project quality objectives. A grid sampling approach was used for the Orlando property, by superimposing a 9,025 ft^2 grid on the area. Two samples were collected within each grid node for a total of 8 samples from the Orlando property. The reader should consult the Work Plan (SHA, 2000b) for a detailed description of the statistical soil sampling design for the Site.

A targeted sampling approach was deemed appropriate for sediment, surface water, and soil on residential lots on the Neponset River and near Lewis Pond. In addition, based on an understanding of the Site hydrogeology, historic Site use, and analytical data, a targeted sampling approach for groundwater was applied. Because elevated TCE concentrations were detected at soil sampling location SB-09 at the East of South Street On-Facility area, SHA conducted a soil gas sampling program to identify the extent of volatile contamination detected at this location.

The soil sampling carried out for the Site, as described in the Initial Site Characterization Report (SHA, 2002b), was consistent with the sampling design proposed in the Site Work Plan (SHA, 2000b), and the overall data quality objectives were met for all media at the Site (SHA, 2002a;

SHA, 2004b). Therefore, the Site data set was deemed adequate for development of EPCs for the assessment of risk to human health.

3.1.2 Calculation of Exposure Point Concentrations

To account for uncertainty in the underlying database, including uncertainty associated with sample collection, analysis, and how well the data represent Site contamination that people are likely to contact, USEPA recommends using the 95% upper confidence limit (UCL) on the arithmetic mean to represent EPCs (USEPAReg1, 1994; USEPAReg1, 1995) for RME and CT exposures for all scenarios except the tap water scenario. In addition, arithmetic mean concentrations were used for all lead modeling. 95% UCLs were calculated using ProUCL version 3.0 (USEPA, 2004e) for each exposure point. Note that EPCs were initially calculated using ProUCL version 3.0 in April 2004. Since then, the program has been updated, once in June 2004 and again in August 2004. The update in June fixed a discrepancy in the "Fixed Excel Format" Option. This did not affect any EPC calculations because we do not use that UCL menu option. In August 2004, the program was updated in order to correct a discrepancy in the ProUCL source code associated with the bias corrected accelerated (BCA) bootstrap UCL computation method. However, ProUCL did not recommend use of this UCL method to calculate EPCs for any of the areas at the Site; therefore, no EPCs are affected by this ProUCL discrepancy. The latest version of ProUCL (version 3.00.02) (USEPA, 2004f) was used to calculate 95% UCLs for any revised or new EPCs calculated subsequent to the submittal of the BHHRA-II in October 2004.

If the 95% UCL exceeds the maximum concentration, then the maximum concentration is used as the EPC for RME and the arithmetic mean is used as the EPC for CT. In addition, when fewer than four samples were available for EPC calculation at an exposure point, 95% UCLs were not calculated, and the maximum detected concentration was used as the RME EPC and the mean was used as the CT EPC. EPCs are calculated by using ½ the reporting limit for the non-detects qualified as “U,” and the whole reporting limit was used for non-detects qualified as “UJ” where data were reported down to the method detection limit (MDL) or a sample-specific low level reporting limit, as discussed in the Data Usability Worksheets (Appendix B) and in the Data Usability Reports (SHA, 2002a; SHA, 2004b).

Field duplicate data were managed as discussed in the Data Usability Worksheets in Appendix B, prior to EPC calculations.

For groundwater wells that were sampled multiple times, temporal averages were calculated; the concentrations were averaged over time (e.g., 2001, 2002 and 2003). If the calculated average was greater than the maximum measured concentration (this can occur if detection limits are greater than the maximum measured concentration), the maximum concentration was used to represent the concentration in that well. The temporal averages were calculated after combining results for field duplicate samples, as described in Appendix B. We did not calculate temporal averages for soil, sediment, or surface water data; each sample was included separately in the EPC calculations. Soil gas samples were collected during a single sampling event, so temporal averaging is not relevant to these data.

Tap water RME EPCs are the maximum concentrations of each chemical in groundwater from each tap water exposure area. If more than one round of groundwater sampling was performed at a well, the concentrations were averaged over time for that well, and the highest average concentration was used as the EPC; if the average exceeded the maximum concentration in a well, the maximum concentration was used to represent the concentration in that well. Average groundwater concentrations from each area were calculated for CT EPCs. If the average concentrations exceeded the maximum concentrations then the maximum concentration was used as the CT EPC.

3.1.2.1 Modeled Plant Tissue, Fugitive Dust, and Air EPCs

See Appendix D for a discussion of how plant tissue EPCs were modeled. See Appendix E for a discussion of how indoor air and trench vapor EPCs were calculated.

Fugitive dust EPCs for the construction worker scenario were calculated from soil EPCs, using USEPA's particulate emission factor (PEF) equation that relates soil concentrations to concentrations of dust in the air (USEPA, 1996b). The PEF equation is as follows:

$$PEF = Q/C * (3{,}600 \text{ sec/hr}) * 1/[0.036 * (1-V) * (U_m/U_t)^3 * F(x)]$$

Where:

Parameter	Definition	Value	Units	Source
PEF	Particulate Emission Factor	1E+09	m^3/kg	Calculated
Q/C	Inverse of mean concentration at center of square source	71.35	g/m^2-s per kg/m^3	Table 3 of (USEPA, 1996b) (for 0.5 acres source in Hartford, CT)
V	Fraction of vegetative cover	0.5	unitless	(USEPA, 1996b)
U_m	Mean annual wind speed	4.69	m/s	(USEPA, 1996b)
U_t	Equivalent threshold value of wind speed at 7 m	11.32	m/s	(USEPA, 1996b)
F(x)	Function dependent on U_m/U_t	0.194	unitless	(USEPA, 1996b)

See Tables 4.2.RME and 4.2.CT in Appendix G for how the PEF is used to calculate the chronic daily exposure (CDE) to dust.

The risk from fugitive dust for the construction worker is used to qualitatively evaluate risk from fugitive dust for the resident, trespasser, and site worker scenarios (see Section 6.4.4); therefore fugitive dust EPCs were only calculated for the construction worker.

Soil and groundwater EPCs used to model plant tissue, air, or dust concentrations were calculated as described above in Section 3.1.2.

3.1.3 Areas of Elevated Soil Concentrations

The 95% UCL is an appropriate EPC for soil as long as contamination across the Site is relatively homogeneous. If Site contamination is heterogeneous and people spend more time in the more highly contaminated areas of the Site, it may be necessary to estimate risk just for that area. For this reason, we examined soil data to identify potential areas with higher COPC concentrations relative to the surrounding soil samples in the exposure area.

Our analysis consisted of comparing the maximum soil concentration of each COPC with the arithmetic average concentration from all other soil samples in the exposure area. We divided the soil data for the Site into two exposure areas, and carried out analyses for each: 1) the more contaminated industrial On-Facility areas East and West of South Street (shown on Figure 2); and 2) the less contaminated peripheral and residential areas east and west of South Street (all Off-Facility and Off-Site areas where soil was analyzed) (Figure 2). We flagged those COPCs with maximum soil concentrations more than ten and one-hundred times greater than the arithmetic average concentration calculated from all other samples. The AOC was not included in the evaluation since contamination in this area is known to be high relative to other portions of the Site. The only contaminant concentration identified as greater than one-hundred times the average was TCE in soil sample SB-09 (2 to 6 feet deep) from East of South Street On-Facility. The TCE concentration in this sample is 4.5 mg/kg, greater than the Region IX residential (0.05 mg/kg) and industrial (0.11 mg/kg) soil PRG (which is based on direct contact and ambient air exposures), but less than the MCP Method 2 S-1 direct contact standard (70 mg/kg). Although TCE was elevated in soil sample SB-09, it was detected in only one other location in this area, at a concentration less than the applicable screening values (SB-11 at 0.0018 mg/kg); TCE was not detected in samples from other locations in this area, with detection limits ranging from 0.0017 mg/kg to 0.0037 mg/kg. In addition, the concentrations of naphthalene, and 2-methylnaphthalene detected in soil samples from SB-09 are considerably higher than in any other vadose zone soil samples from the Site.

In response to the elevated TCE concentration in soil sample SB-09, SHA collected two additional soil samples and ten soil gas samples to further define the nature and extent of VOC (including naphthalene and 2-methylnaphthalene) concentrations in the vicinity of SB-09. These samples also provide additional data to assess potential exposures from inhalation of and direct contact with contaminants in soil from this area.

Soil sample SB-09 and the two additional soil samples collected near it are included with other soil samples from the East of South Street On-Facility exposure point for:

- Dermal contact and incidental ingestion for the future site worker and future resident
- Dermal contact, incidental ingestion, and inhalation of particulates for the future construction worker

For vapor inhalation exposure pathways, soil gas data are preferred over soil (and groundwater) data for use in the Johnson & Ettinger model, which was used to predict indoor air and trench air VOC concentrations, because they "eliminate the need for theoretical partitioning of a total

volume soil concentration or a groundwater concentration into discrete phases" (EPA, 2004b). Therefore, soil gas data were used to predict air concentrations in lieu of soil samples collected from the same area "SB-09 area" exposure point (i.e. SB-09, SB-10, SB-19, and SB-20). In addition, a future building could be constructed in the SB-09 area; therefore, it is important to estimate vapor intrusion at this exposure point separately from the non-SB-09 area given the relatively high TCE concentrations near SB-09.

Risk estimates for the East of South Street On-Facility area are discussed in Section 5.0 in the context of the elevated TCE concentration at SB-09.

There are 22 samples in the industrial area and 19 samples in the peripheral/residential area, each with one or more compounds with concentrations greater than ten times, but less than one-hundred times, the arithmetic average concentration from the surrounding samples. These samples are spread fairly evenly over each area. As discussed in the Initial Site Characterization Report (SHA, 2002b), the statistical evaluation of the soil data indicates that the Site contamination is very heterogeneous and contains numerous areas of elevated concentrations, "patches," and relatively clean areas, with varying degrees of contamination between these elevated areas, patches, etc. Thus, our analysis does not highlight any discrete areas of contamination, greater than ten but less than one-hundred times above the average, to which someone could be exposed, but rather further indicates that the Site contamination is very heterogeneous. Therefore, no soil samples greater than ten, but less than one hundred, times the average are evaluated as separate exposure points in this assessment.

3.2 Exposure Scenarios

The following sections summarize the exposure pathways evaluated and current and future exposure point concentrations and exposure assumptions applied for each scenario.

Exposure assumptions in the BHHRA are consistent with *USEPA Risk Assessment Guidance for Superfund Part A* (USEPA, 1989), *USEPA Region 1 Risk Updates* (USEPAReg1, 1994; USEPAReg1, 1995; USEPAReg1, 1999b), the *USEPA Exposure Factors Handbooks* (USEPA, 1997a; USEPA, 1997b; USEPA, 1997c), and the *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final* (USEPA, 2004g), as referenced in the exposure assumptions tables.

Exposure point concentrations for all RME and CT exposure scenarios are presented in the RAGS Table 3s in Appendix F. Exposure parameter values that are used to estimate RME and CT risk for all scenarios are presented in RAGS Table 4s in Appendix G.

3.2.1 Current Resident

The current resident may be exposed to surface soil (0-1 foot), while working or playing in the yard. The current resident may also be exposed to VOCs in indoor air originating from soil. The current indoor air from groundwater exposure pathway was eliminated from further evaluation as discussed in Section 2.2.2.3, and this pathway is discussed in Section 6.2.1.2.

We assume the current resident is exposed to contaminants in soil via:

- Incidental ingestion
- Dermal contact
- Ingestion of homegrown produce
- Inhalation of indoor air

See Figure 8 and Figures 15a and 15b for exposure pathways and exposure points evaluated for the current resident.

3.2.1.1 General Exposure Assumptions

Body weights (15 kg for child and 70 kg for adult, for RME and CT) and exposure durations (6 years for child and 24 years for adult for RME, and 2 years for child and 7 years for adult for CT) for the resident are from USEPA Region 1 guidance (USEPAReg1, 1994).

3.2.1.2 Soil Ingestion and Dermal Contact

Soil ingestion rates (200 mg/day for child and 100 mg/day for adult for RME, and 100 mg/day for child and 50 mg/day for adult for CT) and soil exposure frequencies (150 days per year for RME and CT) are from USEPA Region 1 guidance (USEPAReg1, 1994). The adult resident is assumed to wear a short-sleeved shirt, short pants and shoes. Therefore, the exposed skin surface area (5,700 cm^2 for RME and CT) is limited to the head, forearms, hands, and lower legs as recommended by USEPA's dermal guidance (USEPA, 2004g). The soil-to-skin adherence factor used is USEPA's recommended AF for an adult resident (0.07 mg/cm^2 for RME and 0.01 mg/cm^2 for CT) (USEPA, 2004g). The child resident is assumed to wear a short-sleeved shirt and short pants, but no shoes. Therefore, the exposed skin surface area (2,800 cm^2 for RME and CT) is limited to the head, forearms, hands, lower legs, and feet. The soil-to-skin adherence factor used is USEPA's recommended AF for a child resident (0.2 mg/cm^2 for RME and 0.04 mg/cm^2 for CT) (USEPA, 2004g).

RAGS Tables 3.1.RME and 3.1.CT in Appendix F present EPCs for current soil direct contact (incidental ingestion and dermal contact). RME and CT exposure assumptions for current soil direct contact are presented in RAGS Tables 4.1.RME and 4.1.CT in Appendix G.

3.2.1.3 Homegrown Produce Ingestion

To quantify risk from ingestion of homegrown produce, we use home-produced food consumption rates for exposed fruits and vegetables and root vegetables from USEPA's analyses of the 1987-1988 U.S. Department of Agriculture (USDA) Nationwide Food Consumption Survey (NFCS) (Tables 13-61, 13-63 & 13-65, USEPA, 1997b). The survey was conducted between April 1987 and August 1988. Respondents were asked to recall consumption patterns over the previous 7 days and to identify foods that were home-produced (Moya and Phillips, 2001). Consumption rates for consumers (i.e., those who reported consumption of the home-produced form of the food item of interest during the previous 7 days) were used. USEPA

converted the reported weekly consumption rates to daily consumption rates by dividing by 7 days and dividing by body weights reported by respondents (USEPA, 1997b). Therefore, all consumption rates are reported on a body weight-normalized basis (i.e., grams of food consumed each day per unit body weight).

RME consumer intake rates of homegrown produce for the child and adult resident are calculated for exposed fruits (2.7 g/kg-d for the child and 1.9 g/kg-d for the adult), exposed vegetables (2.9 g/kg-d for the child and 1.4 g/kg-d for the adult), and root vegetables (2.3 g/kg-d for the child and 1.4 g/kg-d for the adult). Intake rates are weighted averages using 75th percentile intake data over ages 1-7 years for the child and 7-31 years for the adult. We use the 75th percentile data for the RME scenario since the 75th percentile provides a degree of conservatism that is appropriate considering the uncertainty in the underlying data, but also does not lead to unreasonable compounding of conservative assumptions. We assume that homegrown produce is consumed for 3 months out of the year for 30 years (6 year child, 24 year adult residential exposure).

As described in Appendix G of the *Soil Screening Guidance: Technical Background Document* (USEPA, 1996b), the bioconcentration factors used to convert soil concentrations to plant concentrations result in plant concentrations that are in dry-weight. Therefore, it is necessary to convert the consumption rates to dry weight consumption rates. We applied the average fresh-to-dry conversion factor for fruit (0.15) and vegetables (0.085), as presented in Table G-1 of the Soil Screening Guidance, to adjust the fresh consumption rates to dry consumption rates.

As presented in Section 5.3 of this report, the garden produce pathway contributes a comparatively small amount to risk and hazard at the Site; therefore, garden produce from CT exposures was not evaluated. RAGS Table 3.3.RME in Appendix F presents soil EPCs used to model concentrations in homegrown produce. The methodology used to model produce EPCs is presented in Appendix D, and modeled produce concentrations are presented in RAGS supporting Table 3.3 in Appendix F. RME exposure assumptions for current produce ingestion are presented in RAGS Table 4.3.RME in Appendix G.

3.2.1.4 Inhalation of Volatiles in Indoor Air from Soil and Soil Gas

For RME inhalation of indoor air, the 95th percentile statistic for time spent indoors at the residence per day for adult (24 hours) and 1-4 year old child (24 hours) are applied (USEPA, 1997c). For CT inhalation of indoor air, the 50th percentile statistic for time spent indoors at the residence per day for adult (15 hours) and 1-4 year old child (21 hours) are applied (USEPA, 1997c). Exposure frequency is assumed to be 350 days per year for both RME and CT.

RAGS Table 3.5.RME and 3.5.CT in Appendix F present soil and soil gas EPCs used to model indoor air concentrations. The methodology used to model indoor air concentrations is presented in Appendix E1, and modeled indoor air concentrations are presented in RAGS supporting Table 3.5 in Appendix F. RME and CT exposure assumptions for current inhalation of indoor air from soil and soil gas are presented in Tables 4.5.RME and 4.5.CT in Appendix G.

3.2.2 Current Trespasser

The current trespasser may be exposed to unpaved surface soil (0-1 foot) while walking and playing in all areas of the Site outside of current residential locations and the AOC. We assume that the current trespasser is a 7-14 year-old child.

We assume the trespasser is exposed to contaminants in soil via:

- Incidental ingestion
- Dermal contact

See Figure 8 and Figure 16 for exposure pathways and exposure points evaluated for the current trespasser.

A mean body weight of 37 kg for males and females ages 7-14 years is used (USEPA, 1997a). USEPA's soil ingestion rate for an adult is used (100 mg/day for RME and 50 mg/day for CT) (USEPAReg1, 1994). For the RME scenario, a trespasser is assumed to visit the area 4 days per week during the 5 non-winter months (May through September) for 7 years. For the CT scenario, a trespasser is assumed to visit the area 1 day per week during the 5 non-winter months (May through September) for 2 years. The older child trespasser is assumed to wear a short-sleeved shirt, short pants and shoes. Therefore, the exposed skin surface area (3,138 cm^2 for RME and CT) is limited to the face, forearms, hands, and lower legs (USEPA, 2004g). The soil-to-skin adherence factors used are USEPA's recommended RME (0.2 mg/cm^2) and CT (0.04 mg/cm^2) AFs for a child resident (USEPA, 2004g).

RAGS Tables 3.1.RME and 3.1.CT in Appendix F present EPCs for current soil direct contact (incidental ingestion and dermal contact). RME and CT exposure assumptions for current soil direct contact are presented in RAGS Tables 4.1.RME and 4.1.CT in Appendix G.

3.2.3 Current Site Worker

The current site worker may be exposed to unpaved surface soil (0-1 foot) while working outdoors at the East of South Street On-Facility location, and to VOCs in indoor air originating from soil. The current indoor air from groundwater exposure pathway was eliminated from further evaluation as discussed in Section 2.2.2.3 and is discussed in Section 6.2.1.2.

We assume the site worker is exposed to contaminants in soil via:

- Incidental ingestion
- Dermal contact
- Inhalation of volatiles in indoor air

See Figure 8 and Figure 17 for exposure pathways and exposure points evaluated for the current site worker.

3.2.3.1 General Exposure Assumptions

For RME, the recommended exposure duration from USEPA's Supplemental Soil Screening Guidance for non-residential indoor and outdoor workers (25 years) is used to calculate RME risk for the site worker (USEPA, 2002e). For CT, we assumed an exposure duration of 9 years, based on USEPA Region 1 guidance (Taylor, 2000). A body weight of 70 kg was applied for the site worker for CT and RME (USEPA, 2002e).

3.2.3.2 Soil Ingestion and Dermal Contact

For direct contact with soil (ingestion and dermal contact), USEPA's recommended soil ingestion rate (100 mg/day for RME and 50 mg/day for CT) and exposed skin surface area (3,300 cm^2 for RME and CT) are used (USEPA, 2002e). An RME soil-to-skin adherence factor (0.2 mg/cm^2) for a non-residential outdoor worker is used (USEPA, 2002e). The CT soil-to-skin adherence factor used (0.04 mg/cm^2) is the geometric mean of the weighted soil adherence factor for a landscaper (USEPA, 2004g). The RME and CT exposure frequency for ingestion and dermal contact with soil for this receptor is 150 days per year, since soil contact is limited during portions of the year when the ground is frozen. This exposure frequency is also consistent with the default value for an adult non-contact-intensive worker in USEPA Region 1 guidance (USEPAReg1, 1994).

RAGS Tables 3.1.RME and 3.1.CT in Appendix F present EPCs for current soil direct contact (incidental ingestion and dermal contact). RME and CT exposure assumptions for current soil direct contact are presented in RAGS Tables 4.1.RME and 4.1.CT in Appendix G.

3.2.3.3 Inhalation of Volatiles in Indoor Air from Soil and Soil Gas

The exposure frequency for inhalation of indoor air is assumed to be 250 days per year for RME and 219 days per year for CT, the recommended exposure frequencies for industrial scenarios in Exhibit 3-5 of (USEPA, 2004g). The exposure time used for the adult site worker exposed via inhalation of indoor air is the 95th percentile statistic for time spent at work (12 hr per day) for RME, and the 50th percentile statistic for time spent at work (8 hr per day) for CT (USEPA, 1997c).

RAGS Tables 3.5.RME and 3.5.CT in Appendix F present soil and soil gas EPCs used to model indoor air concentrations. The methodology used to model indoor air concentrations is presented in Appendix E1, and modeled indoor air concentrations are presented in RAGS supporting Table 3.5 in Appendix F. RME and CT exposure assumptions for current inhalation of indoor air from soil and soil gas are presented in Tables 4.5.RME and 4.5.CT in Appendix G.

3.2.4 Current/Future Wader

The current/future wader may be exposed to sediment and surface water while wading in water bodies on the Site.

We assume the wader is exposed to contaminants via:

- Incidental ingestion of sediment
- Dermal contact with sediment and surface water

See Figure 11 and Figure 18 for exposure pathways and exposure points evaluated for the current/future wader. Surface water was not collected in Lewis Pond, as discussed earlier in the report. We qualitatively evaluate risk from dermal exposure to Lewis Pond surface water based on dermal risks from upstream Neponset River surface water samples (See Section 6.2.3.1). Since Lewis Pond is only approximately two feet deep, there is no beach area, and the bottom is very vegetative and mucky, swimming is unlikely to occur. Therefore, we have not quantified exposure from surface water ingestion in Lewis Pond.

Wader risk estimates are added to sediment and surface water risk estimates for the adult fisher (see Section 6.2.1) for a total 31-year (to approximate a 30-year exposure) nearby resident exposure to surface water bodies.

3.2.4.1 General Exposure Assumptions

A wader is assumed to be between 7 and 14 years of age with a mean body weight of 37 kg for 7-14 year old males and females (USEPA, 1997a). For the RME scenario, a wader is assumed to visit the water body 1 hour per day for 3 days per week during the 5 non-winter months (May through September) for 7 years. For the CT scenario, a wader is assumed to visit the area 1 hour per day for 3 days per month during the 5 non-winter months (May through September) for 2 years.

3.2.4.2 Sediment and Surface Water Direct Contact

EPA's soil ingestion rate for an adult (100 mg/day for RME and 50 mg/day for CT) is used to represent incidental ingestion of sediment (USEPAReg1, 1994) for the wader. The wader is assumed to wear a short-sleeved shirt, and short pants. Therefore, the exposed skin surface area (4,014 cm^2 for RME and CT) is limited to the face, forearms, hands, lower legs, and feet for sediment and surface water exposure (USEPA, 2004g). The soil-to-skin adherence factor used is USEPA's recommended AF for a child resident (0.2 mg/cm^2 for RME and 0.04 mg/cm^2 for CT) (USEPA, 2004g).

In Appendix F, RAGS Tables 3.10.RME and 3.10.CT present sediment EPCs, and RAGS Tables 3.11.RME and 3.11.CT present surface water EPCs. RME and CT exposure assumptions for the current/future wader are presented in Appendix G in Tables 4.10.RME and 4.10.CT for sediment exposure, and in Tables 4.11.RME and 4.11.CT for surface water exposure.

3.2.5 Current/Future Adult Fisher and Child Fish Consumer

The current/future adult fisher may be exposed to sediment and surface water while fishing. The adult and child may be exposed to contaminants via ingestion of fish tissue.

We assume the adult fisher is exposed to contaminants via:

- Incidental ingestion of sediment
- Dermal contact with sediment and surface water
- Ingestion of fish tissue

We assume the child fish consumer is exposed to contaminants via:

- Ingestion of fish tissue

See Figure 11 and Figure 19 for exposure pathways and exposure points evaluated for the current/future fisher and child fish consumer. As shown in these figures, fish were collected from Lewis Pond and the Neponset River. White sucker, Bluegill, Redfin pickerel, and American eel were collected from Lewis Pond. White sucker, Bluegill, and American eel were collected from the Neponset River. The former mill tailrace has two physically distinct habitats separated by a 1.5-foot high concrete weir that restricts flow in and out of the tailrace. Downey (Downey, 2003) conducted a fish habitat survey of the former mill tailrace upstream of the weir and found that this area provides little habitat for supporting a permanent resident fish population; therefore fish ingestion from the former mill tailrace is not evaluated in the main report. However, although there is not a permanent fish population in the tailrace, fish are present in the former mill tailrace area downstream of the weir and adjacent to the Neponset River and fishing may occur in this area. Therefore, in the uncertainty section of the report (Section 6.2.1), we evaluate a fisher exposed to sediment and surface water throughout the former mill tailrace. As for the wader, we qualitatively evaluate risk from dermal exposure to Lewis Pond surface water based on dermal risks from upstream Neponset River surface water samples (See Section 6.4.5).

3.2.5.1 General Exposure Assumptions

For the RME scenario, a fisher is assumed to visit the area 1 hour per day for 3 days per week during the 5 non-winter months (May through September) for 24 years. For the CT scenario, a fisher is assumed to visit the area 1 hour per day for 3 days per month during the 5 non-winter months (May through September) for 7 years. A 70 kg body weight is used for the adult fisher, and a 15 kg body weight is used for the child fish consumer.

3.2.5.2 Sediment and Surface Water Exposure

EPA's soil ingestion rate for an adult is used to represent incidental ingestion of sediment (100mg/day for RME, and 50 mg/day for CT) for the adult fisher (USEPAReg1, 1994). The fisher is assumed to wear a short-sleeved shirt, and short pants. Therefore, the exposed skin surface area (6,074 cm^2 for RME and CT) is limited to the face, forearms, hands, lower legs, and feet for sediment and surface water exposure (USEPA, 2004g). The soil-to-skin adherence factor used is USEPA's recommended AF for an adult resident (0.07 mg/cm^2 for RME and 0.01 mg/cm^2 for CT) (USEPA, 2004g).

In Appendix F, RAGS Tables 3.10.RME and 3.10.CT present sediment EPCs, and RAGS Tables 3.11.RME and 3.11.CT present surface water EPCs. RME and CT exposure assumptions for the

current/future fisher are presented in Appendix G in Tables 4.10.RME and 4.10.CT for sediment exposure, and in Tables 4.11.RME and 4.11.CT for surface water exposure.

3.2.5.3 Fish Ingestion

The fishing population in the area of the Site is likely recreational and we assume that these anglers may consume fish from either Lewis Pond or the Neponset River. We use the Maine freshwater angler fish ingestion rates (95th percentile of 0.013 kg/meal for RME, and mean of 0.005 kg/meal for CT) recommended in USEPA's Exposure Factors Handbook (EFH) Vol. II Table 10-84 (USEPA, 1997c) to assess exposure to the adult fish consumer. For the child fish consumer, we assume the fish ingestion rate is 50% of adult ingestion rate, based on research by Pao et al. (Pao *et al.*, 1982). We apply these ingestion rates to estimate risks from long-term fish consumption, assuming 365 meals per year for 24 years for the adult and 6 years for the child for RME, and 7 years for the adult and 2 years for the child for CT.

RAGS Tables 3.12.RME and 3.12.CT in Appendix F present EPCs for fish tissue. RAGS Tables 4.12.RME and 4.12.CT in Appendix G present adult and child exposure assumptions for fish ingestion.

3.2.6 Future Resident

The future resident may be exposed to soil while working or playing in the yard. We assume exposure to surface and subsurface soil (0-10 feet) since re-working of the soil during excavation and construction can move subsurface soils to the surface. This is also the depth defined by USEPA Region 1 as subsurface soil, based on the general depth of frost penetration (USEPAReg1, 1995). The future resident is also evaluated for exposure to VOCs in indoor air originating from soil, soil gas, and groundwater.

We assume that the future resident is exposed to contaminants via:

- Incidental ingestion of soil
- Dermal contact with soil
- Ingestion of homegrown produce
- Inhalation of volatiles in indoor air from soil, soil gas, and groundwater

Although an unlikely pathway, this BHHRA also assumes that the future resident may be exposed when using tap water for drinking, cooking, washing or showering. Aquifer transmissivities calculated from the RI hydrogeologic data indicate that the Site is not underlain by a viable aquifer that could be realistically utilized by a future resident for a water supply. Further, properties in this area of Walpole are serviced by public drinking water. Therefore, future exposure of residents to ingestion, dermal contact, or inhalation of volatiles from tap water during household use is highly unlikely. However, based on EPA's concern over evaluation of risk from exposure to tap water by potential future receptors, in the November 30, 2005 monthly progress meeting, EPA, MADEP, and SHA agreed that the risk assessment would include an evaluation of potential risk from tap water use by future residents, even in areas where future use

of groundwater as tap water is not realistic. Therefore, the potential risk associated with hypothetical exposure of the future resident to groundwater used as tap water is evaluated for the following areas: off-Site groundwater west of Neponset River, off-Site groundwater east of Neponset River (SH-27 and SH-28 separately), off-facility groundwater Lot 208/Lot 209, and on-Site groundwater (including the AOC).

We assume that the future resident is exposed to contaminants in tap water via:

- Ingestion
- Dermal contact
- Inhalation of volatiles from tap water during household use

See Figure 9 and Figures 20a, 20b, and 21 for exposure pathways and exposure points evaluated for the future resident.

The exposure assumptions for the future resident are the same as the current resident for the following pathways:

- Incidental ingestion of soil
- Dermal contact with soil
- Ingestion of homegrown produce
- Inhalation of volatiles in indoor air from soil and soil gas

See Section 3.2.1 for a discussion of exposure assumptions for these pathways. The following RAGS D Tables present the corresponding EPCs and exposure assumptions for these pathways for the future resident.

RAGS Table 3s (EPCs) in Appendix F:

Incidental ingestion and dermal contact with soil - RAGS Tables 3.2.RME and 3.2.CT

Ingestion of homegrown produce - RAGS Tables 3.4.RME and 3.4.CT for soil EPCs used to model plant concentrations, and supporting RAGS Table 3.4 for modeled plant EPCs. The methodology used to model plant EPCs is presented in Appendix D

Inhalation of volatiles in indoor air from soil and soil gas – RAGS Tables 3.6.RME and 3.6.CT for soil and soil gas EPCs used to model indoor air concentrations, and supporting RAGS Table 3.6 for modeled indoor air concentrations. The methodology used to model indoor air concentrations is presented in Appendix E1.

RAGS Table 4s (Exposure Assumptions) in Appendix G:

Incidental ingestion and dermal contact with soil - RAGS Tables 4.2.RME and 4.2.CT

Ingestion of homegrown produce - RAGS Tables 4.4.RME and 4.4.CT

Inhalation of volatiles in indoor air from soil and soil gas – RAGS Tables 4.6.RME and 4.6.CT

Exposure assumptions for the remaining pathways that a future resident is exposed to are discussed below.

3.2.6.1 General Exposure Assumptions

The general exposure assumptions applied to all pathways for the future resident are the same as for the current resident. Body weights (15 kg for child and 70 kg for adult, for RME and CT) and exposure durations (6 years for child and 24 years for adult for RME, and 2 years for child and 7 years for adult for CT) for the resident are from USEPA Region 1 guidance (USEPAReg1, 1994).

3.2.6.2 Inhalation of Volatiles in Indoor Air from Groundwater

The exposure assumptions for a future resident from inhalation of volatiles in indoor air from groundwater are the same as those used for inhalation of volatiles in indoor air from soil and soil gas for the current resident. See Section 3.2.1.4 for a discussion of these exposure assumptions.

RAGS Tables 3.9.RME and 3.9.CT in Appendix F present the groundwater EPCs used to model indoor air concentrations. As shown in Table 3.9a in Appendix F, the only sample locations that exceed the groundwater to indoor air screening values for the West of South Street Off-Facility/Off-Site Groundwater are on Lots 208 and 209 (SH-15, SH-26, WP-06, and WP-07); therefore, the groundwater to indoor air pathway is evaluated only for these lots and risks from this pathway are added to soil risks from Lots 208 and 209. The methodology used to model indoor air concentrations is presented in Appendix E1, and modeled indoor air concentrations from groundwater are presented in RAGS supporting Table 3.9 in Appendix F. RME and CT exposure assumptions for future residential exposure to indoor air from groundwater are presented in RAGS Tables 4.9.RME and 4.9.CT in Appendix G.

3.2.6.3 Tap Water Exposure

For the hypothetical future tap water exposure pathway, RME tap water ingestion rates of 2 L/day for adults (USEPAReg1, 1994) and 1.5 L/day for children (USEPA, 1997a) are used. CT tap water ingestion rates of 1.4 L/day for adults (USEPAReg1, 1994) and 0.87 L/day for children (USEPA, 1997a) are used. While in contact with tap water or groundwater, the resident is assumed to have the skin surface area of the whole body exposed for both the RME and CT scenarios. The 50th percentile skin surface areas of 18,000 cm^2 for adults and 6,600 cm^2 for children are used (USEPA, 1997a). RME event durations for dermal contact with tap water of 0.58 hours for adults, and 1 hour for children are used (USEPA, 1997a). CT event durations for dermal contact with tap water of 0.25 hours for adults, and 0.33 hours for children are used (USEPA, 1997a).

The dose from inhalation of volatiles from tap water during household use is assumed to be equal to the ingestion dose (USEPAReg1, 1995). To quantify risk, the tap water ingestion ADDs for

VOCs are converted to ADEs by multiplying by a receptor-specific body weight and dividing by a receptor-specific inhalation rate. The exposure assumptions for a future resident from inhalation of volatiles from tap water during household use are the same as those used for inhalation of volatiles in indoor air from soil for the current resident. See Section 3.2.1.4 for a discussion of these exposure assumptions.

RAGS Table 3.7.RME and 3.7.CT present the RME and CT EPCs for tap water. Table 4.7.RME and 4.7.CT present the RME and CT exposure assumptions for direct contact with tap water.

3.2.7 Future Site Worker

The future site worker may be exposed to soil while working outdoors. We assume exposure to surface and subsurface soil (0-10 feet), since re-working of the soil during excavation and construction can move subsurface soils to the surface as discussed above for the future resident. The future site worker may also be exposed to VOCs in indoor air originating from soil, soil gas, and groundwater.

We assume the future site worker is exposed to contaminants via:

- Incidental ingestion of soil
- Dermal contact with soil
- Inhalation of volatiles in indoor air from soil, soil gas, and groundwater

See Figure 10 and Figure 22 for exposure pathways and exposure points evaluated for the future site worker.

The exposure assumptions for a future site worker from ingestion and dermal contact with soil are the same as those used for those pathways for the current site worker (see Section 3.2.3).

RAGS Tables 3.2.RME and 3.2.CT in Appendix F present EPCs for future soil direct contact (incidental ingestion and dermal contact). RME and CT exposure assumptions for future soil direct contact are presented in RAGS Tables 4.2.RME and 4.2.CT in Appendix G.

The exposure assumptions for a future site worker from inhalation of volatiles in indoor air from soil, soil gas, and groundwater are the same as those used for current site worker from inhalation of volatiles in indoor air from soil and soil gas (See Section 3.2.3).

RAGS Tables 3.6.RME and 3.6.CT in Appendix F present soil and soil gas EPCs used to model indoor air concentrations. The methodology used to model indoor air concentrations is presented in Appendix E1, and modeled indoor air concentrations are presented in RAGS supporting Table 3.6 in Appendix F. RME and CT exposure assumptions for future inhalation of indoor air from soil, soil gas, and groundwater are presented in RAGS Tables 4.6.RME and 4.6.CT (soil) and Tables 4.9.RME and 4.9.CT (groundwater) in Appendix G.

3.2.8 Future Construction Worker

The future construction worker may be exposed to soil and groundwater while performing excavation activities on the Site. We assume exposure to surface and subsurface soil (0-10 feet). This is the depth defined by USEPA Region 1 as subsurface soil, based on the general depth of frost penetration (USEPAReg1, 1995).

We assume that the construction worker is exposed to contaminants in soil via:

- Incidental ingestion
- Dermal contact
- Inhalation of fugitive dust
- Inhalation of volatiles in trench air

We assume the construction worker is exposed to contaminants in groundwater via:

- Dermal contact

Since all chemicals were eliminated as COPCs for the groundwater to trench vapor pathway (RAGS Tables 2.8 and 2.8a in Appendix C), inhalation of volatiles in trench air from groundwater is not evaluated for the future construction worker. See Figure 10 and Figures 20a and 20b for exposure pathways and exposure points evaluated for the future construction worker.

3.2.8.1 General Exposure Assumptions

The construction worker is assumed to work in the area 6 days per week for a total of 6 months for the RME scenario, and a total of 3 months for the CT scenario. The exposure duration for both RME and CT scenarios was assumed to be 1 year. A body weight of 70 kg was applied for the construction worker for CT and RME (USEPA, 2002e).

3.2.8.2 Soil Ingestion, Dermal Contact, and Fugitive Dust Inhalation

A soil ingestion rate of 330 mg/day was used for the RME scenario (USEPA, 2002e), and 100mg soil/day was used for the CT scenario (USEPA, 2006a). The construction worker is assumed to wear a short-sleeved shirt, long pants, and shoes. Therefore, the exposed skin surface area (3,300 cm^2 for RME and CT) is limited to the head, hands, and forearms as recommended by USEPA's dermal guidance. A soil-to-skin adherence factor of 0.3 (USEPA, 2002e) is used for the RME scenario, and soil-to-skin adherence factor of 0.1, the geometric mean adherence factor for construction workers (USEPA, 2004g), is used for the CT scenario. The exposure time used for the construction worker exposed via inhalation to fugitive dust is the 95th percentile statistic for time spent at work (12 hr per day) for RME, and the 50th percentile statistic for time spent at work (8 hr per day) for CT (USEPA, 1997c).

RAGS Tables 3.2.RME and 3.2.CT in Appendix F present EPCs for future soil direct contact (incidental ingestion and dermal contact) and inhalation of fugitive dust. RME and CT exposure

assumptions for future soil direct contact and inhalation of fugitive dust are presented in RAGS Tables 4.2.RME and 4.2.CT in Appendix G.

3.2.8.3 Groundwater Dermal Contact

The construction worker is assumed to be in dermal contact with groundwater in an excavation trench for 1 hour/day for the RME scenario and 0.5 hours/day for the CT scenario. The exposed skin surface area used for dermal contact with groundwater is the same as that used for soil dermal contact, discussed above.

RAGS Tables 3.8.RME and 3.8.CT in Appendix F present EPCs for future groundwater dermal contact. RME and CT exposure assumptions for future groundwater dermal contact are presented in RAGS Tables 4.8.RME and 4.8.CT in Appendix G.

3.2.8.4 Inhalation of Volatiles in Trench Air

The exposure time used for the adult construction worker exposed via inhalation of trench vapor is the 95th percentile statistic for time spent at work (12 hr per day) for RME, and the 50th percentile statistic for time spent at work (8 hr per day) for CT (USEPA, 1997c).

RAGS Tables 3.6.RME and 3.6.CT in Appendix F present soil and soil gas EPCs used to model trench air concentrations. The methodology used to model trench air concentrations is presented in Appendix E2, and the modeled trench air concentrations are presented in RAGS supporting table 3.6 in Appendix F. RME and CT exposure assumptions for future trench air from soil and soil gas are presented in RAGS Tables 4.6.RME and 4.6.CT in Appendix G.

3.3 Dermal Absorption from Soil and Sediment

Dermal absorption fractions used to estimate the daily dose from dermal exposure to soil and sediment are presented in the RAGS Dermal Worksheet in Appendix H. Values are consistent with the USEPA Dermal Guidance (USEPA, 2004g).

3.4 Dermal Absorption from Groundwater and Surface Water

Dermal absorption input variables used to estimate the daily dose from dermal exposure to groundwater and surface water are presented in the RAGS Dermal Worksheet in Appendix H. Values are consistent with USEPA Dermal Guidance (USEPA, 2004g).

USEPA's dermal guidance (USEPA, 2004g) describes uncertainty associated with predicting water dermal exposure for chemicals outside the effective predictive domain (EPD), such as dibenzo(a,h)anthracene and benzo(a)pyrene, that are COPCs in future tap water exposure points and surface water from the Former Mill Tailrace. Therefore, as USEPA's guidance recommends, the surface water and groundwater dermal pathways for these chemicals are evaluated in the uncertainty section (See Section 6.2.3.1).

3.5 Calculation of Chronic Daily Intake and Exposure

To estimate the chronic daily intake, dose, or exposure received by people exposed to Site contamination, one must combine EPCs with variables that describe contact rates with Site media (e.g., soil ingestion rate, type of outdoor activities), physiological data of receptors (e.g., body weight), and time-activity pattern data (e.g., wading frequency and duration).

The Chronic Daily Intakes (CDI) for ingestion of soil, groundwater, surface water, sediment, and fish; the Dermal Absorbed Dose (DAD) for dermal contact with soil, groundwater, surface water, and sediment; and the Chronic Daily Exposure (CDE) for inhalation exposure pathways are calculated using equations shown in the exposure assumptions tables presented in Appendix G.

3.5.1 Inhalation exposure to tap water

The dose from inhalation of volatiles (VOCs, naphthalene, and 2-methylnaphthalene) from tap water during household use is assumed to be equal to the ingestion of the volatiles in tap water (USEPAReg1, 1995). Per USEPA Region 1 guidance, the volatiles ingestion dose is converted to an inhalation exposure to quantify risk. Tap water ingestion ADDs for volatiles are converted to ADEs by multiplying by a receptor-specific body weight and dividing by a receptor-specific inhalation rate (see Table 4.7.RME and 4.7.CT in Appendix G).

4.0 DOSE-RESPONSE ASSESSMENT

This section provides the following information:

- Description of toxicity values
- Adjustments to toxicity values
- Approaches for estimating risk from exposure to elevated pH, nutrients, and special case metals

The USEPA RAGS Part D (USEPA, 2001a) standardized tables associated with the Dose-Response Assessment are provided in Appendix J to this report:

Table 5.1 – Oral/Dermal Non-cancer Toxicity Data

Table 5.2 – Inhalation Non-cancer Toxicity Data

Table 6.1 – Oral/Dermal Cancer Toxicity Data

Table 6.2 - Inhalation Cancer Toxicity Data

4.1 Introduction

The primary purpose of the dose-response assessment is to identify the toxicity values to use in the evaluation of human cancer risks and non-cancer health effects. These toxicity values are combined with the average daily exposures of COPCs to calculate cancer risks and non-cancer health hazards in the risk characterization step. USEPA has developed toxicity values for cancer and non-cancer effects for certain chemicals. The toxicity values for cancer through inhalation are known as unit risks (URs), and for cancer through ingestion and dermal contact as cancer slope factors (CSFs). The toxicity values for non-cancer effects associated with exposure are known as reference concentrations (RfCs) for inhalation exposures and reference doses (RfDs) for ingestion and dermal exposure.

Historically, an important distinction between the cancer and non-cancer toxicity values has been that UR were developed assuming a linear dose-response relationship at the low doses associated with environmental exposures in humans (USEPA, 1986b), whereas non-cancer reference concentrations were developed assuming that there was a threshold to the adverse effect. In other words, for a carcinogen, it was assumed that there is a finite risk of a carcinogenic response associated with all exposures, no matter how low. For a non-cancer threshold effect it was assumed that there is a dose below which no adverse effects would be expected.

Toxicity values are used to provide quantitative estimates of the carcinogenic and non-carcinogenic toxicity of COPCs. USEPA recommends the following hierarchy of toxicological sources for Superfund Risk Assessments (OSWER Directive 9285.7-53, December 5, 2003):

Tier 1 - USEPA's Integrated Risk Information System (IRIS, http://www.epa.gov/iris)

Tier 2 - USEPA's Provisional Peer Reviewed Toxicity Values (PPRTVs, http://hhpprtv.ornl.gov/) – The Office of Research and Development / National Center for Environmental Assessment (NCEA, http://www.epa.gov/ncea) / Superfund Health Risk Technical Support Center (STSC) develops PPRTVs on a chemical specific basis as requested by USEPA's Superfund program. These values are available upon request through the project USEPA Risk Assessor

Tier 3 - Other toxicity Values – Includes additional USEPA and non-EPA sources:

- California Environmental Protection Agency (CalEPA) toxicity values (http://www.oehha.ca.gov/risk/ChemicalDB)
- The Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Levels (MRLs) (http://www.atsdr.cdc.gov/mrls.html)
- Health Effects Assessment Summary Tables (HEAST). Annual FY-1997. Office of Research and Development/ Office of Emergency and Remedial Response. OERR 9200.6-303 (USEPA, 1997d)

The most technically defensible toxicity values available, based on USEPA guidance and hierarchy, were used to evaluate the COPCs in this risk assessment. The RfDs, RfCs, CSFs, and URs used in this assessment are summarized in RAGS Part D Tables 5.1, 5.2, 6.1, and 6.2, respectively (See Appendix J). Toxicity profiles for COPCs most dominant in the risk assessment are provided in Appendix O.

4.2 Cancer Effects

Carcinogenicity is described in two ways; 1) quantitatively, with Cancer Slope Factor (CSF) toxicity values expressed in units of $(mg/kg\text{-}day)^{-1}$ and unit risks (URs) with units of $(\mu g/m^3)^{-1}$, and 2) qualitatively with the USEPA Weight-of-Evidence classification scheme (A through E)(USEPA, 1986b).

The CSF is used with exposure information to provide a conservative estimate of the likelihood that an individual will develop cancer as a result of lifetime exposure to a chemical. It is a plausible upper-bound estimate of carcinogenic potency used to calculate cancer risk from exposure to carcinogens by relating lifetime average contaminant intake to the incremental probability of an individual developing cancer over a lifetime. The oral CSFs used in this risk assessment are expressed as risk per unit dose, in units of incremental cancer risk per milligram of contaminant per kilogram of body weight per day $(mg/kg\text{-}d)^{-1}$. The inhalation URs used in the risk assessment are expressed as risk per unit exposure, in units of incremental cancer risk per microgram per cubic meter of air breathed per day. Cancer potency is directly proportional to the CSF and UR values; the larger the CSF and UR, the greater the cancer potency of the compound.

CSFs and URs provide quantitative estimates of the carcinogenic potency of a chemical in humans. They are derived from a mathematical extrapolation of the slope of the dose-response

curve from high doses to the low doses commonly experienced in the environment. The larger the CSF or UR is, the greater the cancer potency of the chemical is. In accordance with the USEPA 1986 guidelines, CSFs and URs are calculated assuming there are no threshold levels for carcinogenic effects and that the response increases linearly with dose at low levels, including dose levels encountered in the environment.

Carcinogenicity is also described through the USEPA Weight-of-Evidence classification scheme (A through E). The weight-of-evidence evaluation considers available test data, adequacy of studies, types of studies, and observed responses. Chemicals that give rise to cancer or gene mutations are generally classified as follows:

- Group A: Human Carcinogen, sufficient human data
- Group B1: Probable Human Carcinogen, limited human data
- Group B2: Probable Human Carcinogen, sufficient evidence in animals and limited evidence or no evidence in humans
- Group C: Possible Human Carcinogen, limited evidence in animals and limited or no evidence in humans
- Group D: Not Classifiable as to Human Carcinogenicity, insufficient tests for carcinogenesis or mutagenesis are available
- Group E: Evidence of Non-Carcinogenicity in Humans

Guidelines for Carcinogen Risk Assessment (2005b), including supplemental guidance for assessing susceptibility from early-life exposure to carcinogens (USEPA, 2005f) have been developed by USEPA to update the 1986 cancer guidelines. The Cancer Guidelines classify human carcinogenic potential as *"Carcinogenic to Humans," "Likely to Be Carcinogenic to Humans," "Suggestive Evidence of Carcinogenic Potential," "Inadequate Information to Assess Carcinogenic Potential,"* and *"Not Likely to Be Carcinogenic to Humans,"* to replace the Weight-of-Evidence alphanumeric categories A through E.

The 2005 Cancer Guidelines acknowledge that the mode of action of a carcinogen may involve both threshold and non-threshold events. For carcinogenic agents whose mode of action is sufficiently understood and the carcinogenic response is secondary to another toxicity that has a threshold, a RfD or RfC can be developed (USEPA, 2005b; USEPA, 2005f). For these chemicals, a certain level of the chemical is required in the cellular population before it can influence cancer formation. The 1986 cancer guidelines do not consider threshold events when evaluating carcinogens.

The 2005 Cancer Guidelines also differ from the 1986 guidelines in using straight-line extrapolation from a point of departure near the lower end of the observed range on the dose-response data for carcinogens acting by a non-threshold mode of action and those whose mode of action is unknown, rather than using a mathematical model, the linearized multistage model (LMS), to extrapolate below the observed range (USEPA, 2005b; USEPA, 2005f). However, assessments based on the 1986 guidelines are considered scientifically acceptable for estimating human health risk.

This BHHRA provides the CSFs and URs for the COPCs at the Site, along with the Weight of Evidence categorization under the 1986 guidelines and, when available, under the Final Cancer Guidelines (USEPA, 2005b; USEPA, 2005f) in Appendix J, Tables 6.1 and 6.2.

4.2.1 Trichloroethene

Trichloroethene (TCE) cancer toxicity values are currently being re-evaluated by USEPA. The proposed oral slope factors range from 2 x 10^{-2} per mg/kg-day to 4 x 10^{-1} per mg/kg-day (USEPA, 2001b). These cancer slope factors are higher than USEPA's previously published slope factor of 1.1x10^{-2} per mg/kg-day and higher than the cancer slope factor of 1.3x10^{-2} per mg/kg-day developed by California EPA (CalEPA, 1999). The range of oral cancer slope factors for TCE, proposed in the USEPA external review draft, has not been accepted by peer-reviewers; cancer potency values and reference doses for TCE are not expected to be available for quite some time. The BHHRA presents risk estimates from the upper end of this range (4 x 10^{-1} per mg/kg-day) in the main body of the assessment, with discussion of the use of the CalEPA value in the risk summary.

The oral cancer slope factor can be converted to an inhalation unit risk using standard assumptions of a 20 m^3/day breathing rate and a 70 kg body weight (5.7E-06 to 1.1E-04 per $\mu g/m^3$). Route-to-route extrapolation of an oral to inhalation exposure does not consider chemical-specific pharmacokinetics of TCE and contributes uncertainty to risk assessment. However, the authors of the draft TCE health risk assessment (USEPA, 2001b) elected not to develop an inhalation-specific unit risk. Additional evaluation of the inhalation unit risk for TCE is required before an estimate with greater confidence can be derived.

Alternate inhalation unit risks have been developed for TCE. In 1990, CalEPA developed an inhalation unit risk of 2x10^{-6} per $\mu g/m^3$ based on four inhalation studies taking pharmacokinetics into account in the extrapolation process, and this inhalation unit risk is currently used by CalEPA (CalEPA, 2002).

The BHHRA applies both ends of the TCE CSF and inhalation unit risk range; however, in order to reduce the number of RAGS Tables 7, 9, and 10, the baseline risk estimates shown in RAGS Tables 7, 9, and 10 incorporate only the upper range of TCE toxicity values. The lower ends of the TCE CSF range (NCEA 2 x 10^{-2} per mg/kg-day) and inhalation unit risk range (CalEPA 2 x 10^{-6} per $\mu g/m^3$) were used in a sensitivity analysis (see Section 6.3.2.2). The affect that the lower end of the range, has on the total risk estimate is shown in risk summary Tables 28 – 39 (note that when a range is not presented, it is because both ends of the range are the same value, or TCE was not COPC).

4.2.2 Benzene

The IRIS file derives a cancer slope factor range [1.5E-02 $(mg/kg\text{-}d)^{-1}$ to 5.5E-02 $(mg/kg\text{-}d)^{-1}$] and inhalation unit risk range [2.2E-06 $(ug/m^3)^{-1}$ to 7.8E-06 $(ug/m^3)^{-1}$] for benzene (USEPA, 2005d).

The BHHRA applies both ends of the benzene CSF and inhalation unit risk range; however, in order to reduce the number of RAGS Tables 7, 9, and 10, the baseline risk estimates shown in RAGS Tables 7, 9, and 10 incorporate only the upper range of benzene cancer toxicity values. The lower ends of the benzene CSF [1.5E-02 $(mg/kg\text{-}d)^{-1}$] and inhalation unit risk range [2.2E-06 $(ug/m^3)^{-1}$] were used in a sensitivity analysis (see Section 6.3.2.2). The affect that the lower end of the range has on the total risk estimate is shown in risk summary Tables 28 – 39 (note that when a range is not presented, it is because both ends of the range are the same value, or benzene was not COPC).

4.3 Non-cancer Effects

Noncarcinogenic chemical toxicity is described by the RfD, in units of mg/kg-day, for ingestion exposures, and by the RfC, in units of mg/m^3, for inhalation exposures. RfDs and RfCs are available for chronic and subchronic exposures, and each published RfD and RfC has an associated degree of confidence (low, medium, or high). An RfD or RfC, unlike the CSF or UR, is based on the threshold dose theory, which assumes that there is an experimentally determined threshold dose below which adverse effects are not expected to occur in a large human population, including sensitive subgroups.

Exposure to these chemicals must overwhelm organic homeostatic, compensating, and adaptive mechanisms before a toxic endpoint can occur. Thus, RfDs and RfCs are benchmarks designed to fall at or below the lowest threshold for toxic effects among the population to be protected.

USEPA defines the RfD as,

> An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a NOAEL, LOAEL, or benchmark dose, with uncertainty factors generally applied to reflect limitations of the data used (USEPA, 2006b).

USEPA defines the RfC as,

> An estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a NOAEL, LOAEL, or benchmark concentration, with uncertainty factors generally applied to reflect limitations of the data used (USEPA, 2006b).

4.3.1 Development of RfDs and RfCs

RfDs and RfCs can be based on adverse effects, such as gross or microscopic organ damage, and physiological effects (reproductive dysfunction, immunotoxicity, or biochemical effects, e.g., altered enzyme system). Adverse effects are not likely at doses and concentrations below RfDs

and RfCs. The level of concern for a particular COPC does not increase linearly as the RfD or RfC is approached or exceeded because they are derived to be below a threshold of response and the slope of the dose-response curve above a RfD or RfC is not well known. Therefore, comparing these toxicity values with exposure estimates at the Site provides an index of concern rather than a probability of an adverse effect occurring.

The assessment of non-carcinogenic effects needs to take into account the interaction of time scales of exposure with types of effects (acute and chronic). Chronic health effects are those that might occur following long-term exposures typically of concern at hazardous waste sites. USEPA defines chronic exposures as those lasting more than seven years.

RfDs and RfCs may be derived from several different measures of toxicity (points of departure) depending on the availability of data: the highest No Observed Adverse Effect Level (NOAEL), the lowest observed adverse effect levels (LOAELs), or from the lower confidence limit on the benchmark dose or concentration (BMD, BMC). The highest NOAEL is the dose or concentration at which there are no statistically or biologically significant increases in the frequency or severity of any effect between the exposed population and its appropriate control. LOAELs are sometimes used when NOAELs are not available. A BMD (BMC) is a dose or concentration that produces a predetermined change in response rate of an adverse effect (called the benchmark response or BMR) compared to background (USEPA, 2006b). The statistical lower confidence limit on the dose or concentration at the BMD or BMC, respectively is usually used for deriving the RfD and RfC.

Uncertainty factors are applied to point of departure to ensure that RfDs are sufficiently protective given uncertainties in the underlying toxicity database. Uncertainty factors (UF) are incorporated as divisors to the NOAEL associated with the critical effect (i.e. the first adverse effect, or its known precursor that occurs as the dose rate increases). Standard uncertainty factors include:

- 3 to 10-fold factor for extrapolation from animals to humans
- 3 to 10-fold factor for variability in the human population
- 3 to 10-fold factor for use of a less-than-chronic study
- 1 to 10-fold factor for extrapolation from a LOAEL to a NOAEL
- 3 to 10-fold factor for an incomplete database

Application of these uncertainty factors results in RfDs and RfCs between 3 and 10,000 times lower than the point of departure. An additional divisor or modifying factor (MF), typically between 1 and 10, can be used to account for scientific uncertainties of the study and database not explicitly treated with the standard uncertainty factors or to account for increased confidence in the available data. The default value for the MF is 1.

USEPA recommends limiting the total UF applied for any particular chemical to no more than 3000 (USEPA, 2002d).

4.3.2 Division of Hazard Indices by Target Organ

Based on the assumption that non-cancer effects occur after an exposure dose has exceeded a threshold target organ concentration, the cumulative non-cancer hazard indices for each receptor can be separated according to the target organ upon which toxic effects are exerted, after taking into account the mechanisms of applicable adverse effects. However, there is a great deal of uncertainty associated with this division for a number of reasons:

When people are exposed to individual chemicals at concentrations greater than those considered health protective (i.e., HI >1), effects may occur in other organs in addition to that of the critical effect

Effects of toxicological significance can occur in additional target organs at doses similar to those eliciting the critical effect

Relationships between dose level and adverse effects can be complex

There is little information available to judge whether the complex mixtures present at a Site might act additively, synergistically, or antagonistically

In the risk summary tables, multiple organ systems are considered to be target organs of a COPC; this is based on the presence of effects in organ systems other than the organ system of the critical effect. For an organ system (other than the critical effect organ system) to be included as a target organ for a given chemical, the doses where effects are observed are required to be comparable to the doses where the critical effects are observed. The target organ for chemicals with systemic effects not related to specific organ systems is classified as "whole body." When hazard indices are divided by target organ, we include whole body hazard indices in the sums for each target organ.

In this risk assessment, total HIs, the sum of the HIs for all chemicals without dividing by target organ, are presented for each scenario. This conservative approach is chosen to minimize the potential for underestimating target organ specific risk. However, it may overestimate the target organ specific risk depending on the dose-response relationship for each chemical and target organ effect. In the Risk Characterization section, we review the hazard indices for each scenario and indicate where it is appropriate to divide the hazard indices according to target organ effects. The target-organ specific HI is presented as the final HI, if target organ division is appropriate. The uncertainties associated with division of hazard indices by target organ are presented in Section 6.4.1.

4.4 COPCs with No Published Toxicity Values

Some COPCs may be toxic to people but have an inadequate toxicity database to support the derivation of toxicity values. In this assessment, surrogate toxicity values are assigned wherever reasonable, based on knowledge of the mechanism(s) of toxicity of the COPC or structural similarity. This approach introduces uncertainty into the analysis but is more appropriate than ignoring the toxicity of these chemicals. COPCs requiring surrogate toxicity values are

summarized in RAGS Tables 5 and 6 in Appendix J, and footnoted as such in each COPC selection table in Appendix C.

4.5 Adjusting Oral Toxicity Values for Estimating Toxicity through the Dermal Route of Exposure

Guidance in the USEPA Dermal Exposure Assessment: Principles and Applications (USEPA, 1992b; USEPA, 2004g) was used to adjust oral toxicity values to dermal toxicity values.

In estimating toxicity from a particular chemical it is important that the toxicity value (RfDs, RfCs, CSFs, or URs) used for that chemical and the exposure estimate calculated for that chemical are both expressed as absorbed doses or as intakes.

Most toxicity values are based on administered doses, or intakes. The administered dose in a toxicity study used for derivation of toxicity values is typically the amount of a chemical given orally to an organism. Thus, since CDIs calculated for the ingestion pathway are based on intake, they are typically comparable to the toxicity values for the COPCs.

Dermal absorbed doses (DADs) calculated for the dermal exposure pathway, however, represent absorbed doses rather than administered doses. An absorbed dose is the amount of a COPC penetrating the exchange boundaries, (e.g., skin) of an organism after contact. The DAD equation for the dermal exposure pathway includes a chemical-specific absorption efficiency factor that accounts for the amount of COPC that permeates the skin and is absorbed by the body. Therefore, toxicity values based on administered doses must be adjusted to represent absorbed doses before comparing to DADs from the dermal route of exposure. The adjustment, shown in the equations below, consists of multiplying the oral RfD, or dividing the CSF, by the chemical-specific absorption efficiency factor to account for the fraction of the administered dose that is absorbed.

Carcinogens:

$$CSF_{ABS} = \frac{CSF_O}{ABS_{GI}}$$

Noncarcinogens:

$$RfD_{ABS} = RfD_o \times ABS_{GI}$$

Where:

CSF_{ABS}	=	Absorbed cancer slope factor $(mg/kg\text{-}day)^{-1}$
CSF_o	=	Oral cancer slope factor $(mg/kg\text{-}day)^{-1}$
RfD_{ABS}	=	Absorbed reference dose (mg/kg-day)
RfD_o	=	Oral reference dose (mg/kg-day)
ABS_{GI}	=	Fraction of contaminant adsorbed in the gastrointestinal tract (dimensionless) in the critical toxicity study.

The oral to dermal adjustments are particularly important for evaluating exposures to metals, because many metals are not well absorbed in the gastrointestinal tract. Without this adjustment, non-cancer hazard and cancer risk from dermal exposure to metals would be underestimated. The oral absorption efficiency (ABS_{GI}) for evaluation of dermal exposures is presented in Appendix J, Tables 5.1 and 6.1, for each COPC.

4.6 Application of Relative Potency Factors for Carcinogenic PAHs

USEPA classifies benzo(a)pyrene (B(a)P) as a Group B2, or probable human carcinogen. The oral cancer slope factor is based on a dietary study in mice published by (Neal and Rigdon, 1967). The data were modeled by two procedures to provide three upper bound estimates. A LMS procedure was applied to data (Brune *et al.*, 1981) to provide the fourth estimate. The range is 4.5 to 11.7 $(mg/kg\text{-}day)^{-1}$, with a median of 6.3 $(mg/kg\text{-}day)^{-1}$. The geometric mean of the four risk estimates, 7.3 $(mg/kg\text{-}day)^{-1}$, is used for the oral cancer slope factor in this risk assessment.

Six other PAHs are classified as B2 carcinogens. Each of these PAHs generates biologically active metabolites associated with tumor formation. Results are consistent among cancer bioassays involving B(a)P and these PAHs; however, insufficient data are available to derive CSFs for all of these PAHs. Also, while these PAHs may cause cancer by the same mechanism as B(a)P, they appear to be less potent. USEPA developed a relative potency approach to estimate cancer risk associated with these PAHs (USEPA, 1993). This approach assumes that these PAHs have the same mode of action and dose-response curves similar to that of B(a)P, but that it takes a proportionally larger concentration of these chemicals to induce an equivalent tumor response. To develop relative potency factors, USEPA compared PAH relative cancer potencies using skin tumorogenicity bioassays. These relative potency factors (RPFs) are only used to assess PAH cancer risk:

PAH	Relative Potency Factor (RPF)
Benzo(a)pyrene	1
Benz[a]anthracene	0.1
Benzo[b]fluoranthene	0.1
Benzo[k]fluoranthene	0.01
Chrysene	0.001
Dibenz[a,h]anthracene	1
Indeno[1,2,3-cd]pyrene	0.1

Source: (USEPA, 1993)

This approach assumes additivity of toxicity among the PAHs. However, there is uncertainty in this approach because both additive and nonadditive effects have been observed for the carcinogenicity and genotoxicity of PAHs by different exposure routes (USEPA, 1993).

Carcinogenic risk due to exposures to compounds that have a mutagenic mode of action may be greater during early life. To quantitatively assess this risk, USEPA identified animal studies that

compare the incidence of tumors during early-life exposures to adult exposures, and used these studies to estimate the difference in susceptibility between early-life and adult exposures (USEPA, 2005f). To quantify the observed differences, USEPA selected age-dependent adjustment factors (ADAFs) to adjust the CSFs of compounds that have a mutagenic mode of action believed to have greater potency during early life. USEPA selected an ADAF of 10 for the lifestage of birth until the day before a child's second birthday, and an ADAF of 3 for the lifestage starting at a child's second birthday and ending the day before the child's sixteenth birthday. The applicability of ADAFs to B(a)P and other carcinogenic PAHs is uncertain. However, EPA issued a policy recommending that the ADAFs be used for B(a)P and the other carcinogenic PAHs until EPA reanalyzes the primary data for B(a)P (USEPA, 2006c). Therefore, an evaluation of early life exposure to carcinogenic PAHs and associated cancer risks using these ADAFs are provided in the uncertainty section (See Section 6.4.6).

4.7 Evaluation of Risk from Elevated pH

There is no current guidance on how to evaluate human health risk from exposure to high or low pH. Corrosivity as defined in the Federal environmental regulations CFR 40 Part 261 (USEPA, 2004b) is shown below.

> 261.22 Characteristics of corrosivity
>
> (a) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:
>
> (1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using Method 9040 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA Publication SW–846, as incorporated by reference in §260.11 of this chapter.
>
> (2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55 °C (130 °F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM–01–69 as standardized in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA Publication SW–846, as incorporated by reference in §260.11 of this chapter.
>
> (b) A solid waste that exhibits the characteristic of corrosivity has the USEPA Hazardous Waste Number of D002.

In accordance with Section 40.0347(2)(a) of the MCP, and consistent with the Federal regulations, a material is a hazardous material based on corrosivity if a representative sample exhibits any of the following properties:

> It is aqueous and has a pH less than 2 or greater than 12.5.

It is a liquid or solid that causes visible destruction or irreversible alterations in mammalian skin tissue at the site of contact.

There are surface water and drinking water criteria; however, the criteria are not based on an evaluation of human health risk.

There is a NRWQC for pH of 5 - 9 standard pH units (s.u.) for protection of human health (water and organisms). The pH 5 - 9 s.u. range is considered acceptable for waters serving as a public water supply, and is proposed based on corrosivity (e.g., of water treatment plant equipment and piping) and adverse effects on water treatment processes such as coagulation and chlorination. The documentation (USEPA, 1986a) for derivation of this range states "a range of pH from 5.0 to 9.0 s.u. would provide a water treatable by typical (coagulation, sedimentation, filtration, and chlorination) treatment plant processes." Hence, this criterion is based on feasibility and public welfare considerations, not toxicity to humans.

A secondary drinking water standard (SMCL) has been set for pH (6.5 - 8.5 s.u.). The SMCL pH range has been set based on odor and taste, and potential to cause corrosion, staining, scaling and sedimentation within water pipes (USEPA, 2002c). At pH below the SMCL, the following effects occur: bitter metallic taste, and corrosion. At pHs above the SMCL, aesthetic effects include slippery feel, soda taste, and deposits. The documentation also indicates that pH is "not considered to present a risk to human health at the SMCL."

The Massachusetts Water Resources Authority “treats its drinking water so that it has a pH of approximately 9.3, a slightly alkaline measurement” (MWRA, 2007).

Sediment and soil pH are compared to the Federal and MCP pH range (2.0 – 12.5), above or below which defines a hazardous material. For surface water, the pH is compared to the NAWQC pH range (5.0 – 9.0). For groundwater, the pH is compared to the Federal SMCL pH range (6.5 – 8.5).

4.8 Evaluation of Risk for Some Special Case Metals

4.8.1 Chromium

In this risk assessment, chromium concentrations are assumed to be in the form of hexavalent chromium (Cr VI). This is likely to be a conservative assumption because chromium is generally present in the environment as the less toxic trivalent chromium (Cr III). Although anthropogenic sources may result in the presence of Cr VI in the environment (Palmer, 1994), as discussed in SHA’s *Existing Data Review and Analysis Report*, no Site-related historical sources of Cr VI were identified (SHA, 2000a).

4.8.2 Cadmium

The IRIS file for cadmium lists different RfDs for cadmium ingested in food and cadmium ingested in water. In this assessment, we used the oral RfD for cadmium in food to estimate risk from sediment, since this RfD is based on bioavailability from a solid.

4.8.3 Lead

The disposition of lead is fairly well understood, as are the target organs, effects, and to some extent, the mechanism by which lead exerts its adverse effects.

USEPA has not established a RfD for inorganic lead because it appears that some observed effects may occur at blood lead levels so low as to be essentially without a threshold (USEPA, 2004c). Alternatively, information on the distribution, metabolism, and excretion of lead has been used to construct compartmental pharmacokinetic models that describe the concentration of lead in various compartments (e.g. blood, bone) in the body and can be used to assess risks to individuals exposed to lead in soils and other media. Since the concentration of lead in blood is in equilibrium with the other compartments of lead in the body, it is a good biomarker for exposure and can be used in the models as a predictor of risk due to exposures to lead.

Lead EPCs are provided in tables in Appendix F. The following models are applied to determine risk from exposure to lead.

4.8.3.1 Child Exposure to Lead

The potential for adverse health effects in children due to lead exposure is evaluated using the USEPA's Integrated Exposure Uptake Biokinetic (IEUBK) model. This is a pharmacokinetic model that takes into account multi-media exposures of young children (ages less than 6 months to 6 years). This population is most sensitive to lead's effects due in part to physiological characteristics (e.g., efficient absorption and developing nervous system/blood brain barrier) and to behavior patterns (e.g., hand-to-mouth and frequent ingestion of soils).

The model calculates blood lead levels based on children's estimated exposure to lead from various media such as food, soil, dust, and water. The output of the IEUBK model is a predicted distribution of blood lead levels in children from ages less than 6 months to 6 years of age. From this distribution, the model calculates the probability that blood lead concentrations will exceed 10 μg lead per deciliter of blood in an exposed population. The Center for Disease Control (CDC) established a blood lead level limit of 10 μg/dL to prevent impairment of cognitive and behavioral development in children (CDC, 1991). If the probability of a population of children's blood lead levels exceeding 10 μg/dL is predicted to be less than 5%, it is assumed that no significant lead hazard exists.

Exposure to indoor dust, derived, at least in part from soil is included in the IEUBK model. Because lead particles larger than 0.5 μm are not well absorbed by the lungs, and this pathway typically is an insignificant contributor to the overall intake (less than 2%) when compared with ingestion, USEPA did not include evaluation of exposures from inhalation of fugitive dust derived from soil in the IEUBK model. In addition, the IEUBK model does not evaluate the dermal pathway because lead is not well absorbed dermally.

A detailed description of the IEUBK model can be found in USEPA's documentation and guidance for use of the IEUBK model (USEPA, 1994a; USEPA, 2002f).

The IEUBK model was used to estimate lead exposure for the young child resident exposed to lead in soil (via incidental ingestion), and the young child of a fisher exposed to lead from ingestion of fish tissue.

4.8.3.2 Adult and Adolescent Exposure to Lead

Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risk Associated with Adult Exposures to Lead in Soil ((USEPA, 1996a), with 2003 update) was used to evaluate the risk from lead exposure for adult site worker and construction worker exposed to soil via incidental ingestion, the adolescent wader exposed to sediment via incidental ingestion, and the adult fisher exposed to sediment via incidental ingestion and/or fish tissue. The USEPA Technical Review Workgroup (TRW) methodology is typically used to evaluate nonresidential soil exposure for women of childbearing age because a developing fetus is considered a sensitive receptor from lead exposure.

The methodology uses a simplified representation of lead uptake and distribution in the body, the biokinetic slope factor, to estimate the increase from background in the amount of lead in the blood of women after exposure to soil, sediment, or fish. The methodology permits an estimation of a quasi-steady state blood lead level in the woman and uses a constant of proportionality to estimate the blood lead concentration in the blood of the fetus. The background blood lead concentration is derived from a population distribution, reflecting variability in blood lead concentrations among people. In establishing clean-up goals, USEPA's goal is to limit the risk of a child or fetus having a blood level of 10 μg/dL to 5% (USEPA, 1994b). In applying the adult lead model, because adults are considered less sensitive to lead exposure than fetuses, the target level for fetuses also protects adults.

The USEPA TRW model predicts a concentration representing the 95th percentile of the population. This means that out of an exposed population of, for example, one thousand people, 950 of the exposed people would have blood lead values less than the predicted 95th percentile value.

The USEPA TRW model is described further and results are presented in Appendix I.

4.8.4 Manganese

Manganese occurs naturally in food and is essential for normal physiological functioning. The oral RfD of 1.4×10^{-1} mg/kg-day is the total daily allowable intake. The normal daily dietary intake of manganese is estimated to be 2-5 mg/day (USEPA, 2005e). When normal dietary intakes of 2-5 mg/day are subtracted from the RfD, a RfD of 7×10^{-2} mg/kg-day is derived for evaluating hazard from exposure to soil and dermal exposure to water. For exposure to drinking water, reduction of the RfD by an additional modifying factor of 3 is recommended by USEPA (2005e) and USEPA Region I (USEPAReg1, 1999b). In this risk assessment a RfD of 2.4×10^{-2} was used for evaluating health hazard from ingestion of drinking water.

4.9 Evaluation of Nutrients

Reference doses are not available for the following essential nutrients: calcium, magnesium, potassium, and sodium. In addition, USEPA Region 1 does not endorse the application of the iron RfD for calculation of risk from iron (USEPAReg1, 1999b). However, the Institute of Medicine's Standing Committee on the Scientific Evaluation of Dietary Reference Intakes Food and Nutrition Board develops reference values, including tolerable upper intake levels (UL), for dietary nutrient intakes (including iron) for the healthy population in the United States and Canada. These ULs are used to derive modified upper limits (MULs), taking into consideration daily intake from the diet. The sum of ingested doses of iron and sodium from all media for each receptor are compared to the corresponding modified upper limit (MUL). The MUL for iron is based on the Upper Intake Level of 45 mg/day for adolescents and adults minus the 95th percentile dietary intake for adolescent and adults of 40.5 mg/day (IM, 2002). For sodium, dietary exposure is greater than the UL for sodium (IM, 2004). Therefore, the MUL is based on the 20 mg/L EPA drinking water standard and a 2 L/day tap water ingestion rate for an adult.

We do not provide MUL comparisons for calcium, magnesium, or potassium because these chemicals are only toxic at very high doses.

5.0 RISK CHARACTERIZATION

The risk characterization integrates information developed during the hazard identification, exposure assessment, and dose response evaluation to estimate the risks for each exposure scenario. RME risk estimates represent estimates of risk to human health, well above average, but still within the range of possible exposures. CT risk estimates provide central tendency or average risks. As discussed with EPA Region 1, CT evaluations were carried out only for scenarios with RME cancer risks that were above USEPA's cancer risk range (i.e., total cancer risk > 10^{-4}), or non-cancer hazards greater than USEPA's target organ-specific hazard index limit of 1.

The USEPA RAGS Tables ("RAGS Tables 7, 9 and 10") associated with this section are presented in the following appendices:

RAGS Table 7s (Appendix K)

RAGS Table 9s (Appendix L)

RAGS Table 10s (Appendix M)

Cancer risks are presented separately for the adult and child in the RAGs Table 7s and summed in the RAGs Table 9s and 10s to provide total cancer risks for the residential and fisher/fish consumer scenarios. Individual COPC HIs, Total HIs, and target organ-specific HIs greater than one are presented in the Table 9s. The RAGS Table 10s show only scenarios and specific COPCs associated with cumulative cancer risk greater than 10^{-4} or target organ-specific HIs greater than 1. Non-cancer hazard indices are presented separately for the adult and child residents in the RAGS Table 7s and the higher of the two indices (i.e. child non-cancer hazard indices) is presented in the RAGS Table 9s and 10s.

Sections 5.1 and 5.2 provide a description of the methods used to calculate cancer risks and non-cancer hazards. The method used to evaluate risk from exposure to lead is provided elsewhere (See Section 4.0 and Appendix I). The method used to evaluate exposure to elevated pH is provided in Section 4.0.

Section 5.3 summarizes risks and hazards for all scenarios.

5.1 Calculation of Cancer Risks

The Incremental Lifetime Cancer Risk (ILCR) is defined as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogenic compound. The ILCR associated with the Lifetime Average Daily Dose (LADD) is the product of the LADD and the cancer slope factor (CSF) for each COPC for the ingestion and dermal exposure pathways:

$$ILCR = CSF \times LADD$$

Where:

ILCR = Lifetime cancer risk for chemical (unitless);
CSF = Cancer slope factor for chemical $(mg/kg\text{-}day)^{-1}$; and
LADD = Lifetime average daily dose for chemical (mg/kg-day).

The ILCR associated with the Lifetime Average Daily Exposure (LADE) is the product of the LADE and the inhalation unit risk (UR) for each COPC for the inhalation exposure pathway:

$$ILCR = UR \times LADE$$

Where:

ILCR = Lifetime cancer risk for chemical (unitless);
UR = Inhalation Unit Risk for chemical $(ug/m^3)^{-1}$; and
LADE = Lifetime average daily exposure for chemical (ug/m^3).

The total cancer risk for each exposure scenario is calculated by summing the risks across all exposure pathways for all COPCs. Cancer risks for children and adults are summed to provide a Total Cancer Risk for the residential scenarios.

The USEPA cancer risk range identified in the National Contingency Plan (NCP) (USEPA, 1990) is 1 in 1,000,000 (expressed as 10^{-6}) to 1 in 10,000 (expressed as 10^{-4}) over the course of a 70-year lifetime. For sites where the cumulative site risk to an individual based on the RME is less than 10^{-4}, action generally is not warranted unless there are adverse environmental effects or exceedances of drinking water standards (USEPA, 1991). All cancer risk estimates were compared to EPA's cancer risk range.

5.2 Calculation of Non-Cancer Hazard Indices

For non-carcinogenic compounds, health effects resulting from exposure to each COPC for each exposure pathway are evaluated by comparing the average daily dose (ADD) with a reference dose (RfD) derived for a similar time period. The ratio of the ADD to the RfD is known as the Hazard Quotient (HQ), shown below:

$$HQ = \frac{ADD}{RfD}$$

Where:

HQ = Hazard quotient for chemical (unitless);
ADD = Average daily dose for chemical (mg/kg-day);

and

RfD = Reference dose for chemical (mg/kg-day).

For the inhalation exposure pathway, the HQ is the ratio of the average daily exposure (ADE) to the reference concentration (RfC), shown below:

$$HQ = \frac{ADE}{RfC}$$

Where:

HQ = Hazard quotient for chemical (unitless);
ADE = Average daily exposure for chemical (mg/m^3); and
RfC = Reference concentration for chemical (mg/m^3).

The total non-carcinogenic hazard for all COPCs summed over all exposure pathways is known as the Total Hazard Index (HI).

The BHHRA evaluates subchronic non-cancer hazard for exposures of less than 7 years (construction worker) and chronic non-cancer hazard for all other scenarios.

A total HI exceeding 1 for an individual receptor may be considered a cause for potential concern regarding non-cancer health effects, in accordance with USEPA guidance.

To screen for possible additive effects, HQs for individual COPCs are summed to calculate a total HI. If the total HI is less than or equal to 1, adverse effects are unlikely to occur. If the total HI exceeds 1, adverse effects are possible but one must evaluate the assumption of additive toxicity before reaching a conclusion. The evaluation consists of determining the target organ(s) for each COPC and dividing the total HI into separate target organ-specific HIs, which are presented in the RAGS Tables 9 and 10. The uncertainty associated with dividing Total HIs by target organ is discussed in Section 6.4.1. Some COPCs have critical effects that are not specific to an individual target organ. The target organ for these COPCs is referred to as "whole body" given the uncertainty about where the COPC might exert its toxic effect. Because a whole body response is not specific for a target organ system and could involve several target organ systems, we assume that any target organ could be affected. Therefore, the HI from each chemical with a target organ of whole body is added to each target organ-specific HI (i.e., hepatic, renal, reproductive, etc.).

5.3 Risk Summary

This section summarizes risks, hazards, and blood lead exceedances for all scenarios, from COPCs and pathways that remained subsequent to COPC screening. In addition, exposure to elevated pH is presented.

Tables 28 through 40 summarize risks and hazards, and associated RAGS Table 9s and 10s for all scenarios. Table 41 summarizes all RAGS Table 10s and the corresponding RAGS Table 9s, as well as areas where the probability that blood lead exceeds 10 μg/dL (PBL) is greater than 5%, and where exposure to elevated pH might occur. Lead modeling results are summarized in Tables 42 and 43. Soil, groundwater, sediment, and surface water pH are summarized in Tables 24 through 27. Figures 23 through 33 depict cancer risk and hazard estimates for each scenario and each exposure area, as well as PBL exceedances, and exposure to elevated pH. In some cases, a range of cancer risks is presented instead of a single value. These ranges were calculated by using USEPA's range of cancer potency estimates for benzene and TCE (see Section 4.0). If no range is shown, the total risk is the same regardless of what end of the range is used, or TCE and benzene are not COPCs.

5.3.1 Current Scenarios

RME and CT risks and HIs, and blood lead exceedances for the current scenarios are summarized in the following tables:

- Current resident (Tables 28, 29, 41, and 42);
- Current trespasser (Table 30); and
- Current site worker (Table 31 and 43).

In addition, as shown in Table 24, pH levels in soil are not elevated.

Figure 23 summarizes RME risks and hazards from all exposure areas. Figure 24 summarizes areas where RME risks are within USEPA's risk range (i.e. total cancer risk >1E-06 and ≤ 1E-04), the HI is less than 1, and PBL is less than 5%. Figure 25 summarizes exposure areas where RME risks are within USEPA's risk range and the HI is less than 1, but PBL is a greater than 5%.

As shown, there are no exceedances of USEPA's risk range or HI limit for any current scenario, and three exposure areas have risks below the risk range (i.e. total cancer risk $\leq 10^{-6}$). While the cumulative HI for the child resident on Lot 360 is greater than 1, the cumulative target organ-specific HIs are less than or equal to one (See discussion in Section 6.4.1). However, there is a greater than 5% probability that child blood lead levels could exceed 10 μg/dL from exposure to lead in soil under current or potential future conditions at Residential Lot 257 (PBL = 13.4%). As described in further detail in SHA's RI Report, the spatial distribution of lead on lot 257 is likely limited to the general vicinity of sample location FP-05 (e.g., those areas of lot 257 that would be subject to flooding when the Neponset River has particularly high flow rates). SHA/Tyco proposed additional delineation of lead as part of the RI to improve our estimate of lead exposures; however, the property owner denied access to SHA/Tyco to perform this sampling.

5.3.2 Current/Future Scenarios Exposed to Surface Water Bodies

Current/future waders and fisher/fish consumers are evaluated for exposure to surface water, sediment and fish tissue (fisher/fish consumer only) at surface water bodies at the Site.

RME risks and HIs, and exposure to elevated pH for the scenarios exposed to surface water bodies are summarized in the following tables:

- Current/future wader (Tables 26, 27, 32, 41, 42, and 43); and
- Current/future fisher and fish consumer (Tables 26, 27, 33, 34, and 43).

As shown in Table 26, pH levels in sediment are not elevated.

Figure 26 summarizes RME risks, hazards, and exposure to elevated pH for the current/future wader and fisher scenarios from all exposure areas.

As shown, all areas have risks within USEPA's risk range (i.e., total cancer risk $>10^{-6}$ and $\leq 10^{-4}$), HI ≤ 1, and PBL less than 5%. While the cumulative HI for the fish consumer at the Neponset River East of South Street and West of South Street is greater than 1, the cumulative target organ-specific HIs are less than or equal to one (See discussion in Section 6.4.1).

However, there is potential exposure to elevated pH in surface water for the wader in the Former Mill Tailrace; pH exceeds the NAWQC range of 5.0 to 9.0 s.u. (elevated pH range = 9.3 to 10 s.u.).

5.3.2.1 Lifetime Wading Scenario

At USEPA's request, to represent a 31-year lifetime wading scenario, cancer risk for the older child current/future wader and the sediment and surface water cancer risk for the adult fisher are summed. RME cancer risks are within or below USEPA's cancer risk range (i.e., total cancer risk $>10^{-6}$ and $\leq 10^{-4}$) for this lifetime exposure.

- Lewis Pond (cancer risk = 9E-06);
- Neponset River East (cancer risk = 7E-07); and
- Neponset River West (cancer risk = 4E-06).

Since wading in the Former Mill Tailrace is unlikely for an adult, the adolescent/adult sum is discussed in the uncertainty section of the report.

5.3.2.2 Arsenic Speciation in Fish Tissue

The arsenic risk calculations are based on the unrealistic assumption that all of the arsenic in fish tissue is inorganic. As discussed in Section 6.3.2.3, it is reasonable to assume that only 10% of the arsenic in fish tissue is inorganic. If we make this assumption, RME cancer risks from

arsenic in fish tissue (adult and child combined) would be 1E-06 for Lewis Pond and 6E-07 for the Neponset River.

5.3.2.3 Comparison of Site and Reference Sediment and Fish Tissue Concentrations

Concentrations of risk drivers in sediment and fish tissue were compared to reference area concentrations as presented in the Baseline Ecological Risk Assessment (BERA).

As discussed in the BERA, an area just upstream of the Site in the Neponset River was chosen as the Neponset River Reference Area; this reference area was used for comparison of sediment and surface water concentrations from the Neponset River Site area, including the Upper and Lower Former Mill Tailrace. Lower Pond in Norwood, Massachusetts was selected as the reference area for Lewis Pond sediment and fish tissue. Lower Pond was also used as the reference area for Neponset River fish since fish were not collected from the Neponset River Reference Area because fish present in that portion of the Neponset River might be exposed to downstream sediment and surface water that has been impacted by the Site.

As summarized in Table 46, risk drivers from sediment for the wader and fisher in Lewis Pond (benzo[a]pyrene and arsenic) are similar to reference area concentrations for Lewis Pond (Lower Pond). In fact, benzo(a)pyrene concentrations are slightly higher in the reference area. Therefore, sediment risk for the wader and fisher in Lewis Pond could be consistent with background. Benzo(a)pyrene concentrations in the Tailrace are higher than the Neponset River reference sediment concentrations.

Of the risk drivers in fish tissue for Lewis Pond and the Neponset River, bis(2-ethylhexyl)phthalate contributes the greatest; this chemical was not detected in fish tissue from Lower Pond. However, arsenic fish tissue reference concentrations (Lower Pond) appear consistent with Neponset River and Lewis Pond arsenic fish tissue concentrations (Table 46). Therefore, risk from arsenic in fish may be consistent with background. However, as discussed above, if we assume 10% inorganic arsenic in fish tissue, risk is not greater than 1E-06 from both water bodies. All other risk drivers for fish tissue are not detected in the reference area fish.

5.3.3 Future Scenarios

This section summarizes risks and hazards for future scenarios.

5.3.3.1 Future Resident (Not Including Tap Water)

RME and CT risks and HIs, and blood lead exceedances for the future resident (not including tap water) are summarized in Tables 35, 36, 41, and 42. In addition, as shown in Table 24, pH levels in soil are not elevated.

Figure 27 summarizes RME risks and hazards from all exposure areas. Figure 28 summarizes areas where RME risks are within USEPA's risk range (i.e. total cancer risk $>10^{-6}$ and $\leq 10^{-4}$), the HI is less than 1, and PBL is less than 5%. Figure 29 summarizes exposure areas where RME

risks exceed USEPA's risk range (i.e. total cancer risk > 10^{-4}), the maximum target-organ specific HI is greater than 1, or the PBL is greater than 5%.

As shown:

- Three areas (East of South Street On-Facility ["SB-09 area" and "non-SB-09 area"] and Old Railroad / Former Lower Mill Pond) exceed USEPA's risk range (i.e. total cancer risk > 10^{-4}) and/or HI limit of 1; and
- All of the remaining exposure areas have cancer risks below (i.e. total cancer risk ≤ 10^{-6}) or within (i.e. total cancer risk >10^{-6} and ≤ 10^{-4}) USEPA's risk range, HIs less than 1, and PBL less than 5%.

Cancer Risk Exceeding USEPA's Risk Range

RME cancer risk at East of South Street On-Facility "non-SB-09 area" is predominantly due to ingestion and dermal contact with benzo(a)pyrene and other PAHs in soil. RME cancer risk at East of South Street On-Facility "SB-09 area" is due to both ingestion and dermal contact with benzo(a)pyrene and other PAHs in soil, as well as inhalation of TCE in indoor air. The TCE risk is based on the maximum detected concentration of TCE in soil gas because the 95% UCL was greater than this concentration. The CT cancer risk for both East of South Street On-Facility exposure points are within USEPA's risk range.

RME cancer risk at the Old Railroad and Former Lower Mill Pond Area is predominantly due to ingestion and dermal contact of arsenic and PAHs in soil, and ingestion of arsenic in plant tissue. The CT cancer risk is within USEPA's cancer risk range (note that we did not calculate CT risk for the garden pathway, as discussed in Section 3.2.1.3).

Non-cancer Hazard Exceeding USEPA's Target-Organ Specific HI

The maximum target organ-specific HI is 2 for the RME scenario for the East of South Street On-Facility "non-SB-09 area," due primarily to potential respiratory hazard from inhalation of naphthalene and 2-methylnaphthalene in indoor air. However, neither COPC alone is associated with an RME HI>1. The corresponding CT HI is also 2.

The maximum target organ-specific HI is 4 for the RME scenario for the Old Railroad and Former Lower Mill Pond Area, due primarily to potential integumental and cardiovascular hazard from ingestion of arsenic in soil and plant tissue. The CT HI is less than 1 (note that we did not calculate CT risk for the garden pathway, as discussed in Section 3.2.1.3).

5.3.3.2 Future Resident Tap Water Exposure

Aquifer transmissivities calculated from the RI hydrogeologic data indicate that the Site is not underlain by a viable aquifer. Further, properties in this area of Walpole are serviced by public drinking water. Therefore, future exposure of residents to ingestion, dermal contact, or inhalation of volatiles from tap water during household use is highly unlikely. However, based

on EPA's interest in an evaluation of risk from exposure to tap water by hypothetical future receptors, in the November 30, 2005 monthly progress meeting, EPA, MADEP, and SHA agreed that the risk assessment would include an evaluation of potential future risk from tap water from this portion of the Site and for all on-Site groundwater. Therefore, the potential risk associated with hypothetical exposure of the future resident to groundwater in these areas is evaluated.

RME and CT risks and HIs, blood lead exceedances, and exposure to elevated pH for the future resident exposed to tap water are summarized in Tables 25, 35, 36, 41, and 42. Figure 30 summarizes RME risks, HIs, blood lead exceedances, and exposure to elevated pH for this scenario.

As shown, all tap water exposure areas except one (Off-Site Groundwater West of Neponset River) have cancer risks exceeding USEPA's risk range (i.e. total cancer risk > 10^{-4}), or an HI greater than 1. Two areas have elevated groundwater pH: Off-Facility Groundwater Lot 208 / Lot 209 (elevated pH range = 10.11 to 11.9 s.u.); and On-Site Groundwater (elevated pH range = 8.84 to 14.06 s.u.). The On-Site Groundwater, with pH of 14.06, is classified as a hazardous material when it is removed from the ground because of corrosivity (i.e. pH above 12.5). In addition, Off-Facility Groundwater Lot 208 / Lot 209 has a PBL greater than 5% (8.1%).

Cancer Risks Exceeding USEPA's Risk Range

RME cancer risks from exposure to tap water from Off-facility groundwater Lot 208 / Lot 209 are predominantly due to ingestion of arsenic in tap water. The CT cancer risk is within the USEPA cancer risk range for this pathway.

RME and CT cancer risks from On-Site groundwater are predominantly due to ingestion of arsenic in tap water. Exceedance of the USEPA cancer risk range is also due to inhalation of benzene, ethylbenzene, and TCE in shower vapor for the RME scenario in this area (3E-04), but not the CT scenario (4E-06).

As discussed in Section 6.3.2.2, and shown in Table 45, TCE risk is equal to or less than 1E-06 from ingestion, dermal, and shower vapor combined if the lower end of the TCE cancer slope factor and inhalation unit risk range is applied for On-Site groundwater and Off-Site groundwater east of Neponset River (SH-28).

Non-cancer Hazard Exceeding USEPA's HI Limit

The maximum target organ-specific HI is 2 for the RME scenario from Off-Site groundwater east of Neponset River (SH-27), due to potential developmental, hepatic, immunological, and renal hazard from ingestion of TCE, and from potential neurological hazard from ingestion of manganese. The maximum target organ-specific HI is 3 for the RME scenario from Off-Site groundwater east of Neponset River (SH-28) due to potential neurological hazard from ingestion of manganese.

The RME and CT maximum target organ-specific HIs are 20 and 4, respectively, from Off-facility groundwater Lot 208 / Lot 209, due to potential integumental and cardiovascular hazard

from ingestion of arsenic in tap water. RME exceedances due to potential renal hazard from ingestion of vanadium in groundwater (HI = 5), neurological hazard from ingestion of manganese in groundwater (HI = 2), and respiratory hazard from inhalation of naphthalene in shower vapor (HI = 2) also occur in this area.

The RME maximum target organ-specific HI is 300 for On-Site groundwater, due to potential respiratory hazard from inhalation of naphthalene and 2-methylnaphthalene in shower vapor, ingestion and dermal contact with 2-methylnaphthalene in tap water, ingestion of 4-methylphenol in tap water, plus potential whole body hazard (HI = 30) from ingestion and dermal contact with naphthalene, ingestion of antimony, and ingestion of nickel in tap water. The following RME exceedances also result in potential hazard from On-Site groundwater (HI values below are shown without whole body included, and only chemicals with HI>1 are shown):

Cardiovascular and integumental hazard from ingestion of arsenic in tap water (HI = 200);

Developmental hazard from ingestion of 4-methylphenol in tap water (HI = 3);

Hematological hazard from ingestion and dermal contact with benzene in tap water, ingestion of zinc in tap water, and inhalation of benzene in shower vapor (HI = 20);

Hepatic hazard from ingestion of nickel, antimony, and several chemicals with HI < 1 (ethylbenzene, styrene, toluene, TCE, DHEP, and selenium) in tap water (HI = 10);

Immunological hazard from ingestion and dermal contact with benzene in groundwater and inhalation of benzene in shower vapor (HI = 20);

Neurological hazard from ingestion of manganese and 4-methylphenol in groundwater and inhalation of xylenes in shower vapor (HI = 20);

Renal hazard predominantly from ingestion of and dermal contact with vanadium and several chemicals with HI < 1 (ethylbenzene, styrene, toluene, TCE, acenaphthylene, and cadmium) in tap water (HI = 80); and

Hazard from ingestion of chromium VI in groundwater (No target organ observed: HI = 6).

The CT maximum target organ-specific HI is 10 from On-Site groundwater, due to potential cardiovascular and integumental hazard from ingestion of arsenic in tap water (HI = 10). The following CT exceedances also result in potential hazard at On-Site groundwater:

Respiratory hazard from inhalation of naphthalene and 2-methylnapthalene in shower vapor (HI = 6);

Neurological hazard from ingestion of manganese in groundwater (HI = 2); and

Renal hazard from ingestion of vanadium in tap water (HI = 3).

Comparison of Tap Water EPCs to MCLs

Table 44 compares tap water data to the MCLs, Federal Health Advisories, or GW-1 standards. All of the major contributers to risk and hazard for the tap water pathway (shown in bold in Figure 30) also exceed one or more of these standards (shown in bold and italics in Figure 30), with the following exceptions: TCE in Off-Site groundwater east of Neponset River (SH-27), and naphthalene in Off-facility groundwater Lot 208/209. There is no available MCL, Federal Health Advisory, or GW-1 standard for 4-methylphenol (in On-Site groundwater). In addition, although arsenic in tap water from Off-Site groundwater west of Neponset River results in a cancer risk of 2E-05, the arsenic concentration is less than its corresponding MCL.

5.3.3.3 Future Site Worker and Construction Worker

RME and CT risks and HIs, and blood lead exceedances, for the future site worker and construction worker, and exposure to elevated pH in groundwater for the construction worker are summarized in the following tables.

- Future site worker (Tables 37 and 43); and
- Future construction worker (Tables 25, 39, 40, 41, and 43).

In addition, as shown in Table 24, pH levels in soil are not elevated.

Figure 31 summarizes RME risks and hazards from all exposure areas. Figure 32 summarizes areas where RME risks are within USEPA's risk range (i.e. total cancer risk $>10^{-6}$ and $\leq 10^{-4}$), the HI is less than 1, and PBL is less than 5%. Figure 33 summarizes exposure areas where RME risks are within USEPA's risk range, and the HI is less than 1, but the PBL is greater than 5%, or there is exposure to elevated pH.

For the site worker, only three exposure areas were evaluated (East of South Street On-Facility ["SB-09 area" and "non-SB-09 area"] and West of South Street On-Facility). RME risks from two of these areas are within USEPA's cancer risk range (i.e. total cancer risk $>10^{-6}$ and $\leq 10^{-4}$), with a HI less than 1. RME risk from the third, "SB-09 area," exceeds USEPA's cancer risk range due to inhalation of TCE in indoor air. The TCE risk is based on the maximum detected concentration of TCE in soil gas because the 95% UCL was greater than this concentration.

For the RME construction worker scenario, only one area - the East of South Street On-Facility "non-SB-09 area" - exceeds USEPA's cancer risk range or HI limit, with an HI=2 due to inhalation of naphthalene and methylnaphthalene in trench air. However, neither COPC alone is associated with an RME HI>1. Eleven areas have RME cancer risks below the range (i.e. total cancer risk $\leq 10^{-6}$), with HIs less than 1. Although cancer risks are within USEPA's risk range (i.e. total cancer risk $>10^{-6}$ and $\leq 10^{-4}$) for West of South Street On-Facility, and below the risk range (i.e. total cancer risk $\leq 10^{-6}$) for Lot 208 / Lot 209, with HIs less than 1 for both areas, there is potential exposure to elevated pH in groundwater from these areas. Elevated pH range

equals 9.7 to 11.99 s.u. for the West of South Street On-Facility area, and 10.11 to 11.9 s.u. for Lot 208 / Lot 209. Cancer risks are within USEPA's risk range and below the HI limit of 1 at the East of South Street On-Facility "SB-09 area," West of South Street On-Facility, Old Railroad/Former Lower Mill Pond area, and Lot 283. In addition, although the cancer risk is below USEPA's risk range (i.e. total cancer risk $\leq 10^{-6}$) and the HI is less than 1 for Residential Lot 257, the PBL exceeds 5% (6.5%). As described in further detail in SHA's RI Report, the spatial distribution of lead on lot 257 is likely limited to the general vicinity of sample location FP-05 (e.g., those areas of lot 257 that would be subject to flooding when the Neponset River has particularly high flow rates). SHA/Tyco proposed additional delineation of lead as part of the RI to improve our estimate of lead exposures; however, the property owner denied access to SHA/Tyco to perform this sampling.

Note that the cancer risk of 2E-06 from Lot 283 for the construction worker is from chloroform in trench vapor, modeled from soil. Based on the uncertainty in the soil to trench vapor model (see discussion in Section 6.2.2.2), this is likely an overestimate.

5.3.4 Exceedance of Iron and Sodium MULs

MULs for iron (4.5 mg/day) and sodium (40 mg/day), as discussed in Section 4.9, are not exceeded for any scenario for soil, sediment, or surface water exposure, or for the construction worker dermal exposure to groundwater.

MULs are exceeded only for the following tap water exposure scenarios:

- Off-Site groundwater east of Neponset River (SH-27) (sodium: 137 mg/day)
- Off-Site groundwater east of Neponset River (SH-28) (sodium: 77 mg/day)
- Off-facility groundwater Lot 208 / Lot 209 (iron: 27 mg/day and sodium: 204 mg/day)
- On-Site Groundwater (iron: 90 mg/day and sodium: 86,300 mg/day)

6.0 UNCERTAINTY SECTION

In general, the non-cancer hazard and cancer risk estimates are subject to uncertainties in each step of the assessment. In order to limit the possibility of erroneously concluding that the Site poses no unacceptable risks, uncertainty was addressed by applying assumptions that are more likely to overestimate rather than underestimate risk.

6.1 Uncertainties in Hazard Identification

Hazard identification is subject to uncertainties related to limitations of sampling design, collection and analytical techniques, and selection of chemicals of potential concern (COPCs).

6.1.1 Environmental Sampling Design and Collection

Since it is not possible to sample the entire exposure area, one must rely on a set of samples from that exposure area to represent the entire exposure area. Although this is a source of uncertainty, it is not likely to result in an underestimate of risk because sampling was targeted to the primary source areas of contamination and contaminated groundwater plumes. Such a biased data set is more likely to overestimate risk.

As stated in the Data Usability Worksheets in Appendix B, there were no apparent problems reported from the field collection program that should affect data usability (e.g., groundwater samples were collected using low flow sampling techniques where possible). All data, except "R" qualified data (see below), were acceptable for use in the BHHRA based on field QC, following data validation. Therefore, there is little uncertainty resulting from sampling error.

6.1.2 Analytical Techniques and Data Quality

As discussed in the Data Usability Worksheets in Appendix B, overall there were no significant analytical errors that should affect data usability in the BHHRA. Reporting limits (RLs) for some chemicals did not meet the corresponding risk-based concentrations (RBCs). However, in most cases the RBCs for these chemicals cannot be met with the best available technology using the USEPA methods defined in the Data Usability Reports (SHA, 2002a; SHA, 2004b). Data validation, as summarized in Appendix B, indicated that there were minimal data quality issues that could affect data usability. Completeness goals were met for soil, sediment, surface water, and groundwater, and qualified data (except "R" qualified data) were considered usable. Therefore, there is little uncertainty resulting from laboratory analytical error.

6.1.2.1 Reporting Limit Exceedances of Screening Criteria

Every effort was made to achieve reporting limits (RLs) below applicable screening toxicity values (STVs) and potential ARARs listed in Appendix C (RAGS Table 2s). However, some STVs cannot be met with the best available technology. Therefore, some chemicals in soil, soil gas, groundwater, sediment, surface water, and fish tissue were infrequently or never detected, but have maximum RLs greater than STVs. The range of detection limits and the applicable STVs are shown in Appendix C (RAGs Table 2s). In most cases where the maximum RLs are

greater than STVs in soil, soil gas, groundwater, and sediment, the minimum RLs are less than or equal to the STVs to one significant figure. Cases where the RLs exceed the STVs 100% of the time at an exposure point when the values are rounded to one significant figure are discussed below.

Direct Contact with Soil (Appendix C, Tables 2.1 and 2.2)

RLs for n-nitroso-di-n-propylamine at Gleason Court Vacant Lot (nearby resident) under current conditions and Vacant Lot 209 (resident) under future conditions slightly exceeded the STV by, at most, a factor of 1.4. RLs for hexachlorobutadiene and 3-nitroaniline at East of South Street On-Facility (resident) exceeded the STVs for these chemicals by, at most, a factor of 3. In addition, these chemicals were not detected in groundwater or at soil exposure points where RLs lower than the STVs were achieved.

Indoor and Trench Air from Soil and Soil Gas (Appendix C, Tables 2.3 and 2.4)

Appendix C indicates instances when RLs exceed STVs for soil and soil gas used in the current and future indoor air and trench vapor pathways (Tables 2.3 and 2.4). Chemicals with RLs that exceed the STVs 100% of the time in at least one area of the Site are benzene, carbon disulfide (future trench vapor only), chloroform, 1,2-dichlorobenzene (future trench vapor only), cis-1,2-dichloroethene, heptachlor, methylene chloride, and TCE. STVs for these chemicals, from Table 2c of the Indoor Air Evaluation Guidance (USEPA, 2002b), are very low and not likely to be feasible to meet. Benzene, carbon disulfide, and chloroform are COPCs in soil for the future indoor air pathway, but cancer risks from carbon disulfide and chloroform in soil are less than USEPA's risk range ($<10^{-6}$). The indoor air concentration of benzene modeled from soil was about two orders of magnitude lower than the concentration modeled from groundwater, and the cancer risk from benzene in groundwater ranged from 3E-06 to 1E-05 (using both ends of the unit risk range for benzene). Therefore, since future on-facility risks to a resident from benzene, carbon disulfide, and chloroform are less than or within USEPA's risk range, they are not likely to be a risk at the West of South Street On-Facility area and the East of South Street On-Facility area. . Dichlorobenzene (1,2-) is not detected at the West of South Street On-Facility area and the East of South Street On-Facility area, and the RLs are below STVs most of the time. In general, STVs tend to be conservative in that they were predicted from the Johnson & Ettinger model assuming an infinite source; therefore, these exceedances are not likely to strongly influence risk conclusions.

Groundwater – Tap Water and Construction Worker Exposure (Appendix C, Tables 2.5 and 2.6)

As shown in Table 2.5 in Appendix C for Off-Site groundwater, West of Neponset River and East of Neponset River SH-27 and SH-28, RLs for 13 VOCs and SVOCs, and cyanide exceeded the STVs 100% of the time. The laboratory attained the lowest RLs reasonably achievable for these compounds, starting with the goal of attaining Region 9 tap water PRGs. For SVOCs, exceedances were due to method limitations plus a combination of validation actions for blank contamination and necessary analytical dilutions (all three played a role in the RLs for some SVOCs exceeding STVs).

- At Off-facility groundwater Lot 208 / Lot 209 and On-Site groundwater, RLs for 33 and 47 VOCs and SVOCs, respectively, exceeded the STV 100% of the time. Cyanide also exceeded the STV 100% of the time at Off-facility groundwater Lot 208 / Lot 209. Both of these areas exceed USEPA thresholds for cancer risk and non-cancer hazard to the future resident; therefore, the cases where RLs exceed STVs add uncertainty to the tap water exposure pathway in these areas, but likely do not change risk results.

- RLs for a number of chemicals in groundwater for the construction worker groundwater dermal pathway exceed STVs100% of the time (Table 2.6 in Appendix C). This is largely due to the fact that the Region IX tap water PRGs were used for this screening, and were not initially included as ARARs for groundwater. Although the Region IX tap water PRGs are conservative STVs for the construction worker dermal pathway, they were selected because they are the only groundwater STVs available. All but one of the chemicals in groundwater that exceeded the STVs 100% of the time (9 VOCs and 12 SVOCs at construction worker exposure points), exceeded due to sensitivity limitations of the USEPA analytical methods used for analysis. The chemicals are listed below.

    - VOCs: Bromodichloromethane, Carbon tetrachloride, Dibromochloromethane, 1,2-Dichloroethane, 1,1,2,2-Tetrachloroethane, Tetrachloroethene, 1,1,2-Trichloroethane, Trichloroethene, and Vinyl Chloride

    - SVOCs: bis(2-Chloroethyl)ether, bis(2-Chloroisopropyl)ether, 1,4-Dichlorobenzene, 3,3'-Dichlorobenzidine, 4,6-Dinitro-2-methylphenol, Hexachlorobenzene, Nitrobenzene, N-Nitroso-di-n-propylamine, Pentachlorophenol, 1,2,4-Trichlorobenzene, and 2,4,6-Trichlorophenol

- RLs for 3-nitroaniline in groundwater in the East of South Street On-Facility area exceeded the applicable screening levels 100% of the time because the QAPP did not identify the need for lower RLs when initially written. This is a limitation based on the original QAPP requirements rather than a method limitation.

Because the STVs for the groundwater dermal pathway are very conservative, exceedances likely contribute little to the overall uncertainty in the evaluation of risk for this pathway.

Indoor Air and Trench Air from Groundwater (Appendix C, Tables 2.7, 2.8, and 2.8a)

As shown in Table 2.7 in Appendix C, for the current groundwater to indoor air pathways, no RLs exceed STVs. As shown in Table 2.8 in Appendix C (future groundwater to air pathways), dibenzofuran (future trench vapor) RLs exceed STVs 100% of the time in Lots South of the AOC but by less than a factor of two. TCE RLs in the Old Railroad and Former Lower Mill Pond Area and West of South Street Off-Facility/Off-Site Groundwater Exposure Area (future trench vapor) exceed STVs 100% of the time; the STV for TCE is very low and not likely feasible to meet.

Sediment (Appendix C, Table 2.9)

No RLs for chemicals in sediment exceed STVs 100% of the time (Appendix C, Table 2.9).

Surface Water (Appendix C, Table 2.10)

Dermal contact is the only direct contact pathway that is quantified for surface water. RLs for a number of chemicals in surface water for the wader and fisher dermal pathway exceed STVs, largely due to the fact that the Region IX tap water PRGs were used for this screening because STVs protective of the surface water dermal contact pathway are not available. Chemicals in surface water with RLs that exceeded STVs 100% of the time, due to sensitivity limitations of the USEPA analytical methods used for analysis, are listed below.

- Inorganic Parameters: Arsenic (total), and Weak Acid Dissociable Cyanide,
- Organic Parameters:
    - VOCs: Benzene, Bromodichloromethane, Bromomethane, Carbon tetrachloride, Chloroform, Dibromochloromethane, 1,2-Dichloroethane, 1,2-Dichloropropane, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 1,1,2,2-Tetrachloroethane, Tetrachloroethene, 1,1,2-Trichloroethane, Trichloroethene, and Vinyl Chloride
    - SVOCs: Bis(2-Chloroethyl)ether, bis(2-Chloroisopropyl)ether, 1,4-Dichlorobenzene, 3,3'-Dichlorobenzidine, 4,6-Dinitro-2-methylphenol, Hexachlorobenzene, Hexachlorobutadiene, Nitrobenzene, N-Nitroso-di-n-propylamine, Pentachlorophenol, 1,2,4-Trichlorobenzene, and 2,4,6-Trichlorophenol

RLs for the following chemicals in surface water, for the areas shown, exceeded the applicable screening levels 100% of the time because the QAPP did not identify the need for lower RLs when initially written. This is a limitation based on the original QAPP requirements rather than a method limitation.

Chemical	Neponset River East	Neponset River West	Former Mill Tailrace
antimony	x	x	x
thallium	x	x	x
vanadium	x	x	
benzo(a)pyrene	x		
dibenzofuran	x	x	x
3-nitroaniline	x	x	x
methylene chloride		x	x
dibenz(ah)anthracene		x	
x = RL exceeds STV 100% of the time			

The elevated RLs discussed above introduce a source of uncertainty in the risk evaluation. Because STVs for the surface water dermal pathways are very conservative, the RLs exceeding STVs likely contribute very little to the overall uncertainty in the evaluation of risk for this pathway.

Fish (Appendix C, Table 2.11)

RLs were less than STVs for nearly all COPCs in fish samples, with just four cases where RLs exceeded STVs: 4-nitroaniline (Lewis Pond and the Neponset River where RL > STV by a factor of 3.2), dibenzo(a,h)anthracene (Lewis Pond where RL > STV by a factor of 4.6), and 2,4-dimethylphenol (Lewis Pond where RL > STV by a factor of 1.5). These few cases where RLs exceed STVs are not likely to influence risk estimates for fish consumption.

6.1.2.2 Data Qualification and Bias

Although overall completeness goals (90%) were met or exceeded for all media, as summarized in Appendix B, individual chemicals in some samples did not achieve the criteria specified in the QAPP for one or more quality control (QC) indicators of precision and accuracy (this is not unusual considering the strict protocols used, and the number of analytical complexities caused by Site conditions). In such cases data were qualified as J, UJ, EB, JEB, TB, JTB, B, BJ, or R. Data qualifier definitions are summarized in the Data Usability Report for the Site (SHA, 2000a).

All qualified data were determined usable for the risk assessment except for results qualified as "R." Rejected data reduce the size of the database used in the assessment, and therefore increases the uncertainty regarding representativeness. However, as discussed in the Phase 1A and Phase 1B Data Usability Reports, completeness goals on a matrix by matrix basis exceeded the Project Quality Objectives for completeness (e.g., 90% complete data set). In many cases, no data were rejected (e.g., 100% completeness) for a given matrix.

Potential low bias in the qualified data could result in an underestimate of the chemical concentration. The following are examples of low bias comments from the BHHRA database for groundwater, sediment, and surface water qualified as "J" or "UJ":

- Low bias from serial dilutions
- Possible low bias from negative instrument baseline drift
- Low surrogate recoveries
- Low matrix spikes
- Low bias from matrix interference

Potential high bias in the database could result in an overestimate of the medium concentration. The following are examples of high bias comments from the BHHRA database for groundwater, sediment, and surface water qualified as "J" or "UJ":

- High bias from serial dilutions

- High bias from instrument QC
- High surrogate recoveries
- High matrix spikes

Some of the data were qualified as B, JB, EB, JEB, TB, or JTB. These qualifiers indicate that the chemical was also detected in a blank (B and JB), equipment blank (EB and JEB), or trip blank (TB and JTB). In general, this qualifier suggests the measured concentration is biased high.

The qualified data determined usable in this assessment contribute to uncertainty in the risk estimates. However, review of data used to calculate EPCs for the dominant chemicals in the risk estimates suggests that data for most chemicals are not generally biased either high or low at most exposure areas. Cases with identifiable bias are:

- Arsenic in On-Site groundwater: out of 10 samples, 2 are biased low and 1 has indeterminate bias;
- Naphthalene in soil used to model indoor air at Off-Site Residential Building 2: out of 9 samples, 1 is biased low and 4 have indeterminate bias; and
- Naphthalene in soil used to model future indoor air at West of South Street On-Facility: out of 48 samples, 18 are biased low and 4 have indeterminate bias.

Therefore cancer risk might be biased low at On-Site groundwater and non-cancer hazard may be biased low at Off-Site Residential Building 2 and West of South Street On-Facility.

6.1.3 Selection of Chemicals of Potential Concern (COPCs)

Maximum chemical concentrations from each medium in each area of the Site were screened against criteria derived using conservative exposure assumptions and toxicity information (USEPA Region 9 PRGs for soil and groundwater, MCLs, MADEP GW-1 standards, USEPA Region III PRGs for fish tissue, and USEPA indoor air screening values; applying 1/10 the value for noncarcinogenic compounds). Therefore, it is unlikely that this risk-based screening eliminated chemicals that would be of potential concern, and is therefore not a significant source of uncertainty in this assessment.

Xylenes

Two xylene isomers (m,p-xylene and o-xylene) were analyzed in soil, groundwater, sediment and surface water samples. To select COPCs, each xylene isomer was screened against the STV and ARAR for total xylenes or screened against isomer-specific STVs (air pathways only). If the maximum concentrations of these two isomers are summed before comparing to the STV for total xylenes, there would be a slight change in the groundwater COPC list for construction worker dermal exposure West of South Street On-Facility. m,p-Xylene is currently a COPC in that area, but if the maximum detected concentrations of m,p- and o-xylene were summed, both isomers would be COPCs. Therefore, the xylene EPC would be the sum of the isomers, which would be higher than the EPC we are currently using (i.e. for m,p-xylene only). However, the groundwater dermal HI for the sum of the maximum concentrations of both isomers is only

0.0005. Therefore, summing the xylene isomers would not change the groundwater dermal risk estimate.

6.2 Uncertainties in the Exposure Assessment

The exposure assessment is subject to uncertainties associated with development of exposure scenarios, selection of exposure pathways, calculation of exposure point concentrations, selection of exposure parameters, and average daily dose calculations.

6.2.1 Selection of Exposure Pathways

As previously discussed the Site is not underlain by a viable aquifer. Further, properties in this area of Walpole are serviced by public drinking water. Therefore, future exposure of residents to ingestion, dermal contact, or inhalation of volatiles from tap water during household use is highly unlikely. Therefore, this pathway is not expected to occur in the present or future. Risk estimates were calculated for groundwater as a hypothetical future water supply, based on the request of USEPA.

The Upper Former Mill Tailrace does not support a permanent resident fish population; therefore, fish ingestion is not a complete pathway in this area. However, at the request of USEPA, adult exposures to surface water and sediment within the tailrace area are calculated and summed with the adolescent (wader) risk from exposure to surface water and sediment in the tailrace, since although people may not eat fish from the tailrace, fishing and therefore exposure to sediment and surface water for an adult may occur. Addition of the adult cancer risk estimate (5×10^{-6}) and adolescent cancer risk estimate (3×10^{-6}) results in a total cancer risk of 8×10^{-6}, with non-cancer hazard indices of less than 1 for both the adult and the adolescent. Therefore, adding these exposures would not result in exceedance of USEPA's risk management criteria.

6.2.2 Calculation of Exposure Point Concentrations

There are uncertainties associated with estimating concentrations of chemicals that people may be exposed to from available analytical data, particularly when exposure concentrations in one medium (e.g. indoor air) are modeled from data in another medium (e.g. soil).

6.2.2.1 Reporting limits

There is uncertainty associated with the treatment of non-detected compounds in EPC calculations. It is possible that results reported as "below reporting limit" may actually have been detects. The assessment uses one-half the sample reporting limit in calculating EPCs to address this uncertainty, which may overestimate or underestimate risk associated with these samples. However, given the high degree of data quality identified in the data set, and the large data set collected, this uncertainty is considered low. In some cases, because ½ the reporting limit is used in the EPC calculation, the arithmetic mean or the 95% UCL concentration can be higher than the maximum. In these cases the maximum concentration is used as the EPC and is likely an overestimate of the exposure point concentration.

6.2.2.2 Modeling

Exposure models were applied to estimate exposure point concentrations from several pathways evaluated in this assessment: plant tissue modeled from soil (Appendix D); and indoor air and trench vapor modeled from soil and groundwater (Appendix E). Given the inherent uncertainties in these models, the modeled concentrations are typically biased high and could overestimate risk for these exposure pathways. Non-cancer hazard and cancer risk estimates for these modeled exposure pathways should be viewed as conservative screening estimates only. Use of soil gas data for modeling indoor air concentrations reduces some of the uncertainties inherent in these models.

Indoor Air

There is also uncertainty associated with the assumption that volatiles in groundwater and soil as far as 100 feet away from a building could impact the indoor air in that building. The basis of the 100-ft distance, in accordance with the Draft USEPA Vapor Intrusion Guidance (USEPA, 2002b), is from empirical data indicating that groundwater that is 100 feet from a building does not impact the indoor air in that building. In this context, it is worth noting that, under the MADEP MCP, exposure to vapor intrusion from contaminated groundwater is only assumed if groundwater is within 15 feet of the ground surface and contamination is identified within 30 feet horizontally of an occupied building.

Volatile chemicals in soil, soil gas, and groundwater could contribute to indoor air contamination; therefore these media were screened using USEPA's screening criteria (USEPA, 2002b) for the vapor intrusion pathway. For all current indoor inhalation scenarios, there are volatile COPCs in soil and soil gas but not groundwater. For future scenarios with COPCs in both groundwater and soil, indoor air concentrations were modeled from both media and the higher concentration was used as the indoor air EPC. At the request of USEPA, we considered how risks would change if we added the soil and groundwater modeled air concentrations, rather than using the highest of the two media. The indoor air EPCs either did not increase or increased only slightly because the indoor air EPCs predicted from groundwater were much lower than indoor air EPCs predicted from soil data.

There is uncertainty associated with the Johnson & Ettinger (J&E) modeling, particularly with the soil model. This uncertainty is due in part to the use of default parameters for the soil model that are based on highly variable empirical data from the literature instead of site-specific data. USEPA selected default values from the conservative end of the empirical data range, meaning those values that result in relatively high predicted indoor air concentrations. Therefore, use of USEPA default values likely resulted in conservative estimates of indoor air concentrations. In this assessment, site-specific total organic carbon data and building dimensions were used where appropriate, and the finite source model was used where depth to groundwater data were sufficient to define the lower extent of soil contamination (See Appendix E). All other parameters in the model are defaults, and therefore risks estimated from the J&E soil model are likely overestimated.

Use of soil gas data reduces but does not eliminate the uncertainty associated with the Johnson & Ettinger modeling. For example, using all new soil gas data collected in the East of South Street On-Facility "SB-09 area," we quantified an RME total cancer risk to a future site worker that is above USEPA's cancer risk range (i.e. total cancer risk > 10^{-4}). This risk is primarily due to inhalation of TCE in indoor air because the indoor air EPC is modeled from the maximum TCE concentration at sample location SV-01 given that the UCL was greater than the maximum detected concentration. (In addition, TCE cancer risk was estimated using the upper end of the CSF/UR range.) Thus, there is uncertainty about the geographic area that is associated with this level of cancer risk. If this risk calculation is repeated using all soil gas data except SV-01, the cancer risk associated with indoor air exposure decreases to 2E-06, and the total cancer risk for the site worker in the "SB-09 area" is equal to 1E-04, primarily from exposure to carcinogenic PAHs in soil.

Trench Vapor

An exposure model was applied to estimate risk to a construction worker from trench vapor. The exposure model is a modified version of the Johnson & Ettinger indoor air model as described in Appendix E. Given the inherent uncertainties in this model, the modeled concentrations are likely biased high and could overestimate cancer risk and non-cancer hazard for this pathway.

Garden Produce

The relevance of plant tissue uptake factors to conditions at the Site is not known; therefore contributing to uncertainty in the plant tissue concentrations. However, these values are intended to permit screening of this exposure pathway for potential human health concerns.

Lead concentrations in produce were modeled from arithmetic mean soil lead EPCs, using a lead plant uptake factor of 0.15 Kg-soil dry wt/Kg-plant dry wt (MADEP, 2006). However, even from very low concentrations of lead in soil (as low as 73.1 mg/kg), predicted blood lead concentrations from the IEUBK model were elevated. For example, the lowest soil lead EPC (73.1 mg/kg) results in a plant tissue concentration of 11 mg/kg, which results in a 35% probability of blood lead exceeding 10 μg/dL, using the IEUBK model and calculating lead intake from plant tissue from the equation in Table 4.3.RME in Appendix G. Since 73.1 mg/kg is considered a fairly low lead concentration in soil (i.e., USEPA's typical target for lead in soil for residential exposure is 400 mg/kg), and there is uncertainty in the lead uptake factor applied, the garden produce lead concentrations are likely very overestimated. Therefore, we did not report lead hazards from the garden produce pathway.

6.2.2.3 Tap Water

There is uncertainty associated with the EPCs used to estimate hypothetical future tap water risks as applied to the entire exposure area. In accordance with USEPA guidance, RME EPCs for tap water are the maximum concentrations (averaged over time for each well) of each COPC in each

exposure area. Therefore, although there may be exceedances of USEPA's cancer risk range or non-cancer hazard index limit in a given exposure area, elevated groundwater concentrations might only be in one or two small locations in that exposure area, and might have been detected infrequently within that well. Therefore applying this risk estimate to the entire area may be an overestimate.

Although the majority of the Site's groundwater is classified as GW-3, a small portion of the Site is classified as GW-1. As discussed in Section 1.4.1, groundwater transmissivity data collected during the remedial investigation indicate that groundwater in this area should be classified as non-aquifer. However, based on EPA's interest in an evaluation of risk from exposure to tap water by hypothetical future receptors, in the November 30, 2005 monthly progress meeting, EPA, MADEP, and SHA agreed that the risk assessment would include an evaluation of potential future risk from tap water from this portion of the Site and for all on-Site groundwater.

In addition, it is acknowledged that EPCs in groundwater are likely declining with time; however the assessment assumes that concentrations remain constant for future receptors over a 30-year exposure period. Therefore, risks would likely be lower if the assessment accounted for decreasing chemical concentrations over time. Groundwater samples were collected in 2006 from 44 hypothetical tap water exposure point locations, but these groundwater data are not used in this assessment. However, we checked to see if inclusion of these data would change risk conclusions presented in Section 5. The remainder of this section summarizes our findings.

Off-Site Groundwater East of Neponset River (SH-27 and SH-28)

The total cancer risk for the RME scenario from Off-Site groundwater east of Neponset River (SH-27) is still within the USEPA cancer risk range. The maximum target organ-specific HI is still 2 for the RME scenario from Off-Site groundwater east of Neponset River (SH-27), due to potential developmental, hepatic, immunological, and renal hazard from ingestion of TCE. The concentration of manganese declined between 2003 and 2006 sampling rounds; therefore, the non-cancer HI for manganese from potential neurological hazard would decrease from 2 to 1. This lower HI would round to an HI of 2 if added to COPCs with a target organ of "whole body."

The total cancer risk for the RME scenario from Off-Site groundwater east of Neponset River (SH-28) is still within the USEPA cancer risk range. The concentration of manganese declined between 2003 and 2006 sampling rounds; therefore, the maximum target organ-specific HI due to potential neurological hazard from ingestion of manganese decreases from 3 to 2 for the RME scenario.

Off-Facility Groundwater Lot 208 / Lot 209

The total cancer risk and maximum target organ-specific HIs from Off-facility groundwater Lot 208 / Lot 209 do not change after incorporating the 2006 data.

Off-Site groundwater west of Neponset River

Arsenic and manganese were the only COPCs at this exposure point. If the 2006 groundwater data were included, the arsenic exposure point concentration (EPC) would increase slightly from 0.63 µg/L to 0.69 µg/L, and the manganese EPC would decrease slightly from 130 µg/L to 88 µg/L. Also, two new COPCs would be added (chloroform and bis(2-ethylhexyl)phthalate – the highest concentrations in 2006 in this area were 0.33 and 5.4 µg/L, respectively), but they were detected at concentrations only slightly above USEPA Region 9 Tap Water Preliminary Remediation Goals (0.17 µg/L for chloroform, and 4.8 µg/L for bis[2-ethylhexyl]phthalate) and below USEPA Maximum Contaminant Levels (80 µg/L for chloroform, and 6 µg/L for bis[2-ethylhexyl]phthalate). These EPC changes and COPC additions would not change risk conclusions for this exposure point or "actionable risks" in the FS.

On-Site Groundwater

The maximum concentrations of the tap water COPCs that are major contributors to cancer risk or non-cancer hazard (i.e. those COPCs that contribute a cancer risk of more than 1E-4 or a non-cancer hazard index of more than 1) were detected in the pre-2006 groundwater data set, not the 2006 groundwater data set. Therefore, we do not expect a change in the risk conclusions for On-Site groundwater if we include the 2006 groundwater data.

6.2.2.4 Floodplain Soil

The floodplain soil RME EPCs for Lots 282, 283, 210, 230, 257, 342, 350, and 360 are estimated from only one to three sample locations; in these areas samples were collected from shallow floodplain soils, where contamination is more likely to be present. Therefore, EPCs in these areas are uncertain and may be overestimated. More soil data in these areas might result in lower EPCs. For example, if we use composite soil lead data from the Baseline Ecological Risk Assessment (BERA) earthworm study (0-6 inches), the soil lead EPC is less than the risk-based lead concentration presented in Table 42 (400 mg/kg) for the current resident in Lot 257 (590 mg/kg without earthworm soil data, and 218 mg/kg including earthworm soil data). The soil lead EPC in Lot 257 also falls below the risk-based lead concentration presented in Table 43 (312 mg/kg) for the future construction worker (395 mg/kg without earthworm soil data, and 183 mg/kg including earthworm soil data). Therefore, for Lot 257, more soil data might eliminate lead as a contaminant of concern.

6.2.2.5 Surface Water

Four surface water samples were collected as part of Phase 1B-5 sampling in 2006. These samples are not included in the risk estimates presented in Section 5, but we checked to see if risk conclusions would change if we had included them. Maximum detected concentrations of all chemicals are below screening toxicity values, with the exception of arsenic at the Neponset River East of South Street and Neponset River West of South Street exposure points. Even including this new COPC and revised EPCs that include the 2006 data, hazard and risk from surface water exposure to a wader or fisher are low in comparison to the other exposure

pathways, with total HIs ranging from 0.0006 to 0.04 and total cancer risks ranging from 2E-09 to 8E-08.

6.2.2.6 Selection of East of South Street Exposure Points for the Vapor Intrusion Pathway

To calculate cancer risk and non-cancer hazard in the East of South Street area not represented by soil gas sampling (i.e. the "non-SB-09 area"), we used soil samples collected in the East of South Street area and samples within 100 feet of the East of South Street On-Facility area. We did not include soil samples at SB-09, SB-10, SB-19, or SB-20 because concentrations in these locations are likely to be better represented by the soil gas data. We conducted a sensitivity analysis to assess the implications of excluding soil sampling locations SB-10, SB-19, and SB-20 from the "non-SB-09 area." If all East of South Street soil samples except those at SB-09 were used to represent the "non SB-09 area," the non-cancer hazards from the soil to air pathways (soil to indoor air and soil to trench vapor) for the resident and construction worker are still greater than one. The future resident cancer risk is still greater than 1E-06 and construction worker cancer risk is equal to, not greater than, 1E-06. The future site worker HI is still less than 1 and the cancer risk is equal to 1E-06. Therefore, this assumption results in slightly different risk estimates, but it does not influence risk conclusions.

Scenario	Maximum Target Organ-Specific Hazard Index		Cancer Risk	
	All soil except SB-09	All soil except SB-09, SB-10, SB-19 & SB-20	All soil except SB-09	All soil except SB-09, SB-10, SB-19 & SB-20
Future Resident	2	2	3E-06	2E-06
Future Construction Worker	2	2	1E-06	2E-06
Future Site Worker	0.6	0.6	1E-06	6E-07

6.2.2.7 Construction Worker Dermal Exposure to Groundwater

In Section 5, construction worker cancer risk estimates range from 4E-10 to 6E-08 and non-cancer HI estimates range from 0.005 to 0.1 across four exposure points from dermal exposure to groundwater. As discussed earlier in Section 6.2.2.3, groundwater samples were collected in 2006, but these groundwater data are not used in this assessment to assess a future construction worker's dermal exposure to groundwater. If we included them, risk conclusions presented in Section 5 would not likely change because groundwater concentrations did not change enough for the low cancer risk and non-cancer hazard estimates to exceed an HI of 1 or a cancer risk of 1E-06.

6.2.3 Selection of Exposure Parameters

There is uncertainty in each exposure factor selected for use in any risk assessment. Some of the exposure assumptions used in the BHHRA were based on professional judgment with input from USEPA. For the most part, exposure factors were selected using USEPA's Exposure Factors Handbooks (USEPA, 1997a; USEPA, 1997b; USEPA, 1997c), which provides recommendations for various human exposure parameters based on statistical surveys from across the county.

Since these surveys are typically quite large and variable within the population, there is uncertainty associated with the values recommended. To avoid underestimation of exposure, as recommended by USEPA guidance, scenarios were evaluated using a Reasonable Maximum Exposure (RME). RME is defined as the highest exposure reasonably expected to occur at a site (USEPA, 1989), and is typically represented by applying 90th to 95th percentile exposure assumptions. The intent of the RME is to provide a conservative estimate of exposure, well above the average case, that is still within the range of possible exposures. RME levels are estimated by setting ingestion and contact rates, exposure frequency, and exposure duration at the high end of possible values, while setting the remaining variables (body weight and body surface area) at central tendency (CT) values. CT exposure is defined as the average exposure and is achieved by setting all exposure parameters at the central tendency values. The CT exposure assumptions are used to calculate a central tendency or average risk for the Site for scenarios with RME exceedances of USEPA's cancer risk range or hazard index benchmark.

One example of an exposure parameter that is uncertain is the child drinking water ingestion rate. Current USEPA guidance is to apply an ingestion rate of 1.5 L/day (90th percentile), which is what was done in this assessment. However, USEPA's drinking water program has applied an ingestion rate of 1 L/day (less than 90th but greater than 50th percentile) to be consistent with the adult ingestion rate of 2 L/day from the same range of percentiles. Therefore, use of the 1.5 L/day for RME calculations in this assessment likely overestimates risk for the child from ingestion of tap water. However, use of 1 L/day for the child tap water ingestion rate would not change the risk assessment conclusions for the tap water exposure points in this BHHRA.

There is uncertainty in the garden produce ingestion rate pathway. The NFCS data used to estimate produce ingestion rates represent the weight of food brought into the household that has been used in some manner (USEPA, 1997b). Not all of this food is consumed. Some is lost during preparation and cooking. These losses were not quantified in this assessment, so the ingestion rates may overestimate exposure and risk from ingestion of homegrown produce.

6.2.3.1 Dermal Exposure Pathway

For some parameters for which limited data are available, such as dermal exposure, there is even more uncertainty. Scientific understanding and regulatory guidance continue to evolve regarding dermal adherence and dermal absorption for both soil and water exposures. This assessment employs reasonable RME estimates for these values based on the most recent literature.

Sediment

Studies of dermal exposure to sediments are limited; thus the USEPA dermal guidance focuses on soil (USEPA, 2004g). The absorption of COPCs from sediment is expected to be different than from soil due to differences in physical and chemical properties of the media matrix. In the absence of sediment-specific values, soil values were applied to sediment in the BHHRA, introducing uncertainty with an unknown bias.

The ABS_d for most SVOCs is not well known and is assumed to be 10%. The direction of bias associated with this source of uncertainty is unknown and likely to vary across SVOCs.

Risk might be overestimated with the use of sediment COPC concentration data based on dry weight, with sediment dermal adherence rates based on wet weight. The greater the moisture content of the sediment, the greater the overestimation of the dose to the receptor (USEPA, 2004g).

Water

There is uncertainty associated with evaluation of exposure from the dermal water pathway. Current USEPA guidance (USEPA, 2004g) applies an exposure model to estimate DA_{event} (absorbed dose per event) for the water dermal pathway. Validation of this model is currently underway within the agency. A source of uncertainty in the model is the use of predicted permeability coefficients (K_p), derived via correlation to a database of measured K_p for a small set of compounds not typically evaluated in Superfund assessments. As discussed in the guidance, predicting K_p from this correlation is uncertain for highly lipophilic and halogenated chemicals with log K_{ow} and molecular weights that are very high or low compared to chemicals in the comparative database. Contaminants for which there are sufficient data to predict dermal absorption with acceptable confidence are said to be within the model's effective predictive domain (EPD). There is uncertainty associated with predicting water dermal exposure for chemicals outside the EPD. USEPA guidance (USEPA, 2004g) recommends evaluating risk from these chemicals in the uncertainty section.

In this BHHRA, several PAHs are outside the EPD. Inclusion of these chemicals in the risk calculations does not change any of the baseline risk conclusions. For the following scenarios, inclusion of PAHs does not result in an exceedance of USEPA's risk range, but the surface water or groundwater dermal risk estimates increase due to exposure to PAHs: current wader (7E-08 to 4E-05) and fisher (uncertainty scenario; 2E-07 to 1E-04) at the Former Mill Tailrace; future resident at Off-Site groundwater East of Neponset River (SH-27) (5E-06 to 4E-05); and future construction worker at East of South Street On-Facility (3E-09 to 5E-06), West of South Street On-Facility (6E-08 to 3E-06), and West of South St.-Off Facility/Off Site groundwater (2E-08 to 7E-07). Although PAHs outside the EPD are present at Off-facility groundwater Lot 208/209 and On-Site Groundwater, inclusion of these chemicals for the dermal pathway does not change the risk estimate for exposure to tap water at these areas.

6.3 Uncertainties in the Dose-Response Assessment

Uncertainty in dose-response assessment arises from assumptions that must be made to derive cancer and non-cancer toxicity values; the use of surrogate toxicity values when a COPC does not have a toxicity value; and adjustment of oral toxicity values to evaluate risk from the dermal exposure route.

6.3.1 General Uncertainty Associated with Toxicity Values

A source of uncertainty in all risk assessments is the uncertainty associated with derivation of the toxicity values, the non-cancer reference dose (RfD) and the cancer slope factor (CSF). Most toxicity values are developed using data from animal studies where administered doses are high relative to environmental dose levels in order to observe adverse responses. These results are then extrapolated from high dose to low dose and from test animal to sensitive human using assumptions based on empirical data and policy decisions to provide conservative, health protective, toxicity values.

USEPA considers that an RfD is an estimate with uncertainty of up to an order of magnitude (Barnes, 1988; USEPA, 1994c). That is, the actual RfD value could be a factor of 3 higher or lower than the point estimate RfD published on the IRIS database. The cancer slope factor is considered an upper bound on the risk estimate, where the actual risk could be as low as zero (USEPA, 1986b). For all toxicity values the actual level of uncertainty, assumed to err on the side of conservatism, is unknown and likely to vary across COPCs depending on the mechanism of action and quality of the database.

6.3.2 Uncertainty Associated with Specific Toxicity Values for COPCs

As described in Section 4.4, some COPCs do not have corresponding toxicity values. In an effort to limit the likelihood of underestimating risk and hazard associated with potential exposure to these COPCs, surrogate toxicity values were assigned (RAGS Tables 5 and 6 in Appendix J): the pyrene RfD was used as a surrogate for non-cancer evaluation of carcinogenic PAHs and acenaphthylene, the CSF for benzo(a)pyrene is used as a surrogate for carcinogenic PAHs applying the relative potency factors as discussed in Section 4.6, and naphthalene RfC was used as a surrogate for non-cancer evaluation of 2-methylnaphthalene. The use of surrogate toxicity values is intended to prevent underestimation of risk, but adds uncertainty to the risk estimate with an unknown bias.

For some COPCs, provisional toxicity values have been derived by USEPA (See RAGS Tables 5 and 6 in Appendix J). The CSF for chloroform is a provisional STSC value and the RfC for chloroform is also an STSC value. These toxicity values may have greater uncertainty than toxicity values drawn from IRIS. The direction of bias contributed by use of provisional toxicity values is unknown. However, none of the dominant chemicals in the risk estimates resulted from application of provisional toxicity values. A Unit Risk value was available from IRIS for chloroform, but the IRIS file indicates that the "evaluation of cancer risk from chloroform inhalation was developed in 1987 and does not incorporate newer data or the 1996 or 1999 draft cancer assessment guidelines. EPA is currently working to revise the assessment for inhalation exposure."

6.3.2.1 PAHs

PAHs are present in environmental media as mixtures of chemicals, and are addressed individually as though each PAH is additive, through use of the RPF approach. This approach may under or overestimate risk associated with PAH mixtures because all chemicals within the

mixture may not have been identified and the interaction between individual components of the mixtures is unknown.

Potential increased susceptibility to BaP and other carcinogenic PAHs during early lifestages is evaluated in Section 6.4.6.

6.3.2.2 Trichloroethene and Benzene

Trichloroethene

Trichloroethene (TCE) cancer toxicity values are currently being re-evaluated by USEPA. The proposed oral slope factors range from 2 x 10^{-2} per mg/kg-day to 4 x 10^{-1} per mg/kg-day (USEPA, 2001b). These cancer slope factors are higher than USEPA's previously published slope factor of 1.1x10^{-2} per mg/kg-day and higher than the cancer slope factor of 1.3x10^{-2} per mg/kg-day developed by California EPA (CalEPA, 1999). The range of oral cancer slope factors for TCE, proposed in the USEPA external review draft, has not been accepted by peer-reviewers and cancer potency values and reference doses for TCE are not available at this time.

The oral cancer slope factor can be converted to an inhalation unit risk using standard assumptions of a 20 m^3/day breathing rate and a 70 kg body weight. Route-to-route extrapolation of an oral to inhalation exposure does not consider chemical-specific pharmacokinetics of TCE and contributes uncertainty to risk assessment. However, the authors of the draft TCE health risk assessment (USEPA, 2001b) elected not to develop an inhalation-specific unit risk. Additional evaluation of the inhalation unit risk for TCE is required before an estimate with greater confidence can be derived.

Alternate inhalation unit risks have been developed for TCE. In 1990 CalEPA developed an inhalation unit risk of 2x10^{-6} per $\mu g/m^3$ based on four inhalation studies taking pharmacokinetics into account in the extrapolation process, and this inhalation unit risk is currently used by CalEPA (CalEPA, 2002).

Benzene

There is uncertainty regarding the cancer toxicity values for benzene. The IRIS file derives a cancer slope factor range [1.5E-02 $(mg/kg\text{-}d)^{-1}$ to 5.5E-02 $(mg/kg\text{-}d)^{-1}$] and inhalation unit risk range [2.2E-06 $(ug/m^3)^{-1}$ to 7.8E-06 $(ug/m^3)^{-1}$] for benzene (USEPA, 2005d).

Using the Range of TCE and Benzene Cancer Slope Factors and Unit Risks

USEPA defined a range of estimates for benzene and TCE cancer potency without specifying which values within the range are more likely than others. Therefore, the BHHRA applies both ends of the range; however, in order to reduce the number of RAGS Tables 7, 9, and 10, the baseline risk estimates shown in RAGS Tables 7, 9, and 10 incorporate only the upper range of TCE and benzene cancer toxicity values. The lower ends of the TCE CSF range (NCEA 2 x 10^{-2} per mg/kg-day) and inhalation unit risk range (CalEPA 2 x 10^{-6} per $\mu g/m^3$) were used in addition to the lower ends of the benzene CSF [1.5E-02 $(mg/kg\text{-}d)^{-1}$] and inhalation unit risk range [2.2E-

06 $(ug/m^3)^{-1}$]. The affect that the lower end of the range, for both chemicals, has on the total risk estimate is shown in risk summary Tables 28 –40 (note that when a range is not presented, it is because both ends of the range are the same value, or TCE and benzene were not COPCs).

In all places where there is a range for total risk estimates across all pathways, the entire range falls either below, within, or above USEPA's cancer risk range, except for one area (inhalation of indoor air for the future resident from benzene in the West of South Off-Facility Off-Site Groundwater area [Lot 208 and 209]). In other words, applying the lower end of the range (for TCE and benzene) does not change the overall results of the assessment, for all but the West of South Off-Facility Off-Site Groundwater area [Lot 208 and 209].

Table 45 summarizes the range of risk estimates, per chemical, for individual exposure pathways where risks from the upper end of the TCE or benzene range exceed 1E-06. As shown, use of the lower end of the benzene inhalation unit risk range results in a benzene indoor air risk from groundwater of less than 1E-06 for the future resident West of South Street Off-Facility/Off-Site Groundwater (Lot 208 and 209), and for the future site worker West of South Street On-Facility. Note that since benzene is the only COPC for the groundwater to indoor air pathway for West of South Street Off-Facility/Off-Site Groundwater (Lot 208 and 209), applying the lower end of the benzene inhalation unit risk range for this exposure area would reduce the risk for this entire pathway to less than 1E-06. Applying the lower end of the trichloroethene cancer slope factor range results in a trichloroethene risk for the future resident East of South Street On-Facility of less than 1E-06 in the "non-SB-09 area" and equal to 1E-05 in the "SB-09 area." The future site worker risk at East of South Street On-Facility "SB-09 area" also drops from 2E-04 to 3E-06. In addition, applying the lower end of the trichloroethene cancer slope factor and inhalation unit risk range for tap water exposures On-Site and Off-Site East of Neponset River (SH-28), results in a trichloroethene risk of less than 1E-06 for the future resident for dermal, ingestion, and inhalation combined.

6.3.2.3 Arsenic

There is uncertainty in the non-cancer and cancer toxicity values for arsenic. There is some evidence for a non-linear dose response for arsenic carcinogenicity, suggesting that there may be a threshold below which arsenic is not carcinogenic. In addition, there is not a consensus within USEPA regarding the oral RfD for arsenic. The IRIS file for arsenic (USEPA, 2005c) indicates that there are strong scientific arguments for various values within a factor of 2 or 3 of the currently recommended RfD. Therefore, non-cancer hazard indices for arsenic in the BHHRA could be 2- to 3-fold higher or lower.

In most exposure areas where arsenic is a risk driver, the hazard index would still be greater than 1, even if it were decreased 3-fold. However, there is a hazard index of 4 for a future resident exposure to arsenic in soil (HI=2) and in plant tissue (HI=2) at Old Railroad and Former Lower Mill Pond Area; therefore cardiovascular and integumental hazard from arsenic could be below the USEPA hazard limit.

Arsenic in Fish Tissue

Inorganic arsenic is highly toxic, carcinogenic and fairly mobile in environmental media. In this assessment, we have assumed that all of the arsenic in fish is in the more toxic inorganic form. However, numerous studies have shown that the majority of arsenic in fish is likely to be in the organic form, arsenobetaine (an arsenic sugar), which is not very toxic (Canon, 1983; Jongen, 1985). Reviews of a number of published studies on arsenic speciation in fish (Edmonds, 1993; Neff, 1997; Greene and Crecelius, 2006) suggest that inorganic arsenic represents between 0.5 and 10% of the total arsenic in marine invertebrates and fish. Therefore, cancer risk from arsenic in fish tissue from Lewis Pond (1E-05) and Neponset River (6E-06) may be overestimated. In fact, if the risks were decreased 10-fold, arsenic risks from fish tissue would be less than or equal to 1E-06.

6.3.3 Uncertainty associated with evaluation of toxicity by the dermal pathway

Toxicity from dermal exposure to chemicals is not typically studied, although this information is needed to evaluate risk associated with dermal exposure to soil, sediment, surface water, and groundwater. To account for systemic toxicity from dermal exposure, oral toxicity values based on administered dose are adjusted to absorbed dose based on gastrointestinal (GI) absorption. This approach does not take into account other differences in how a chemical is processed (e.g., metabolism to a form that is more or less available to the blood or more or less potent) that may occur between the GI tract and the skin. USEPA dermal guidance accounts in part for the uncertainty due to estimates of GI absorption by recommending GI absorption values for organic chemicals in which less than 50% of the chemical is absorbed. All others are assumed to be absorbed 100% in the GI tract. This approach is more likely to overestimate than underestimate risk associated with dermal exposure.

6.4 Uncertainties in the Risk Characterization

Sources of uncertainty throughout the risk assessment affect risks and non-cancer hazards estimated in the Risk Characterization. There are also uncertainties associated with summing risks and hazard indices across chemicals and pathways, and interpretation of risk estimates in the context of background concentrations, and groundwater MCL exceedances for the tap water pathways.

Moreover, this assessment uses RME intake calculations to provide an upper bound risk at the Site. Probabilistic analysis could be performed on important exposure pathways to provide a more complete understanding of uncertainty and variability in the dose and risk estimates. If the risk assessment could capture this uncertainty and variability, it is likely that the RME risk estimates would be less than what is presented in this assessment.

6.4.1 Cumulative Cancer Risks and Non-Cancer Hazard Indices

Uncertainty is introduced in deciding how to sum cancer risks and non-cancer hazards across COPCs and exposure pathways. In this assessment, cancer risks are added across all pathways and all chemicals to represent reasonable cumulative exposures now and in the future. As an

initial conservative non-cancer evaluation, non-cancer hazards are summed across all pathways and all chemicals. There is uncertainty in this summing since there is little information available to judge whether the complex mixtures present at the Site might act additively, synergistically, or antagonistically. Cumulative non-cancer HIs for each receptor are also separated according to the target organ upon which toxic effects are exerted, after taking into account the mechanisms of applicable adverse effects. However, there is uncertainty associated with this division for a number of reasons. For example, COPCs may target multiple organs, and relationships between dose level and adverse effects can be complex and difficult to interpret.

There are five exposure scenarios/areas in this BHHRA where individual RME chemical HIs do not exceed unity, but the summed HIs exceed unity:

- For Neponset River East of South Street and West of South Street, the fisher HI is 1 for hepatic hazard from bis(2-ethylhexyl)phthalate in fish tissue and 2 when added to immunological hazard from mercury in fish tissue (HI = 0.4).

- For the current and future resident at Lot 360, the HI is 1 from integumental and cardiovascular effects from arsenic in soil and plant tissue, and 2 when added to the HI from chromium (target effect is "none observed") in soil and plant tissue (HI = 1).

- For the construction worker in the Old Railroad Former Lower Mill Pond area, the HI is 1 from respiratory effects from naphthalene in trench vapor, and 2 when combined with a HI of 0.7 from integumental and cardiovascular effects from arsenic in soil.

- For the East of South Street "non-SB-09 area," the future resident RME HI is 1 for respiratory hazard from naphthalene in soil and 2 when added to the respiratory hazard from methylnaphthalene in soil (HI=0.6).

- For the East of South Street "non-SB-09 area," the future construction worker RME HI is 1 for respiratory hazard from naphthalene in soil and 2 when added to the respiratory hazard from methylnaphthalene in soil (HI=0.7)

In the first three cases, because these COPCs target different organ systems, they are not expected to have additive effects.

6.4.2 Specific Uncertainties in the Tap Water Risk Estimates

Naphthalene and 2-methylnaphthalene contribute to non-cancer hazard via hypothetical shower vapor exposure to the future resident at Off-facility groundwater Lot 208 / Lot 209 and On-Site Groundwater. The dose for shower vapor exposure was estimated as 100% of the ingestion dose for all VOCs, naphthalene and 2-methylnaphthalene. However, naphthalene and 2-methylnaphthalene are much less volatile than VOCs; therefore the dose is likely to be lower. For example, the Henry's law constant for these chemicals is 30 to 40 times smaller than the Henry's law for TCE. Therefore, the inhalation dose is likely to be closer to 10% of ingestion dose rather than 100% for these chemicals. If 10% of the ingestion dose was used, there would be no hazard above USEPA's hazard benchmark of 1 for naphthalene and 2-methylnaphthalene

at Off-facility groundwater Lot 208 / Lot 209; however, hazard from these chemicals at On-Site Groundwater would still exceed 1.

Since future residential exposure to tap water is very unlikely, this pathway was evaluated separately from the other exposure pathways for a future resident (i.e., incidental ingestion and dermal contact with soil, and inhalation of indoor air). However, a hypothetical future resident might simultaneously be exposed to:

- Tap water from Off-facility Groundwater Lots 208 / 209, soil from Lot 208 or Vacant Lot 209, and indoor air from the West of South Street Off-Facility / Off-Site Groundwater Exposure area (Lot 208 and 209);
- Tap water from On-Site Groundwater and soil and indoor air from the West of South Street On-Facility area;
- Tap water from On-Site Groundwater and soil from the East of South Street On-Facility area.

In these cases, total cancer risk and non-cancer hazards are the same as for exposure to the tap water alone.

In addition, a future resident might simultaneously be exposed to:

- Tap water from Off-Site West of Neponset River, and soil and indoor air from Lot 283;
- Tap water from Off-Site East of Neponset River (SH-28), and soil from Lot 210.

In these cases, total cancer risks would still fall within USEPA's cancer risk range (i.e., cancer risk > $10^{-6} \leq 10^{-4}$), and HIs would still be less than 1.

6.4.2.1 MCL Exceedances for Tap Water COPCs

Table 44 compares tap water data to MCLs, Federal Health Advisories, and GW-1 standards. All of the major contributers to risk and hazard for the tap water pathway (shown in Table 41 and defined as those chemicals that contribute non-cancer hazard >1 and/or cancer risk > 10-4 for a given exposure medium) also exceed MCLs and/or other standards listed with two exceptions: naphthalene concentrations in Off-facility groundwater Lot 208/209 do not exceed MCLs or other standards, and TCE concentrations in Off-Site groundwater east of Neponset River (SH-27) do not exceed MCLs or other standards. At Off-facility groundwater Lot 208/209, exposure to naphthalene in hypothetical shower vapor is assumed to be equal to the ingestion dose. Because naphthalene is not very volatile, this estimate likely overestimates potential exposure to naphthalene in shower vapor (see Section 6.4.2).

6.4.3 Uncertainties in Evaluation of Risk from Asbestos

This BHHRA does not address human health risk from asbestos.

During the April 27, 2005 Monthly Progress Conference Call, it was agreed that MCA would proceed with completion of the BHHRA without evaluating risk from asbestos, with the caveat

that incremental asbestos risk could be added to the risk assessment at a later date subsequent to receipt of further guidance from USEPA. In the interim, a discussion of the issues related to risk assessment from asbestos-impacted soils/sediments is included as follows.

Evaluation of risk due to asbestos in soil is subject to a number of uncertainties. One of the biggest challenges is that a standard method does not exist to quantify asbestos fibers in soil. EPA has used methods such as Polarized Light Microscopy (PLM), which are suited to estimate the percent asbestos in bulk material such as floor tiles and insulation. The EPA Region I Method is a modified version of this qualitative method used to identify the type and percent asbestos in a soil matrix. However, applying asbestos data from this qualitative method to quantify asbestos risk introduces considerable uncertainty to the risk assessment. First, a simple assumption is often made that the visual estimate of the percent asbestos in soil is equal to the percent asbestos in dust released to air, the exposure medium of concern. The correlation between percent asbestos in soil and percent in dust is likely to vary considerably depending on the nature of the soil matrix and how asbestos fibers are associated with the soil matrix. Asbestos fibers can be attached to the soil matrix, be loose, be part of a piece of debris, or anything in between. Therefore, the actual proportion (relative to other dust components) of asbestos in dust may be higher or lower than what is in soil. Secondly, it is necessary to model or measure dust concentrations in air that people may be exposed to, to use in combination with the asbestos-dust concentrations. Finally, soil analysis by PLM typically reports asbestos as non-detect below 1 percent and, more recently, a detection limit of 0.25 percent has been attained; however, neither value is risk-based. Instead they are based on practical detection limits for asbestos.

Direct air measurements of asbestos are difficult to obtain. One approach available to quantify asbestos in air is the elutriator Method (Berman and Kolk, 2000), which is used to measure the amount of asbestos released to the air in respirable dust from representative samples of asbestos-contaminated soil. The method specifies soil sampling and analytical protocols for measuring asbestos dust concentrations, which can be used in combination with modeled dust concentrations for dust-generating activities, to quantify risk from inhalation of asbestos in air. However, the asbestos dust concentrations generated in the laboratory may not be representative of real life exposures. Another approach is to measure asbestos in air during typical soil-disturbing activities, such as digging, rototilling, biking, and lawn-mowing, referred to as simulation activity studies, to quantify risk from asbestos in soil. This type of measurement can be applied directly to risk calculations. However, there may be public concerns regarding risk to nearby residents during this type of sampling. Sampling tents have been used to control dust during sampling but this method may reduce the representativeness of asbestos concentrations measured in air.

In addition to uncertainties in estimating exposure concentrations, there are also uncertainties regarding toxicity of asbestos. Asbestos is a generic name given to a group of six different types of fibrous minerals that occur as bundles of fibers naturally in the environment, which fall into two mineral groups, serpentine and amphibole. The most common asbestos type is chrysotile, from the serpentine mineral. The other five asbestos-related minerals (amosite, crocidolite, tremolite, anthophyllite, and actinolite) are amphiboles. Chrysotile asbestos, consists of curly fibers, while amphiboles all have rod-like fibers. There is uncertainty concerning differences in

the extent of disease caused by different types of asbestos fibers. The amphibole fiber type is believed to be much more toxic than the chrysotile fiber type. Specifically, chrysotile is one tenth as potent as amphiboles toward the induction of lung cancer and one hundredth as potent toward the induction of mesothelioma (USEPA, 2003a). These differences are likely due to the varying physical and chemical properties of the different fibers. The bulk of available data indicate that fiber size is the most important determinant of carcinogenic potential. EPA is currently revising asbestos toxicological values for risk assessment. Review is focusing on the variation in toxicology of the different types of asbestos; however, the development of new toxicity values is at least two years away.

6.4.4 Fugitive Dust Risk for Resident, Trespasser and Site Worker Scenarios

Of all scenarios, the construction worker scenario involves the greatest amount of fugitive dust exposure given activities related to soil excavation. The risks estimated for construction workers from fugitive dust exposure are very low, with cancer risks ranging from 4×10^{-11} to 1×10^{-9} and non-cancer hazard indices ranging from 2×10^{-8} to 2×10^{-5} across exposure areas (See Table 39). The resident, trespasser, and site worker scenarios were not evaluated for fugitive dust exposure, but cancer risks and non-cancer hazard indices associated with fugitive dust exposure for these other receptors are expected to be very low given results for the construction worker.

6.4.5 Surface Water Risk from Lewis Pond

As indicated in the Phase 1A Work Plan (SHA, 2000b), surface water was not collected in Lewis Pond because it was assumed that surface water collected upstream in the Neponset River would best represent potential concentrations discharging to surface water from on-Site sources. Downstream, between the Site and Lewis Pond (and in the vicinity of Lewis Pond), considerable urban, commercial, and light industrial development exists, which may contribute contaminants ubiquitous to the environment (e.g., metals and PAHs) to surface water (via surface runoff, for example). Since there are no carcinogenic COPCs from Neponset River surface water and non-cancer hazards from surface water are less than 1 for the wader and fisher scenarios (see Tables 32 and 33), unacceptable risk and hazard from Lewis Pond surface water, associated with the Site, are not likely to occur.

6.4.6 Early Life Exposure Evaluation for Carcinogenic PAHs

This section describes an evaluation of early life exposure to B(a)P and six other carcinogenic PAHs for RME scenarios. It provides screening-level risk calculations for all exposure scenarios that involve exposure to PAHs in soil. None of these scenarios involves exposure during infancy (i.e. birth to <1 year old). However, this section briefly summarizes possible exposures during this period and quantifies screening-level risk calculations for some exposure pathways because EPA's early life guidance includes this lifestage.

6.4.6.1 USEPA's Supplemental Guidance for Evaluating Early Life Exposures

Risk assessments typically use a single estimate of cancer potency for each carcinogenic COPC to quantify risk, regardless of the receptor's age at exposure. In fact, the CSFs are generally derived from studies involving adult humans or sexually mature animals. This approach is based on the assumption that a carcinogen's potency does not vary with the age of the receptor. USEPA recently evaluated this assumption by reviewing the extent to which exposures early in life alter the incidence of cancer later in life, compared to the incidence observed with exposure only during adulthood (USEPA, 2005f). Young children could be more susceptible to the effects of carcinogenic compounds that have a mutagenic mode of action for a number of reasons, such as differences in the capacity to metabolize and clear chemicals and the potentially greater effect of irreversible DNA damage during early lifestages than in later lifestages.

USEPA guidance (USEPA, 2005f) provides a method for evaluating exposure to carcinogenic compounds that have a mutagenic mode of action, such as B(a)P, during early lifestages beginning at birth. This method involves application of age-dependent adjustment factors (ADAFs) to adjust cancer slope factors derived from studies of human adults or sexually mature animals to account for potentially higher potency during early life:

- Birth to <2 years old: ADAF = 10
    - For exposures before 2 years of age (i.e., spanning a 2-year time interval from the first day of birth up until a child's second birthday), a 10-fold adjustment is made.
- 2 to <16 years old: ADAF = 3
    - For exposures between 2 and <16 years of age (i.e., spanning a 14-year time interval from a child's second birthday up until their sixteenth birthday), a 3-fold adjustment is made.
- >16 years old: ADAF = 1
    - For exposures after turning 16 years of age, no adjustment is made.

These ADAFs were selected based on USEPA's review of the literature comparing early life potency with later life potency estimates for the same chemical. USEPA estimated the ratio of the cancer potency from early-life exposure to the estimated cancer potency from adult exposure. USEPA concluded that there can be greater susceptibility for the development of tumors as a result of exposures to carcinogenic compounds that have a mutagenic mode of action during early life stages compared with such exposures during later lifestages. The ADAF of 10 represents the geometric mean tumor incidence ratio from juvenile or adult exposures in repeated dosing studies. The ADAF of 3 is not based on a particular set of data, rather it was selected to represent the mid-point (i.e. approximately ½ the difference between 1 and 10 on a logarithmic

scale) between the 10-fold adjustment for 0 to < 2 years old and no adjustment for adult exposure. These ADAFs are to be used only for carcinogenic compounds that have a mutagenic mode of action when chemical-specific data are absent.

6.4.6.2 Cancer Potency of B(a)P and Other Carcinogenic PAHs During Early Lifestages

Limited carcinogenic studies are available for B(a)P, but USEPA is in the process of updating its toxicity review for B(a)P. Therefore, the cancer potency of B(a)P has not yet been evaluated using USEPA's cancer guidance and supplemental guidance on evaluating early life exposure (USEPA, 2005b; USEPA, 2005f). In lieu of such an assessment, USEPA Region 1 recommended applying the age-dependent adjustment factors (ADAFs) to the cancer evaluation of scenarios involving exposure to B(a)P and the other six carcinogenic PAHs (Levinson 2006 in Appendix J), and more recently, EPA issued a policy recommending that the ADAFs be used for B(a)P and the other carcinogenic PAHs until EPA reanalyzes the primary data for B(a)P (USEPA, 2006c).

6.4.6.3 Exposure Assumptions Applicable to Early Lifestages

The early life exposure evaluation was conducted for all RME scenarios that include ages less than 16 years:

- current resident (1 to 31 year old)
- current trespasser (7 to 14 year old)
- current/future wader (7 to 14 year old)
- current/future fisher and child fish consumer (1 to 31 year old)
- future resident (1 to 31 year old)

An ADAF of 3 can be applied to the current trespasser and the current/future wader scenarios with no change in baseline exposure assumptions. However, the age categories for current resident, future resident, and current/future fisher and child fish consumer differ from the age categories specified in USEPA's early life guidance. In these scenarios, a child is assumed to be 1 to 7 years old, and an adult is assumed to be 7 to 31 years old. Therefore, to conduct the early life evaluation while maintaining the child and adult age categories used in the baseline risk assessment, we had to define exposure assumptions separately for the 1 to < 2 year old lifestage, the 2 to < 7 year old life stage, the 7 to < 16 year old lifestage, and the 16 < 31 year old lifestage. All of these age groups combined yield the 30-year exposure duration for the resident and the fisher/fish consumer that was evaluated in baseline risk calculations. We also reviewed exposure data available for a 0 to < 1 year old infant and performed a screening-level risk calculation for a 0 to 30 year old resident that includes this lifestage.

Table N1.1 in Appendix N compares the exposure assumptions for the early life evaluation to the baseline evaluation for these receptors. Early life exposure assumptions were selected using the same criteria and general approach used to select the baseline exposure assumptions, starting with the USEPA's Child-Specific Exposure Factors Handbook (USEPA, 2002a). This section

describes only those exposure model inputs that required revision to quantify early life exposures. The early life evaluation does not include ingestion of homegrown produce and inhalation of indoor air exposure pathways because PAHs were not COPCs for these pathways.

Tap Water Ingestion Rate

The baseline RME risk calculations incorporate 90th percentile tap water ingestion rates of 2 L/day for adults (USEPAReg1, 1994) and 1.5 L/day for children (USEPA, 1997a). To evaluate early life stages, we selected 90th percentile tap water ingestion rates from USEPA (2004a). USEPA (2004a) reports tap water ingestion rate estimates calculated from the combined 1994, 1995, 1996, and 1998 Continuing Survey of Food Intakes by Individuals (CSFII), conducted by the United States Department of Agriculture (USDA). The CSFII is a probability sample of the entire United States, with 2 nonconsecutive days of food ingestion data collected from a sample of more than 20,000 individuals. These data represent the most recent and complete data set.

USEPA (2002a) recommendations predate USEPA (2004a) and therefore refer to an earlier version of this same CSFII database that does not include data collected in 1998. This last year of data collection is important to an early life evaluation because it substantially increased the amount of available data on children, with the reported records for children increasing by more than 5,000.

The ingestion rates apply only to individuals who consume tap water (i.e. they are consumer only rates, not per capita rates) from community water supply sources, including both direct and indirect intake. USEPA (2002a) recommends use of community water supply ingestion rates for exposure assessments involving site-specific contaminated drinking water because other water sources (bottled water and other purchased foods) are widely distributed and less likely to contain contaminated water from the Site.

Body Weight

The baseline RME risk calculations incorporate mean body weights weighted appropriately for each lifestage from USEPA (2002a). These body weight data were collected as part of the National Center for Health Statistics (NCHS) National Health and Nutrition Examination Survey III (NHANES III). Body weights used in this early life evaluation for the toddler, young child, and older child are age weighted mean values for male and female children combined from the Child-Specific Exposure Factors Handbook ((USEPA, 2002a), Table 11-6).

For exposure assessments involving infants, USEPA (2002a) recommends using tap water ingestion rates based on statistical modeling for ages 0-6 months and NHANES III for older age groups. NHANES III does not include data for infants less than two months old and reports only percentile data for the infant age range, as opposed to the mean body weights that were used in the baseline risk calculations. Therefore, we used body weight data from the CSFII survey of tap water ingestion (USEPA, 2004a) because this information was collected from the same receptors as the drinking water ingestion rate data, data collection was not restricted to children older than 2 months, mean body weights are reported, and the report includes data collected more recently

than NHANES III (i.e. 1998 versus 1994). Estimates of mean body weights for children 6 months to 1 year of age from NHANES III data matched those of the CSFII for the same age category (USEPA, 2004a).

Tap Water Dermal Contact

While in contact with tap water or groundwater, the resident is assumed to have the skin surface area of the whole body exposed. The 50th percentile skin surface areas of 18,000 cm^2 for adults and 6,600 cm^2 for children are used for the baseline evaluation (USEPA, 1997a). Whole body surface areas for the early lifestages were calculated in the same manner as surface areas used in the baseline risk calculation. Event durations for dermal contact with tap water, 0.58 hours for older children and adults, and 1 hour for toddlers and young children are used, consistent with the baseline evaluation for the equivalent age groups (USEPA, 1997a). Event durations and frequency for infants are not specifically provided by USEPA (2002a). However, USEPA (USEPA, 2002a; 2004g) does provide a general recommendations for bathing with an exposure duration of 10 minutes for 350 days/year. These values were used to approximate an infant's dermal exposure to tap water. Dermal absorption rates for the infant were assumed to be the same as the rates recommended by USEPA (2004g) for other lifestages. This assumption is supported by recent literature and USEPA dermal guidance for full-term infants (Makri *et al.*, 2004; USEPA, 1992a).

Soil Ingestion Rate (IR)

Soil ingestion rates (200 mg/day for toddlers and young children and 100 mg/day for the older child and adult), and soil exposure frequencies (150 days per year) are equal to the rates used for the baseline child and adult risk calculations (USEPAReg1, 1994). It's possible that soil ingestion rates differ between 1<2 year olds (to which an ADAF of 10 is applied) and 2<7 year olds (to which an ADAF of 3 is applied), but insufficient data are available to distinguish between these age groups (USEPA, 2005a).

There are no soil ingestion data available for infants (Battelle, 2005; Davis and Mirick, 2006; USEPA, 2002a; USEPA, 2005a). Infant ingestion of soil is likely relatively low because they do not typically play outdoors during this lifestage, and access to contaminated indoor surfaces and objects would be quite limited during the first six months. Still, some exposure might occur. Absent soil ingestion rate data for this lifestage, one can combine data regarding dermal adherence of soil with data regarding frequency of contacting contaminated surfaces and mouthing contaminated objects to estimate the amount of soil a child ingests. However, USEPA (2005a), Table A-1) concluded that there are either no data or insufficient data to pursue such an approach for the infant lifestage.

A recent USEPA model involving soil exposure (SHEDS-wood, (Zartarian *et al.*, 2006; Zartarian *et al.*, 2005) includes the soil ingestion and dermal contact pathways, but evaluates a 1-6 year old and not an infant. A recent assessment of children's exposure for the World Trade Center indoor air assessment also excluded infants (COPC-Committee, 2003).

For all of these reasons, infant exposure to soil via the ingestion route of exposure could not be quantified with confidence.

Skin Surface Area Available for Contact

The baseline adult resident is assumed to wear a short-sleeved shirt, short pants and shoes, with exposed skin surface area limited to the head, forearms, hands, and lower legs as recommended by EPA's dermal guidance (USEPA, 2004g). Age-weighted 50th percentile skin surface areas (males/female average) for were calculated for these body parts for the older child and adult (USEPA, 2004g). The baseline child resident is assumed to wear a short-sleeved shirt and short pants, but no shoes, with an exposed skin surface area limited to the head, forearms, hands, lower legs, and feet.

Age-weighted 50th percentile skin surface areas (males/female average) were calculated for these body parts for the young child (USEPA, 2004g). USEPA (2004g) applied the total surface area of the 2<3 year old to the <1 and 1<2 year olds due to a lack of data. However, the data necessary to calculate these values are available from the NHANES III study (USDHHS, 1996). Using height (or length) and body weight data from NHANES III and the equation from the Exposure Factors Handbook (USEPA, 1997a), 50th percentile male/female surface areas of 5200 cm^2 for the toddler and 4200 cm^2 for the infant were used with the fraction of total surface area for body parts from USEPA (2004g) to calculate age-weighted 50th percentile body part skin surface areas for all early lifestages.

Soil Adherence Factor (SAF)

The baseline soil-to-skin adherence factor are EPA's recommended AFs for adult residents (0.07 mg/cm^2) and child residents (0.2 mg/cm^2) (USEPA, 2004g). The adult AF is calculated from adherence factors measured for gardeners and the child AF is calculated from adherence factors measured for children playing in wet soil. For the early life evaluation, the gardener data were weighted by body part surface areas for the older child and adult (0.07 mg/cm^2 for both groups), and the children playing in wet soil data were weighted by body part surface areas for the toddlers and young children (0.2 mg/cm^2 for both groups). There are no available field data for AFs applicable to infants (Battelle, 2005; USEPA, 2004g; USEPA, 2005a).

Fish Ingestion Rate

We used the Maine freshwater angler fish ingestion rates (95th percentile of 0.013 kg/meal, 365 meals/yr) recommended by USEPA (USEPA, 1997b) (See Table 10-84) to assess baseline risk for an adult fisher and the early life older child (7 < 16 years old). For the baseline child fish consumer, we assume the fish ingestion rate is 50% of adult ingestion rate (0.0065 kg/meal), based on research by Pao et al. (Pao *et al.*, 1982). We used this same rate for the early lifestage of 2 < 7 years old. However, fish consumption between from 1 < 2 years old is likely to be lower than fish consumption from 2 < 7 years old. Therefore, using per capita fish consumption data, we calculated a ratio of 0.72 for fish consumption of a 1-2 year old to that of a 3-5 year old using 95th percentile ingestion rates from Table 10-45 from USEPA (USEPA, 1997b). USEPA does

not present data for the 2 < 7 year-old range, which is why we used the most similar available age range of 3-5 years old. Using this ratio, we weighted the 0.0065 kg/meal for the 1-7 year old between the 1 < 2 year old (0.005 kg/meal) and the 2 < 7 year old (0.0068 kg/meal). The age-weighted average of these rates for a 1-7 year old is 0.0065 kg/meal. There is uncertainty associated with this approach, which must be weighed against the uncertainty associated with assuming this age group eat as much fish as the 2 < 7 year olds. We calculated similar ratios with data from Table 3-34 of USEPA's Child-Specific Exposure Factors Handbook (USEPA, 2002a).

Limited per capita fish consumption rate data are available for infants (USEPA, 2002a), and the applicability of these data to recreational fish consumption generally and to recreational fish consumption at the Site are unknown. In addition, infants typically do not eat solid food before three months, with some solid food possibly introduced between three and six months of age (USEPA, 2005a). USEPA (1997c) reviews recreational surveys other than the one that was used in the baseline risk calculations, but reported age ranges with consumption data all start at one year of age.

6.4.6.4 Screening-level Cancer Risk Estimates for Exposure to Carcinogenic PAHs During Early Lifestages

We evaluated all scenarios from the baseline assessment using early life exposure and toxicity factors (Appendix N2.1 to N2.5). As a sensitivity analysis we included an infant in the future residential scenarios for a 30-year exposure for a 0 to less than 30-year old (Appendix N3.1). These risk calculations are further documented in Appendix N using standard RAGS Table 7s, 9s, and 10s. Sufficient data were available to quantify infant exposure to tap water via ingestion and dermal contact only.

Inclusion of early life evaluation (not including the infant in residential scenarios) increases cancer risk estimates for most areas for the current and future residents, the current trespasser, and the current/future wader and fisher compared to the baseline calculations. However, only one scenario with cancer risk within USEPA's risk range for the baseline risk calculations has cancer risk above the risk range when early life toxicity is included:

- Future resident at West of South Street On-Facility (8E-05 to 2E-04).

The 2E-04 cumulative cancer risk for this area is attributable to PAHs and arsenic in soil (direct contact and ingestion of plant tissue). In a November 2006 discussion, Ms. Sarah Levinson of USEPA and Dr. Lisa Bailey of Menzie-Cura & Associates, Inc. decided that the 2E-04 risk from PAHs and arsenic in soil was uncertain and potentially overestimated, predominantly due to the uncertainty in the garden produce pathway for arsenic. If the garden produce pathway was not included (but the early life evaluation of PAHs retained), the risk from direct contact (ingestion and dermal contact) with arsenic in soil is 1E-04, not exceeding the risk range. Ms. Levinson and Dr. Bailey agreed that soil on the West of South Street On-Facility area would not be targeted for remediation, and that a discussion regarding the uncertainties in the garden produce pathway should be included in the Feasibility Study to support this decision. In deciding that

risk estimates for the West of South Street On-Facility area are not actionable, Ms. Levinson and Dr. Bailey also discussed the following issues:

- The cumulative cancer risk without the early life evaluation for PAHs would be 8E-05, even with inclusion of the garden pathway, which is less than 1E-04. Although there is evidence that some type of early life evaluation is warranted for chemicals with a mutagenic mode of action, it is not clear whether EPA's current recommended method for evaluating early life exposures might overestimate early life risks.
- The concentrations of PAHs and arsenic in the soil in the West of South Street On-Facility area are low (the exposure point concentration for arsenic is 9.48 mg/kg and exposure point concentrations for individual carcinogenic PAHs range from 0.421 to 3.98 mg/kg; See BHHRA, Appendix F, Table 3.2 RME).

Three other scenarios with baseline risk above USEPA's risk range have higher risk with early life toxicity included:

- Future resident at East of South Street On-Facility "SB-09 area" (8E-04 to 2E-03);
- Future resident at East of South Street On-Facility "non-SB-09 area" (3E-04 to 1E-03); and
- Future resident at Old Railroad and Former Lower Mill Pond Area (5E-04 to 8E-04).

For the tap water exposure areas, if the infant is included for a 0 to less than 30-year old future resident, the risk estimates are the same as for the 1 to 31-year old future resident shown on Table N2.5.

6.4.7 Consideration of Background Concentrations for Sediment and Fish Tissue

As summarized in Section 5.3.2.3 and in Table 46, concentrations of risk drivers in sediment for the wader and fisher in Lewis Pond (benzo[a]pyrene and arsenic) may be consistent with reference area (Lower Pond) concentrations based on a comparison of average and maximum detected concentrations. Of the risk drivers in fish, arsenic fish tissue reference concentrations (Lower Pond) appear consistent with Neponset River and Lewis Pond arsenic fish tissue concentrations. Therefore, sediment risk for the wader and fisher in Lewis Pond could be consistent with background, and risk from arsenic in fish may be consistent with background. Although, as discussed in Section 6.3.2.3, if we assume 10% inorganic arsenic in fish tissue, risk is already less than 1E-06 from both water bodies.

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MAIN REPORT TABLES

TABLE 1

(RAGS Part D Table 1)

SELECTION OF EXPOSURE PATHWAYS

BASELINE HUMAN HEALTH RISK ASSESSMENT

Blackburn & Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe	Medium	Exposure Medium	Exposure Point[1,2]	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Soil (0-1 ft)	Surface soil (0-1 ft)	(1) Lot 122 (2) Lot 124 (3) Lot 125 (4) Gleason Court Vacant Lot (5) Lot 208 (6) Lot 283 (7) Lot 282 (8) Lot 210 (9) Lot 230 (10) Lot 257 (11) Orlando Property (12) Lot 342 (13) Lot 360	Resident	Child and Adult[3]	Ingestion	Quant	Potential incidental ingestion during activities consistent with residential use.
						Dermal	Quant	Potential dermal exposure while working or playing in the yard.
						Inhalation of fugitive dust	Qual	Potential fugitive dust inhalation is likely to contribute negligibly relative to ingestion and dermal exposure. See "outdoor air" exposure medium for asbestos dust exposures.
			West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Resident	Child and Adult	Ingestion	None	Soil samples were not collected from off-Site monitoring well locations because they are outside of the area impacted by soil contamination.
						Dermal	None	
						Inhalation of ambient air, fugitive dust and indoor air	None	
						Ingestion of plant tissue	None	
			(1) West of South Street On-Facility and Vacant Lot 209 (2) Old Railroad and Former Lower Mill Pond Area (3) Lot 350	Trespasser	Older Child (7-14 years old)	Ingestion	Quant	Potential incidental ingestion while walking and playing.
						Dermal	Quant	Potential dermal exposure while walking and playing.
						Inhalation of fugitive dust	Qual	Potential fugitive dust inhalation is likely to contribute negligibly relative to ingestion and dermal exposure. See "outdoor air" exposure medium for asbestos dust exposures.
			East of South Street On-Facility	Site Worker	Adult	Ingestion	Quant	Potential incidental ingestion while working outdoors.
						Dermal	Quant	Potential dermal exposure while working outdoors.
						Inhalation of fugitive dust	Qual	Potential fugitive dust inhalation is likely to contribute negligibly relative to ingestion and dermal exposure. See "outdoor air" exposure medium for asbestos dust exposures.
		Plant tissue[4]	Homegrown fruits and vegetables: (1) Lot 122 (2) Lot 124 (3) Lot 125 (4) Lot 208 (5) Lot 283 (6) Lot 282 (7) Lot 210 (8) Lot 230 (9) Lot 257 (10) Orlando Property (11) Lot 342 (12) Lot 360	Resident	Child and Adult[3]	Ingestion	Quant	Potential ingestion of homegrown garden produce.
		Indoor Air[5]	(1) Lot 122 (2) Lot 283 (5) Lot 282 (6) Lot 210 (7) Orlando Property (8) Off-Site Residential Building 1 (9) Off-Site Residential Building 2 (10) Off-Site Residential Building 3 (11) Off-Site Residential Building 4	Resident	Child and Adult[3]	Inhalation	Quant	Potential inhalation of vapors during indoor activities is a complete pathway in these areas.
			(1) Lot 208 (2) Lot 230 (3) Lot 257 (4) Lot 342 (5) Lot 360	Resident	Child and Adult	Inhalation	None	The indoor air exposure pathway is assumed to be incomplete at these exposure points.
			(1) East of South Street On-Facility Building 3 (2) East of South Street On-Facility Building 4 (3) East of South Street On-Facility Building 5	Site Worker	Adult	Inhalation	Quant	Potential inhalation exposure during indoor activities.

TABLE 1

(RAGS Part D Table 1)

SELECTION OF EXPOSURE PATHWAYS

BASELINE HUMAN HEALTH RISK ASSESSMENT

Blackburn & Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe	Medium	Exposure Medium	Exposure Point[1,2]	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Soil (0-1 ft)	Outdoor Air	Ambient Air from volatilization from the subsurface	Resident / Trespasser / Site Worker	Child and Adult / Older Child / Adult	Inhalation	None	Any effect on ambient air would be less than on indoor air due to air mass movement and dispersion outdoors; therefore, the ambient air pathway will not be evaluated.
			Asbestos dust	Resident / Trespasser / Site Worker	Child and Adult / Older Child / Adult	Inhalation	None	At the request of EPA Region 1, evaluation of risk from inhalation of asbestos dust is temporarily on hold until EPA provides further guidance (July 2005).
	Soil Gas	Indoor Air [6]	(1) Lot 124 (2) Lot 125	Resident	Child and Adult[3]	Inhalation	Quant	Potential inhalation of vapors during indoor activities is a complete pathway in these areas.
			(1) East of South Street On-Facility Building 1 (2) East of South Street On-Facility Building 2	Site Worker	Adult	Inhalation	Quant	Potential inhalation exposure during indoor activities.
	Groundwater	Indoor Air [7]	West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Resident	Child and Adult[3]	Inhalation	Quant	Potential inhalation exposure during indoor activities.
			(1) Lot 122 (2) Lot 124 (3) Lot 125 (4) Gleason Court Vacant Lot (5) Areas North and West of Lot 210 (Lot 230, Lot 257, Orlando Property, Lot 342, Lot 360)	Resident	Child and Adult	Inhalation	None	Groundwater data are not available at these exposure points because they are outside of the existing monitoring well network. These locations are either upgradient, sidegradient, or significantly downgradient of the groundwater contaminant plume at the Site. Therefore, groundwater is unlikely to pose a significant risk to human health at the downgradient, off-facility exposure points.
			(1) East of South Street On-Facility Building 3 (2) East of South Street On-Facility Building 4 (3) East of South Street On-Facility Building 5	Site Worker	Adult	Inhalation	Quant	Potential inhalation exposure during indoor activities.
		Outdoor Air	Ambient Air from volatilization from the subsurface	Resident / Trespasser / Site Worker	Child and Adult / Older Child / Adult	Inhalation	None	Any effect on ambient air would be less than on indoor air due to air mass movement and dispersion outdoors; therefore, the ambient air pathway will not be evaluated.

TABLE 1

(RAGS Part D Table 1)

SELECTION OF EXPOSURE PATHWAYS

BASELINE HUMAN HEALTH RISK ASSESSMENT

Blackburn & Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe	Medium	Exposure Medium	Exposure Point[1,2]	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Water	Surface Water	Lewis Pond	Fisher	Adult	Dermal	Qual	Surface water was not collected in Lewis Pond because it was assumed that samples collected upstream in the Neponset River would represent potential concentrations discharging to surface water from on-Site sources. Between the Site and Lewis Pond (and in the vicinity of Lewis Pond), considerable urban, commercial and light industrial development exists which may contribute contaminants, ubiquitous to the environment, to surface water. Therefore, we will qualitatively evaluate risk from dermal exposure to Lewis Pond surface water based on dermal risks from upstream Neponset River surface water samples. Since swimming is unlikely in Lewis Pond, we will not evaluate exposure from surface water ingestion.
						Ingestion	None	
				Wader	Older Child (7-14 years old)	Dermal	Qual	
						Ingestion	None	
			(1) Neponset River East of South Street (2) Neponset River West of South Street	Fisher	Adult	Dermal	Quant	Potential dermal exposure during fishing activities.
						Ingestion	None	Ingestion of surface water is unlikely for a fisher scenario.
				Wader	Older Child (7-14 years old)	Dermal	Quant	Potential dermal exposure during wading.
						Ingestion	None	Since swimming is unlikely, we will not evaluate exposure from surface water ingestion.
			Former Mill Tailrace	Fisher	Adult	Dermal	None	An assessment of potential fish communities conducted by Aquatec Biological Sciences indicates that the former mill tailrace provides little habitat for supporting a permanent resident fish population (Downey, 2003).
						Ingestion	None	
				Wader	Older Child (7-14 years old)	Dermal	Quant	Potential dermal exposure during wading.
						Ingestion	None	Since swimming is unlikely, we will not evaluate exposure from surface water ingestion.
	Sediment	Sediment	(1) Lewis Pond (2) Neponset River East of South Street (3) Neponset River West of South Street	Fisher	Adult	Ingestion	Quant	Potential incidental ingestion during fishing activities.
						Dermal	Quant	Potential dermal exposure during fishing activities.
				Wader	Older Child (7-14 years old)	Ingestion	Quant	Potential incidental ingestion during wading.
						Dermal	Quant	Potential dermal exposure during wading.
			Former Mill Tailrace	Fisher	Adult	Ingestion	None	An assessment of potential fish communities conducted by Aquatec Biological Sciences indicates that the former mill tailrace provides little habitat for supporting a permanent resident fish population (Downey, 2003).
						Dermal	None	
				Wader	Older Child (7-14 years old)	Ingestion	Quant	Potential incidental ingestion during wading.
						Dermal	Quant	Potential dermal exposure during wading.
		Outdoor Air	Asbestos dust from dry sediment	Fisher / Wader	Adult / Older Child	Inhalation	None	At the request of EPA Region 1, evaluation of risk from inhalation of asbestos dust is temporarily on hold until EPA provides further guidance (July 2005).
	Fish Tissue	Fish Tissue	(1) Lewis Pond (2) Neponset River	Fisher	Adult	Ingestion	Quant	Potential ingestion of fish caught from Lewis Pond or the Neponset River.
				Child Fish Consumer	Child	Ingestion	Quant	Potential ingestion of fish caught from Lewis Pond or the Neponset River.
			Former Mill Tailrace	Fisher	Adult	Ingestion	None	An assessment of potential fish communities conducted by Aquatec Biological Sciences indicates that the former mill tailrace provides little habitat for supporting a permanent resident fish population (Downey, 2003).
				Child Fish Consumer	Child	Ingestion	None	

TABLE 1

(RAGS Part D Table 1)

SELECTION OF EXPOSURE PATHWAYS

BASELINE HUMAN HEALTH RISK ASSESSMENT

Blackburn & Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe	Medium	Exposure Medium	Exposure Point[1,2]	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Soil (0-10 ft)	Soil (0-10 ft)	Area of Containment	--	--	--	None	Given the presence of asbestos containing soils (ACS) below the soil or asphalt cap within the Area of Containment (AOC), if the engineering (i.e. the soil or asphalt cap) and institutional controls (i.e. the deed restriction) are not maintained, it is acknowledged that risk would be present in a baseline exposure scenario (where access to these soils was not limited). Therefore, it is not necessary to explicitly consider the AOC in the BHHRA; a note indicating that there is "presumptive risk" in the AOC without the aforementioned engineering and institutional controls is included in the BHHRA. Samples in the AOC that are within 100 feet of the AOC border are included for the future indoor air and trench vapor pathways.
			(1) East of South Street On-Facility (2) Gleason Court Vacant Lot (3) Old Railroad and Former Lower Mill Pond Area (4) Lot 122 (5) Lot 124 (6) Lot 125 (7) Lot 208 (8) Lot 283[9] (9) Lot 282[9] (10) Lot 210[9] (11) Lot 230[9] (12) Lot 257 (13) Orlando Property (14) Lot 342[9] (15) Lot 360[10] (16) Lot 350 (17) West of South Street On-Facility (18) Vacant Lot 209	Resident [8]	Child and Adult[3]	Ingestion	Quant	Potential incidental ingestion during activities consistent with residential use.
						Dermal	Quant	Potential dermal exposure while working or playing in the yard.
						Inhalation of fugitive dust	Qual	Potential fugitive dust inhalation is likely to contribute negligibly relative to ingestion and dermal exposure. See "outdoor air" exposure medium for asbestos dust exposures.
			West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Resident	Child and Adult	Ingestion	None	Soil samples were not collected from off-Site monitoring well locations because they are outside of the area impacted by soil contamination.
						Dermal	None	
						Inhalation of ambient air, fugitive dust and indoor air	None	
						Ingestion of plant tissue	None	
			(1) East of South Street On-Facility (2) Gleason Court Vacant Lot (3) Old Railroad and Former Lower Mill Pond Area (4) Lot 122 (5) Lot 124 (6) Lot 125 (7) Lot 208 (8) Lot 283[9] (9) Lot 282[9] (10) Lot 210[9] (11) Lot 230[9] (12) Lot 257 (13) Orlando Property (14) Lot 342[9] (15) West of South Street On-Facility (16) Vacant Lot 209	Construction worker [11]	Adult	Ingestion	Quant	Potential incidental ingestion and dermal exposure during excavation activities. Risk to a construction worker performing excavation activities in the vicinity of Lot 360 and Lot 350 are not evaluated, since these are both in wetland areas (Normandeau, 2001) and are unlikely to be developed.
						Dermal	Quant	
						Inhalation of fugitive dust	Quant	The construction worker has the greatest potential for exposure via inhalation of fugitive dust compared to other receptors. Quantitative estimation of the risk associated with fugitive dust inhalation for the construction worker will provide a basis for the qualitative discussion of this pathway for remaining receptors. See "outdoor air" exposure medium for asbestos dust exposures.
			West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Construction worker	Adult	Ingestion	None	Soil samples were not collected from off-Site monitoring well locations because they are outside of the area impacted by soil contamination.
						Dermal	None	
						Inhalation of ambient air and fugitive dust	None	
			(1) East of South Street On-Facility (2) West of South Street On-Facility	Site Worker [8]	Adult	Ingestion	Quant	Potential incidental ingestion while working outdoors.
						Dermal	Quant	Potential dermal exposure while working outdoors.
						Inhalation of fugitive dust	Qual	Potential fugitive dust inhalation is likely to contribute negligibly relative to ingestion and dermal exposure. See "outdoor air" exposure medium for asbestos dust exposures.

TABLE 1

(RAGS Part D Table 1)

SELECTION OF EXPOSURE PATHWAYS

BASELINE HUMAN HEALTH RISK ASSESSMENT

Blackburn & Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe	Medium	Exposure Medium	Exposure Point[1,2]	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Soil (0-10 ft)	Plant tissue[4]	Homegrown fruits and vegetables from gardens: (1) East of South Street On-Facility (2) Gleason Court Vacant Lot (3) Old Railroad and Former Lower Mill Pond Area (4) Lot 122 (5) Lot 124 (6) Lot 125 (7) Lot 208 (8) Lot 283[9] (9) Lot 282[9] (10) Lot 210[9] (11) Lot 230[9] (12) Lot 257 (13) Orlando Property (14) Lot 342[9] (15) Lot 360[10] (16) Lot 350 (17) West of South Street On-Facility (18) Vacant Lot 209	Resident	Child and Adult[3]	Ingestion	Quant	Potential ingestion of homegrown garden produce.
		Indoor Air[5]	(1) East of South Street On-Facility (non-SB-09 area) (2) Gleason Court Vacant Lot (3) Old Railroad and Former Lower Mill Pond Area (4) Lot 122 (5) Lot 208[9] (6) Lot 283[9] (7) Lot 282[9] (8) Lot 210[9] (9) Lot 230[9] (10) Lot 257 (11) Orlando Property (12) Lot 342[9] (13) Lot 360 (14) Lot 350 (15) West of South Street On-Facility (16) Vacant Lot 209 (17) Lots South of the AOC[12]	Resident	Child and Adult[3]	Inhalation	Quant	Potential inhalation exposure during indoor activities
			(1) East of South Street On-Facility (non-SB-09 area) (2) West of South Street On-Facility	Site Worker	Adult	Inhalation	Quant	Potential inhalation exposure during indoor activities.
		Outdoor Air[5]	Ambient air from volatilization from the subsurface	Resident / Site Worker	Child and Adult / Adult	Inhalation	None	Any effect on ambient air would be less than on indoor air due to air mass movement and dispersion outdoors; therefore, the ambient air pathway will not be evaluated.
			Asbestos dust	Resident / Site Worker / Construction Worker	Child and Adult / Adult / Adult	Inhalation	None	At the request of EPA Region 1, evaluation of risk from inhalation of asbestos dust is temporarily on hold until EPA provides further guidance (July 2005).
			Trench vapor during excavation: (1) East of South Street On-Facility (non-SB-09 area) (2) Gleason Court Vacant Lot (3) Old Railroad and Former Lower Mill Pond Area (4) Lot 122 (5) Lot 208[9] (6) Lot 283[9] (7) Lot 282[9] (8) Lot 210[9] (9) Lot 230[9] (10) Lot 257 (11) Orlando Property (12) Lot 342[9] (13) Lot 360 (14) Lot 350 (15) West of South Street On-Facility (16) Vacant Lot 209 (17) Lots South of the AOC[12]	Construction worker	Adult	Inhalation	Quant	Potential inhalation exposure during excavation activities.
	Soil Gas	Indoor Air[6]	(1) East of South Street On-Facility (SB-09 area) (2) Lot 124 (3) Lot 125	Resident	Child and Adult[3]	Inhalation	Quant	Potential inhalation exposure during indoor activities
			(1) East of South Street On-Facility (SB-09 area)	Site Worker	Adult	Inhalation	Quant	Potential inhalation exposure during indoor activities.
		Outdoor Air[5]	Trench vapor during excavation: (1) East of South Street On-Facility (SB-09 area) (2) Lot 124 (3) Lot 125	Construction worker	Adult	Inhalation	Quant	Potential inhalation exposure during excavation activities.

TABLE 1

(RAGS Part D Table 1)

SELECTION OF EXPOSURE PATHWAYS

BASELINE HUMAN HEALTH RISK ASSESSMENT

Blackburn & Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe	Medium	Exposure Medium	Exposure Point[1,2]	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Groundwater	Groundwater	Tap Water from: (1) Off-site groundwater west of Neponset River (2) Off-site groundwater east of Neponset River (SH-27) (3) Off-site groundwater east of Neponset River (SH-28) (4) Off-facility groundwater Lot 208 / Lot 209 (5) On-Site groundwater (including the Area of Containment)	Resident	Child and Adult[3]	Ingestion	Quant	Potential ingestion of tap water from drinking and cooking.
						Dermal	Quant	Potential dermal exposure during showering and washing.
						Inhalation	Quant	Potential inhalation of vapors during showering.
			Area of Containment	Construction worker	Adult	Dermal	None	There is an institutional control (i.e. the deed restriction) in this area that prohibits direct contact with groundwater. It is acknowledged that risk would be present in a baseline exposure scenario (where access to groundwater in this area is not limited). Therefore, it is not necessary to explicitly consider the AOC in the BHHRA; a note indicating that there is "presumptive risk" in the AOC without the aforementioned institutional control is included in the BHHRA. Samples in the AOC that are within 100 feet of the AOC border are included for the future indoor air and trench vapor pathways.
			(1) East of South Street On-Facility (2) West of South Street On-Facility (3) West of South Street Off-Facility/Off-Site Groundwater Exposure Area (4) Old Railroad and Former Lower Mill Pond Area	Construction worker	Adult	Dermal	Quant	Potential dermal exposure during excavation activities.
			(1) Gleason Court Vacant Lot (2) Lot 122 (3) Lot 124 (4) Lot 125 (5) Areas North and West of Lot 210 (Lot 230, Lot 257, Orlando Property, Lot 342, Lot 360, Lot 350)	Construction worker	Adult	Dermal	None	Groundwater data are not available at these exposure points because they are outside of the existing monitoring well network. These locations are either upgradient, or significantly downgradient of the groundwater contaminant plume at the Site. Therefore, groundwater is unlikely to pose a significant risk to human health at these exposure points.
		Indoor Air[7]	(1) East of South Street On-Facility (2) West of South Street On-Facility (3) Lots South of the AOC[12] (4) West of South Street Off-Facility/Off-Site Groundwater Exposure Area (5) Old Railroad and Former Lower Mill Pond Area	Resident	Child and Adult[3]	Inhalation	Quant	Potential inhalation exposure during indoor activities.
			(1) Gleason Court Vacant Lot (2) Lot 122 (3) Lot 124 (4) Lot 125 (5) Areas North and West of Lot 210 (Lot 230, Lot 257, Orlando Property, Lot 342, Lot 360, Lot 350)	Resident	Child and Adult	Inhalation	None	Groundwater data are not available at these exposure points because they are outside of the existing monitoring well network. These locations are either upgradient, sidegradient, or significantly downgradient of the groundwater contaminant plume at the Site. Therefore, groundwater is unlikely to pose a significant risk to human health at these exposure points.
			(1) East of South Street On-Facility (2) West of South Street On-Facility	Site Worker	Adult	Inhalation	Quant	Potential inhalation exposure during indoor activities.

TABLE 1

(RAGS Part D Table 1)

SELECTION OF EXPOSURE PATHWAYS

BASELINE HUMAN HEALTH RISK ASSESSMENT

Blackburn & Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe	Medium	Exposure Medium	Exposure Point[1,2]	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Groundwater	Outdoor Air[7]	Ambient air from volatilization from the subsurface	Resident / Site Worker	Child and Adult / Adult	Inhalation	None	Any effect on ambient air would be less than on indoor air due to air mass movement and dispersion outdoors; therefore, the ambient air pathway will not be evaluated.
			Trench vapor during excavation: (1) East of South Street On-Facility (2) West of South Street On-Facility (3) Lots South of the AOC[12] (4) West of South Street Off-Facility/Off-Site Groundwater Exposure Area (5) Old Railroad and Former Lower Mill Pond Area	Construction worker	Adult	Inhalation	Quant	Potential inhalation exposure during excavation activities.
			Trench vapor during excavation: (1) Gleason Court Vacant Lot (2) Lot 122 (3) Lot 124 (4) Lot 125 (5) Areas North and West of Lot 210 (Lot 230, Lot 257, Orlando Property, Lot 342, Lot 360, Lot 350)	Construction worker	Adult	Inhalation	None	Groundwater data are not available at these exposure points because they are outside of the existing monitoring well network. These locations are either upgradient, or significantly downgradient of the groundwater contaminant plume at the Site. Therefore, groundwater is unlikely to pose a significant risk to human health at these exposure points.

Footnotes:

[1] See Figure 2 for Site vicinity and exposure points.

[2] As discussed in the approved Phase 1A Work Plan (SHA, 2000) and as discussed previously with USEPA, given the presence of asbestos containing soils (ACS) below the soil or asphalt cap within the Area of Containment (AOC), if the engineering (i.e., the soil or asphalt cap) and institutional controls (i.e., the deed restriction) are not maintained, it is acknowledged that risk would be present in a baseline exposure scenario (where access to these soils was not limited). Therefore, it is not necessary to explicitly consider the AOC in the Baseline Human Health Risk Assessment; a note indicating that there is “presumptive risk” in the AOC without the aforementioned engineering and institutional controls will be included in the BHHRA.

[3] Non-cancer hazard and cancer risk were estimated separately for an adult and child, and the adult and child cancer risks were summed.

[4] Plant tissue concentrations were modeled from soil using the approach in EPA's Soil Screening Guidance (EPA, 1996) (see Appendix D).

[5] Concentrations in indoor air and trench vapor were modeled from soil using the Johnson & Ettinger Model (EPA, 2004) (see Appendix E). See Sections 2.2.1.3 and 2.2.1.4 for a description of the location and depth of soil samples used for COPC selection. These samples also were used to calculate EPCs for each soil exposure point.

[6] Concentrations in indoor air and trench vapor were modeled from soil gas using the Johnson & Ettinger Model (EPA, 2004) (see Appendix E).

[7] Concentrations in indoor air and trench vapor were modeled from groundwater using the Johnson & Ettinger Model (EPA, 2003) (see Appendix E).

[8] This scenario evaluates exposure to the 0-10 foot soil interval in the future resulting from vertical mixing of soils from 0-10 feet during possible re-development (EPA, 1995).

[9] Only surface soil samples (0-1 ft) were collected in these locations, thus risk at the 0-1 soil interval is considered to be the same for the current and future resident. Risk from the 1-10 foot soil interval was not evaluated. Since deposition of chemicals from the Site through flooding of the Neponset River is the only active depositional mechanism in these areas, deep soils are not expected to be affected by Site chemicals. Phase 1B soil data (1-3 ft) for FP-05, FP-06, and FP-09 suggests that this is true. Risk to a construction worker was evaluated for the 0-1 foot soil interval only at these locations.

[10] Since FP-09 (Lot 360) is in a wetland area (Normadeau, 2001) which is unlikely to be developed, risk to a future resident was evaluated using data from the 0-1 foot soil interval only.

[11] Construction workers may be exposed to chemicals in soil during future excavation work up to a depth of 10 ft, as defined by EPA based on the general depth of frost penetration in New England soil (EPA, 1995).

[12] This area is included for the future soil and groundwater to indoor air and trench vapor pathways because future buildings may be built in these areas within 100 feet of the AOC.

TABLE 1

SELECTION OF EXPOSURE PATHWAYS

BASELINE HUMAN HEALTH RISK ASSESSMENT

Blackburn & Union Privileges Site

Walpole, Massachusetts

References:

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EPA. 2003. Johnson & Ettinger Model for Subsurface Vapor Intrusion into Buildings (Revised). (EPA model templates based on the analytical solutions of Johnson and Ettinger (2001) for contaminant partitioning and subsurface vapor transport into buildings). http://www.epa.gov/superfund/programs/risk/airmodel/johnson_ettinger.htm

EPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Washington D.C., Office of Solid Waste and Emergency Response. OSWER 9355.4-24.

EPA. 1996. Soil Screening Guidance: Technical Background Document, 2nd Edition. Washington D.C., Office of Solid Waste and Emergency Response. EPA/540/R-95/128.

EPA Region 1, 1995: Risk Update, No. 3. August.

Normandeau Associates Inc. 2001. Ecological Site Characterization Report, Blackburn & Union Privileges Superfund Site, Walpole, Massachusetts. December 2001.

Sanborn, Head & Associates, Inc. (SHA), 2000. Work Plan for the Phase 1A Remedial Investigation for the Blackburn & Union Site. November 2000.

TABLE 2
SUMMARY OF SAMPLES USED IN THE BASELINE HUMAN HEALTH RISK ASSESSMENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Sample Location	Depth to Top of GroundwaterTable (feet)	Sample Depth/Screen Depths (feet)	Date(s) Sampled
East of South Street On-Facility	Soil	SS-09	NA	0 - 1	04-23-01
		SB-09 / S-2-3	NA	2 - 6	04-23-01
		SB-09A / S-2	NA	2 - 5.5	09-07-06
		OW-114 / S-2	NA	2 - 5.5	09-07-06
		SB-09A / S-3	NA	6 - 7.5	09-07-06
		SS-10	NA	0 - 1	06-07-01
		SB-10 / S-3	NA	8 - 9.3	06-07-01
		SS-11	NA	0 - 1	06-07-01
		SB-11 / S-2-3	NA	2 - 6	06-07-01
		SS-12	NA	0 - 1	04-17-01
		SB-12 / S-1-2	NA	0 - 4	04-17-01
		OW-105-3	NA	0 - 4	04-17-01
		SS-13	NA	0 - 1	04-13-01
		SB-13A / S-3-4	NA	4 - 8	04-13-01
		OW-105-2	NA	4 - 8	04-13-01
		SS-14	NA	0 - 1	04-13-01
		SB-14 / S-3-4	NA	4 - 8	04-13-01
		SS-15	NA	0 - 1	04-16-01
		SB-15 / S-2-3	NA	2 - 6	04-16-01
		SS-16	NA	0 - 1	06-06-01
		SB-16 / S-3-4	NA	4 - 8	06-06-01
		SS-17	NA	0 - 1	04-05-01
		SB-17 / S-4-5	NA	6 - 10	04-05-01
		SS-18	NA	0 - 1	04-11-01
		SB-18 / S-2-3	NA	2 - 5.4	04-11-01
		SS-19	NA	0 - 1	06-08-01
		SB-19 / S-1-2	NA	0.4 - 4	06-08-01
		OW-110	NA	0.4 - 4	06-08-01
		SS-20	NA	0 - 1	06-12-01
		SB-20 / S-2-3	NA	2 - 6	06-12-01
		SS-21	NA	0 - 1	04-02-01
		SB-21 / S-3-4	NA	4 - 8	04-02-01
		SS-22	NA	0 - 1	06-13-01
		SB-22 / S-3	NA	4 - 5.1	06-13-01
		SS-23	NA	0 - 1	04-11-01
		SB-23 / S-2-3	NA	2 - 6	04-11-01
		SS-24	NA	0 - 1	04-12-01
		SB-24 / S-3-4	NA	4 - 8	04-12-01
		SS-25	NA	0 - 1	03-29-01
		OW-104-1	NA	0 - 1	03-29-01
		SB-25 / S-4-5	NA	6 - 10	03-29-01
		OW-104-2 / S-4-5	NA	6 - 10	03-29-01
		SS-26	NA	0 - 1	03-30-01
		SB-26 / S-2-3	NA	2 - 5.7	03-30-01
		UST-1 / S-1-2	NA	0.2 - 5	04-04-01
		UST-1 / S-3-4	NA	5 - 9	04-04-01
		UST-2 / S-1-2	NA	0.3 - 4	04-05-01
		UST-2 / S-3-4	NA	4 - 8	04-05-01
		UST-3 / S-1-2	NA	0.2 - 4	04-04-01
		UST-3 / S-3-4	NA	4 - 8	04-04-01
	Soil Gas	SV-01	NA	4	09-07-06
		OW-1001	NA	4	09-07-06
		SV-02	NA	4	09-07-06
		SV-03	NA	3.5	09-07-06
		SV-04	NA	4	09-07-06
		SV-05	NA	4	09-07-06
		SV-06	NA	4	09-07-06
		SV-07	NA	1.5	09-07-06
		SV-08	NA	0.75	09-07-06
		SV-09	NA	0.75	09-07-06
		SV-10	NA	0.75	09-07-06
	Groundwater	SH-19S	9.93, 8.52	9.93, 8.52	09-05-01, 05-21-02
		OW-201	9.93	9.93	09-05-01
		OW-205	8.52	8.52	05-21-02
		SH-20S	9.68, 8.4	9.68, 8.4	09-05-01, 05-17-02
		SH-21S	6.6, 5.54	6.6, 5.54	09-06-01, 05-16-02
		SH-22S	16.23, 10.02	16.23, 10.02	09-05-01, 05-17-02

TABLE 2
SUMMARY OF SAMPLES USED IN THE BASELINE HUMAN HEALTH RISK ASSESSMENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Sample Location	Depth to Top of GroundwaterTable (feet)	Sample Depth/Screen Depths (feet)	Date(s) Sampled
Lot 283	Soil	FP-01	NA	0 - 1	10-10-01
		OW-404	NA	0 - 1	10-10-01
		OW-505	NA	0 - 1	10-10-01
Lot 282	Soil	FP-02	NA	0 - 1	10-10-01
Lot 210	Soil	FP-03	NA	0 - 1	10-10-01
Lot 230	Soil	FP-04	NA	0 - 1	10-10-01
Lot 257	Soil	FP-05	NA	0 - 1	10-10-01, 08-05-03
			NA	1 - 3	08-05-03
		OW-410	NA	0 - 1	08-05-03
		OW-509	NA	0 - 1	08-05-03
Lot 342	Soil	FP-08	NA	0 - 1	10-10-01
Lot 360	Soil	FP-09	NA	0 - 1	10-10-01, 08-05-03
		FP-09	NA	1 - 3	08-05-03
		FP-09A / 0-1'	NA	0 - 1	10-13-06
		FP-09A / 1-3'	NA	1 - 3	10-13-06
		FP-09B / 0-1'	NA	0 - 1	10-13-06
		FP-09B / 1-3'	NA	1 - 3	10-13-06
		FP-09C / 0-1'	NA	0 - 1	10-13-06
		FP-09C / 1-3'	NA	1 - 3	10-13-06
		FP-09D / 0-1'	NA	0 - 1	10-13-06
		FP-09D / 1-3'	NA	1 - 3	10-13-06
		FP-09E / 0-1'	NA	0 - 1	10-13-06
		FP-09E / 1-3'	NA	1 - 3	10-13-06
		FP-09F / 0-1'	NA	0 - 1	10-13-06
		OW-412 / 0-1'	NA	0 - 1	10-13-06
		FP-09F / 1-3'	NA	1 - 3	10-13-06
Lot 350	Soil	FP-10	NA	0 - 1	10-10-01
Gleason Court Lot 122	Soil	SS-62	NA	0 - 1	04-17-01
		OW-105-1	NA	0 - 1	04-17-01
		SB-62 / S-3-4	NA	4 - 8	04-17-01
		SS-63	NA	0 - 1	04-02-01
		SB-63 / S-1-2	NA	0 - 4	04-02-01
Gleason Court Lot 124	Soil	SS-60	NA	0 - 1	04-25-01
		SB-60 / S-4-5	NA	6 - 8.5	04-25-01
		SS-61	NA	0 - 1	04-25-01
		SB-61 / S-1-2	NA	0 - 4	04-25-01
Gleason Court Lot 125	Soil	SS-58	NA	0 - 1	04-26-01
		SB-58 / S-2-3	NA	2 - 5.5	04-26-01
		SS-59	NA	0 - 1	04-26-01
		SB-59 / S-4-5	NA	6 - 10	04-26-01
Gleason Court Vacant Lot	Soil	SS-64	NA	0 - 1	03-23-01
		SB-64/S-3-4	NA	4 - 8	03-23-01
		SS-65	NA	0 - 1	03-26-01
		SB-65/S-4-5	NA	6 - 11	03-26-01
Lot 208	Soil	SS-34	NA	0 - 1	05-02-01
		SS-35	NA	0 - 1	05-02-01
		SB-35 / S-1-2	NA	0 - 3.5	05-02-01
Old Railroad and Former Lower Mill Pond Area	Soil	SS-01	NA	0 - 1	05-09-01
		SB-01 / S-1-2	NA	0 - 3.4	05-09-01
		SS-02	NA	0 - 1	04-26-01
		SS-03	NA	0 - 1	05-09-01
		SS-04	NA	0 - 1	03-21-01
		SB-04 / S-4-5	NA	6 - 10	03-21-01
		SS-05	NA	0 - 1	03-19-01
		SB-05 / S-2-3	NA	2 - 6	03-19-01
		SS-06	NA	0 - 1	03-15-01
		SB-06 / S-4-5	NA	6 - 10	03-16-01
		SS-07	NA	0 - 1	03-15-01
		SB-07 / S-3	NA	4 - 6	03-15-01
		SS-08	NA	0 - 1	03-14-01
		SB-08A / S-4-5	NA	6 - 9.3	03-15-01
	Groundwater	WP-02	3.68	3.68	11-4-2003

TABLE 2
SUMMARY OF SAMPLES USED IN THE BASELINE HUMAN HEALTH RISK ASSESSMENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Sample Location	Depth to Top of GroundwaterTable (feet)	Sample Depth/Screen Depths (feet)	Date(s) Sampled
Area of Containment (AOC) [1]	Soil	SB-41 / S-1-2	NA	3 - 7	03-20-01
		OW-103 / S-1-2	NA	3 - 7	03-20-01
		SB-41D / S-5-6	NA	15 - 22	07-27-01
		SB-42 / S-1-2	NA	2.7 - 7	07-27-01
		SB-42 / S-3-4	NA	10 - 15.9	07-27-01
		OW-109	NA	10 - 15.9	07-27-01
		SB-43 / S-1-2	NA	3 - 6	08-01-01
		SB-43 / S-3-4	NA	6 - 9	08-01-01
		SB-44 / S-1-2	NA	4 - 8	07-31-01
		SB-44 / S-3-4	NA	8 - 12	07-31-01
		SB-44 / S-7	NA	17.5 - 18	07-31-01
		SB-45 / S-1-2	NA	3 - 7	07-19-01
		SB-45 / S-4-5	NA	10 - 14	07-19-01
		SB-46 / S-1-2	NA	3 - 5.5	07-18-01
		SB-46B / S-1-2	NA	8 - 12	07-18-01
		SB-47 / S-1-2	NA	1 - 5	07-25-01
		SB-47 / S-3-4	NA	5 - 5	07-25-01
		SB-48 / S-1-2	NA	0.5 - 4	12-14-00
		SB-48A / S-3-4	NA	4 - 7.3	12-14-00
		SB-51 / S-1-2	NA	0.8 - 4	12-07-00
		SB-51 / S-5-6	NA	8 - 12	12-07-00
		SB-52 / S-1-2	NA	4 - 8	04-18-01
		SB-52 / S-4-5	NA	10 - 14	04-18-01
		SB-53 / S-1-2	NA	2.3 - 7	07-13-01
		UST-4 / S-1-2	NA	1 - 4	12-11-00
		UST-4 / S-3-4	NA	4 - 7.3	12-11-00
		UST-5 / S-1-2	NA	0.5 - 4	12-12-00
		OW-101 / S-1-2	NA	0.5 - 4	12-12-00
		UST-5 / S-3-4	NA	4 - 6.8	12-13-00
		UST-6 / S-1-2	NA	0.4 - 4	12-13-00
		UST-6 / S-3-4	NA	4 - 8	12-13-00
	Groundwater	SH-01S	16.32, 13.82, 15.45	16.32, 13.82, 15.45	09-12-01, 05-21-02, 10-28-03
		SH-02S	16.97, 14.72, 15.96	16.97, 14.72, 15.96	09-12-01, 05-24-02, 10-29-03
		OW-210	15.96	15.96	10-29-03
		SH-03S	20.02, 18.73, 18.63	20.02, 18.73, 18.63	09-11-01, 05-16-02, 11-03-03
		SH-06S	6.37, 4.01, 5.32	6.37, 4.01, 5.32	09-06-01, 05-22-02, 10-29-03
		SH-07S	10.61, 8.37, 8.95	10.61, 8.37, 8.95	09-07-01, 05-22-02, 10-29-03
		OW-202-2	10.61	10.61	09-07-01
		OW-206-2	8.37	8.37	05-22-02
		SH-08S	7.26, 5.54, 6.77	7.26, 5.54, 6.77	09-06-01, 05-21-02, 10-28-03
		SH-09S	14.1, 12.77, 12.81	14.1, 12.77, 12.81	09-07-01, 05-17-02, 10-31-03
		SH-10S	18.5, 17.4, 17.35	18.5, 17.4, 17.35	09-10-01, 05-23-02, 10-31-03
		SH-11S	15.41, 14.13, 14.1	15.41, 14.13, 14.1	09-07-01, 05-16-02, 11-03-03
		SH-12S	19.58, 18.59 & 18.13, 18.17	19.58, 18.59 & 18.13, 18.17	09-11-01, 05-17-02, 11-03-03
		SH-13S	17.91, 16.98, 16.95	17.91, 16.98, 16.95	09-11-01, 05-16-02, 11-03-03
		OW-203	17.91	17.91	09-11-01
		OW-207	16.98	16.98	05-16-02

TABLE 2
SUMMARY OF SAMPLES USED IN THE BASELINE HUMAN HEALTH RISK ASSESSMENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Sample Location	Depth to Top of GroundwaterTable (feet)	Sample Depth/Screen Depths (feet)	Date(s) Sampled
Orlando Property	Soil	FP-06	NA	0 - 1	10-10-01, 08-05-03
			NA	1 - 3	08-05-03
		SS-66	NA	0 - 1	07-09-01
		SB-66 / S-3-4	NA	4 - 8	07-10-01
		SS-67	NA	0 - 1	07-11-01
		SS-68	NA	0 - 1	07-11-01
		SB-68 / S-2-3	NA	2 - 6	07-11-01
		SS-69	NA	0 - 1	07-10-01
		SS-70	NA	0 - 1	07-10-01
		OW-108	NA	0 - 1	07-10-01
		SS-71	NA	0 - 1	07-10-01
		SS-72	NA	0 - 1	07-10-01
		SB-72 / S-1-2	NA	0 - 4	07-10-01
		SS-73	NA	0 - 1	07-10-01
Vacant Lot 209	Soil	SS-36	NA	0 - 1	02-21-01
West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Groundwater	SH-15S	5.31, 4.64, 4.54	5.31, 4.64, 4.54	09-10-01, 05-20-02, 10-28-03
		SH-26S	1.12	1.12	10-28-03
		SH-27S	10.65	10.65	11-21-03
		SH-28S	8.45	8.45	11-06-03
		WP-06	1.82	1.82	10-28-03
		WP-07	1.98	1.98	10-27-03
West of South Street On-Facility	Soil	SH-05S / S-1	NA	6.5 - 8.5	02-05-01
		SS-27	NA	0 - 1	06-15-01
		SB-27 / S-2-3	NA	2 - 6	06-15-01
		SS-28	NA	0 - 1	07-23-01
		SB-28 / S-3-4	NA	4 - 8	07-23-01
		SS-29	NA	0 - 1	03-28-01
		SS-30	NA	0 - 1	03-28-01
		SB-30 / S-4-5	NA	6 - 10	03-28-01
		SS-31	NA	0 - 1	02-26-01
		OW-102	NA	0 - 1	02-26-01
		SB-31 / S-3-4	NA	4 - 8	02-26-01
		SS-32	NA	0 - 1	02-22-01
		SS-33	NA	0 - 1	02-23-01
		SS-37	NA	0 - 1	04-23-01
		SS-38	NA	0 - 1	04-23-01
		SB-38 / S-2-3	NA	2 - 4	04-23-01
		SS-39	NA	0 - 1	02-22-01
		SS-40	NA	0 - 1	02-26-01
		SB-40 / S-2-3	NA	2 - 6	02-26-01
		SB-49 / S-1-2	NA	0 - 4	04-24-01
		SB-49 / S-3-4	NA	4 - 8	04-24-01
		OW-106	NA	4 - 8	04-24-01
		SB-50 / S-1-2	NA	0 - 4	04-24-01
		SB-50 / S-3-4	NA	4 - 8	04-24-01
		SB-54 / S-1	NA	0.4 - 1.4	05-03-01

TABLE 2
SUMMARY OF SAMPLES USED IN THE BASELINE HUMAN HEALTH RISK ASSESSMENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Sample Location	Depth to Top of GroundwaterTable (feet)	Sample Depth/Screen Depths (feet)	Date(s) Sampled
West of South Street On-Facility Cont.	Soil	SB-55 / S-1	NA	0.3 - 1.3	05-03-01
		SB-56 / S-1	NA	0.8 - 1.8	05-03-01
		OW-107	NA	0.8 - 1.8	05-03-01
		SB-57 / S-1	NA	0.5 - 1.5	05-03-01
	Groundwater	SH-04S	5.94, 5.05, 5.07	5.94, 5.05, 5.07	09-11-01, 05-20-02, 10-28-03
		SH-05S	6.36, 4.84, 4.15	6.36, 4.84, 4.15	09-11-01, 05-21-02, 10-29-03
		OW-204	6.36	6.36	09-11-01
		OW-208	4.84	4.84	05-21-02
		SH-14S	4.88, 3.98, 4.49	4.88, 3.98, 4.49	09-10-01, 05-20-02, 11-04-03
		SH-16S	5.12, 3.14, 3.5	5.12, 3.14, 3.5	09-11-01, 05-17-02, 11-19-03
		SH-17S	8.12, 6.05, 7.11	8.12, 6.05, 7.11	09-06-01, 05-20-02, 11-19-03
		SH-18S	16.31, 15.11	16.31, 15.11	09-04-01, 05-15-02
		SH-25S	4.16	4.16	11-05-03
		WP-04	1.75	1.75	11-07-03
		WP-05	1.39	1.39	11-07-03
Off-site groundwater west of Neponset River	Groundwater	SH-24R	1.54	28.5 - 38.5	11-06-03
		SH-24S	1.82	1.82	11-06-03
		WP-03	4.9	4.9	11-05-03
Off-site groundwater east of Neponset River (SH-27)	Groundwater	OW-209	11.01	35 - 45	11-19-03
		SH-27D	11.01	35 - 45	11-19-03
		SH-27R	10.53	58 - 68	11-20-03
		SH-27S	10.65	10.65	11-21-03
Off-site groundwater east of Neponset River (SH-28)	Groundwater	SH-28D	6.75	44 - 54	11-06-03
		SH-28R	6.28	72 - 82	11-07-03
		SH-28S	8.45	8.45	11-06-03
Off-facility groundwater Lot 208 / Lot 209	Groundwater	SH-15D	3.68, 2.65, 2.64	45 - 55	09-10-01, 05-17-02, 11-04-03
		SH-15S	5.31, 4.64, 4.54	5.31, 4.64, 4.54	09-10-01, 05-20-02, 10-28-03
		SH-26S	1.12	1.12	10-28-03
		WP-05	1.39	1.39	11-07-03
		WP-06	1.82	1.82	10-28-03
		WP-07	1.98	1.98	10-27-03
On-Site Groundwater	Groundwater	SH-01D	20.22, 15.9, 16.79	35.5 - 45.5	09-12-01, 05-22-02, 10-29-03
		SH-01R	17.24, 15.54, 16.28	56 - 66	09-13-01, 05-22-02, 10-30-03
		SH-01S	16.32, 13.82, 15.45	16.32, 13.82, 15.45	09-12-01, 05-21-02, 10-28-03
		SH-02D	16.5, 14.44, 15.35	35 - 45	09-13-01, 05-23-02, 10-30-03
		SH-02R	14.74, 14.42, 14.56	62 - 72	09-12-01, 05-16-02, 11-04-03
		SH-02S	16.97, 14.72, 15.96	16.97, 14.72, 15.96	09-12-01, 05-24-02, 10-29-03
		OW-210	15.96	15.96	10-29-03
		SH-03D	18.78, 17.31, 17.66	80 - 90	09-12-01, 05-23-02, 11-03-03
		SH-03S	20.02, 18.73, 18.63	20.02, 18.73, 18.63	09-11-01, 05-16-02, 11-03-03
		SH-04D	3.38, 2.45, 2.46	61 - 71	09-11-01, 05-21-02, 11-05-03
		SH-04S	5.94, 5.05, 5.07	5.94, 5.05, 5.07	09-11-01, 05-20-02, 10-28-03
		SH-05D	4.64, 3.24, 3.42	43.1 - 53.1	09-11-01, 05-21-02, 11-04-03
		SH-05R-A	1.98	105.1 - 115.1	11-10-03
		SH-05R-B	1.78	156 - 166	11-11-03
		SH-05S	6.36, 4.84, 4.15	6.36, 4.84, 4.15	09-11-01, 05-21-02, 10-29-03
		OW-204	6.36	6.36	09-11-01
		OW-208	4.84	4.84	05-21-02
		SH-06D	6.48, 5.23, 5.88	37 - 47	09-06-01, 05-22-02, 10-29-03
		OW-202-1	6.48	37 - 47	09-06-01
		OW-206-1	5.23	37 - 47	05-22-02
		SH-06R-A	5.91	63 - 73	11-05-03
		SH-06R-B	7.32	109 - 119	11-06-03

TABLE 2
SUMMARY OF SAMPLES USED IN THE BASELINE HUMAN HEALTH RISK ASSESSMENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Sample Location	Depth to Top of GroundwaterTable (feet)	Sample Depth/Screen Depths (feet)	Date(s) Sampled
On-Site Groundwater Cont.	Groundwater	SH-06S	6.37, 4.01, 5.32	6.37, 4.01, 5.32	09-06-01, 05-22-02, 10-29-03
		SH-07D	11.23, 9.45, 9.39	41 - 51	09-07-01, 05-22-02, 10-30-03
		SH-07S	10.61, 8.37, 8.95	10.61, 8.37, 8.95	09-07-01, 05-22-02, 10-29-03
		SH-08D	10.46, 7.99, 9.05	25 - 30	09-07-01, 05-20-02, 10-29-03
		SH-08S	7.26, 5.54, 6.77	7.26, 5.54, 6.77	09-06-01, 05-21-02, 10-28-03
		SH-09D	14.65, 13.08, 14.07	24 - 29	09-07-01, 05-23-02, 10-28-03
		SH-09S	14.1, 12.77, 12.81	14.1, 12.77, 12.81	09-07-01, 05-17-02, 10-31-03
		SH-10S	18.5, 17.4, 17.35	18.5, 17.4, 17.35	09-10-01, 05-23-02, 10-31-03
		SH-11S	15.41, 14.13, 14.1	15.41, 14.13, 14.1	09-07-01, 05-16-02, 11-03-03
		SH-12D	18.46, 17.16, 17.3	66.2 - 76.2	09-12-01, 05-17-02, 11-03-03
		SH-12S	19.58, 18.13, 18.17	19.58, 18.13, 18.17	09-11-01, 05-17-02, 11-03-03
		SH-13S	17.91, 16.98, 16.95	17.91, 16.98, 16.95	09-11-01, 05-16-02, 11-03-03
		OW-203	17.91	17.91	09-11-01
		OW-207	16.98	16.98	05-16-02
		SH-14D	2.66, 1.71, 1.89	39 - 49	09-10-01, 05-20-02, 11-04-03
		SH-14S	4.88, 3.98, 4.49	4.88, 3.98, 4.49	09-10-01, 05-20-02, 11-04-03
		SH-16S	5.12, 3.14, 3.5	5.12, 3.14, 3.5	09-11-01, 05-17-02, 11-19-03
		SH-17D	7.36	22.2 - 32.2	11-20-03
		OW-211	7.36	22.2 - 32.2	11-20-03
		SH-17R	7.13	42.4 - 52.4	11-20-03
		SH-17S	8.12, 6.05, 7.11	8.12, 6.05, 7.11	09-06-01, 05-20-02, 11-19-03
		SH-18D	15.11, 13.7	37.5 - 47.5	09-04-01, 05-15-02
		SH-18S	16.31, 15.11	16.31, 15.11	09-04-01, 05-15-02
		SH-19D	10.65, 9.32	27 - 37	09-05-01, 05-16-02
		SH-19R	9.87, 8.38	49.5 - 59.5	09-05-01, 05-16-02
		SH-19S	9.93, 8.52	9.93, 8.52	09-05-01, 05-21-02
		OW-201	9.93	9.93	09-05-01
		OW-205	8.52	8.52	05-21-02
		SH-20S	9.68, 8.4	9.68, 8.4	09-05-01, 05-17-02
		SH-21S	6.6, 5.54	6.6, 5.54	09-06-01, 05-16-02
		SH-22S	16.23, 10.02	16.23, 10.02	09-05-01, 05-17-02
		SH-25D	3.17	44 - 54	11-05-03
		SH-25S	4.16	4.16	11-05-03
		WP-01	5.35	5.35	11-04-03
		WP-02	3.68	3.68	11-04-03
		WP-04	1.75	1.75	11-07-03
Former Mill Tailrace	Sediment	TR-1	NA	0 - 0.5	07-25-01
		TR-2	NA	0 - 0.4	07-25-01
		TR-3	NA	0 - 2.5	08-06-03
			NA	0 - 0.4	07-25-01
		TR-3 & OW-409	NA	0 - 0.5	12-16-02
		TR-4	NA	0 - 3	08-07-03
			NA	0 - 0.4	07-25-01
		TR-5	NA	0 - 2.9	08-06-03
			NA	0 - 0.6	07-25-01
	Surface Water	SW-106	NA	NA	04-04-01
		OW-301	NA	NA	04-04-01
		OW-501	NA	NA	04-04-01
		SW-106 & OW-302 & OW-504	NA	NA	08-01-01
		SW-107	NA	NA	04-04-01, 08-01-01

TABLE 2
SUMMARY OF SAMPLES USED IN THE BASELINE HUMAN HEALTH RISK ASSESSMENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Sample Location	Depth to Top of GroundwaterTable (feet)	Sample Depth/Screen Depths (feet)	Date(s) Sampled
Lewis Pond	Sediment	LP-1 & OW-402 & OW-503	NA	0 - 0.5	07-31-01
		LP-01	NA	0 - 0.5	12-18-02
		LP-02	NA	0 - 0.3	07-31-01
		LP-03	NA	0 - 0.4	07-31-01
		LP-04	NA	0 - 0.5	07-31-01
		LP-05	NA	0 - 0.5	07-30-01
		LP-06	NA	0 - 0.5	07-30-01, 12-18-02
		LP-07	NA	0 - 0.5	07-30-01
		LP-08	NA	0 - 0.5	07-30-01
		LP-09	NA	0 - 0.5	07-30-01, 12-18-02
		LP-10	NA	0 - 0.5	07-30-01
	Fish Tissue	LPF-1	NA	NA	08-19-03
		LPF-2	NA	NA	08-19-03
		LPF-3	NA	NA	08-19-03
		LPF-4	NA	NA	08-19-03
		LPF-5	NA	NA	08-19-03
Neponset River East of South Street	Sediment	NR-1 & OW-401 & OW-502	NA	0 - 0.3	07-26-01
		NR-2	NA	0 - 0.2	07-26-01
		NR-3	NA	0 - 0.2	07-26-01
	Surface Water	SW-102	NA	NA	04-05-01, 08-01-01
		SW-103	NA	NA	04-04-01, 08-01-01
Neponset River West of South Street	Sediment	NR-4	NA	0 - 0.5	07-26-01
		NR-5	NA	0 - 0.2	07-26-01
			NA	0 - 0.5	12-18-02
		NR-6	NA	0 - 0.3	07-26-01
		NR-7	NA	0 - 0.1	07-25-01
			NA	0 - 0.5	12-18-02
		NR-8	NA	0 - 0.2	07-25-01
			NA	0 - 0.5	12-18-02
	Surface Water	SW-105	NA	NA	04-04-01, 08-01-01
		SW-108	NA	NA	04-04-01, 08-01-01
Neponset River	Fish Tissue	NRF-1	NA	NA	08-18-03
		NRF-2	NA	NA	08-18-03
		NRF-3	NA	NA	08-18-03
		NRF-4	NA	NA	08-18-03
		NRF-5	NA	NA	08-18-03

Notes:
OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.
NA = not applicable
(1) Samples in the AOC are included for the indoor air and trench vapor pathways only, not for direct contact. See text for discussion.

TABLE 3
CURRENT SOIL SAMPLES BY EXPOSURE POINT FOR RESIDENT, TRESPASSER, SITE WORKER
(Direct Contact, and Homegrown Produce Pathways)
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)
Lot 283	Resident	FP-01 / 10-10-01	0 - 1
		OW-404 / 10-10-01	0 - 1
		OW-505 / 10-10-01	0 - 1
Lot 282	Resident	FP-02 / 10-10-01	0 - 1
Lot 210	Resident	FP-03 / 10-10-01	0 - 1
Lot 230	Resident	FP-04 / 10-10-01	0 - 1
Lot 257	Resident	FP-05 / 10-10-01	0 - 1
		FP-05 / 0-1 / 08-05-03	0 - 1
		OW-410 / 08-05-03	0 - 1
		OW-509 / 08-05-03	0 - 1
Lot 342	Resident	FP-08 / 10-10-01	0 - 1
Lot 360	Resident	FP-09 / 10-10-01	0 - 1
		FP-09 / 0-1 / 08-05-03	0 - 1
		FP-09A / 0-1' / 10-13-06	0 - 1
		FP-09B / 0-1' / 10-13-06	0 - 1
		FP-09C / 0-1' / 10-13-06	0 - 1
		FP-09D / 0-1' / 10-13-06	0 - 1
		FP-09E / 0-1' / 10-13-06	0 - 1
		FP-09F / 0-1' / 10-13-06	0 - 1
		OW-412 / 0-1' / 10-13-06	0 - 1
Lot 350	Trespasser	FP-10 / 10-10-01	0 - 1
Gleason Court Vacant Lot	Nearby Resident	SS-64 / 03-23-01	0 - 1
		SS-65 / 03-26-01	0 - 1
Gleason Court Lot 122	Resident	SS-62 / 04-17-01	0 - 1
		OW-105-1 / 04-17-01	0 - 1
		SS-63 / 04-02-01	0 - 1
Gleason Court Lot 124	Resident	SS-60 / 04-25-01	0 - 1
		SS-61 / 04-25-01	0 - 1
Gleason Court Lot 125	Resident	SS-58 / 04-26-01	0 - 1
		SS-59 / 04-26-01	0 - 1
Lot 208	Resident	SS-34 / 05-02-01	0 - 1
		SS-35 / 05-02-01	0 - 1
West of South Street On-Facility and Vacant Lot 209	Trespasser	SS-28 / 07-23-01	0 - 1
		SS-30 / 03-28-01	0 - 1
		SS-31 / 02-26-01	0 - 1
		OW-102 / 02-26-01	0 - 1
		SS-32 / 02-22-01	0 - 1
		SS-33 / 02-23-01	0 - 1
		SS-36 / 02-21-01	0 - 1
		SS-37 / 04-23-01	0 - 1
		SS-38 / 04-23-01	0 - 1
		SS-39 / 02-22-01	0 - 1
		SS-40 / 2-26-01	0 - 1
		SB-49 / S-1-2 / 04-24-01	0 - 4
		SB-50 / S-1-2 / 04-24-01	0 - 4

TABLE 3
CURRENT SOIL SAMPLES BY EXPOSURE POINT FOR RESIDENT, TRESPASSER, SITE WORKER
(Direct Contact, and Homegrown Produce Pathways)
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)
Orlando Property	Resident	FP-06 / 10-10-01	0 - 1
		FP-06 / 0-1 / 08-05-03	0 - 1
		SS-66 / 07-09-01	0 - 1
		SS-67 / 07-11-01	0 - 1
		SS-68 / 07-11-01	0 - 1
		SS-69 / 07-10-01	0 - 1
		SS-70 / 07-10-01	0 - 1
		OW-108 / 07-10-01	0 - 1
		SS-71 / 07-10-01	0 - 1
		SS-72 / 07-10-01	0 - 1
		SS-73 / 07-10-01	0 - 1
Old Railroad and Former Lower Mill Pond Area	Trespasser	SS-01 / 05-09-01	0 - 1
		SS-02 / 04-26-01	0 - 1
		SS-03 / 05-09-01	0 - 1
		SS-04 / 03-21-01	0 - 1
		SS-05 / 03-19-01	0 - 1
		SS-06 / 03-15-01	0 - 1
		SS-07 / 03-15-01	0 - 1
		SS-08 / 03-14-01	0 - 1
East of South Street On-Facility [(1)]	Site Worker	SS-09 / 04-23-01	0 - 1
		SS-12 / 04-17-01	0 - 1
		SS-14 / 04-13-01	0 - 1
		SS-20 / 06-12-01	0 - 1

Notes:

1. Figures 4 and 5 show the locations of the samples presented in this table.
2. Only samples collected between 0 and 1 feet were included at current soil exposure points except for SB-49 / S-1-2 & SB-50 / S-1-2, where 0 to 4 feet was the shallowest sampling interval.
3. Sample SB-08A is shown on Figure 4 in the Old Railroad and Former Lower Mill Pond Area, but this sample location is excluded from this exposure point for the current scenario because samples were collected at a depth greater than 0-1 ft.
4. Samples inside the AOC are excluded because access is restricted by an eight-foot barbed-wire security fence surrounding its perimeter.
5. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.

Footnotes:

(1) At the East of South St. On-Facility exposure point, only the four samples listed are accessible for current exposure (i.e. not covered by pavement).

TABLE 4
SUMMARY OF COPCs IN CURRENT SOIL
Blackburn and Union Privileges Site
Walpole, Massachusetts

COPCs	Lot 283	Lot 282	Lot 210	Lot 230	Lot 257	Lot 342	Lot 360	Lot 350	Gleason Court Vacant Lot	Gleason Court Lot 122	Gleason Court Lot 124	Gleason Court Lot 125	Lot 208	West of South Street On-Facility and Vacant Lot 209	Orlando Property	Old Railroad and Former Lower Mill Pond Area	East of South Street On-Facility
Antimony							x	x								x	
Arsenic[(1)]	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
Benz(a)anthracene	x				x		x					x		x	x	x	x
Benzo(a)pyrene	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Benzo(b)fluoranthene	x		x		x		x				x	x		x	x	x	x
Benzo(k)fluoranthene																x	x
Chromium[(1)]					x	x	x								x	x	
Chrysene														x		x	x
Cyanide (weak acid dissociable)													x				
Dibenz(a,h)anthracene	x				x		x				x	x		x	x	x	x
Indeno(1,2,3-cd)pyrene					x									x	x	x	x
Lead[(1)]	x				x		x								x		x
Manganese	x	x	x		x				x	x		x	x	x	x	x	
Nickel[(1)]			x														
Trichloroethene																	x
Vanadium	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	

Notes:
x = chemical is a COPC
COPC selection is shown in Table 2.1 of Appendix C.
Footnotes:
(1) This chemical is evaluated in the homegrown produce pathway for all areas where it is a COPC, except in non-residential lots. See text for discussion.

TABLE 5
FUTURE SOIL SAMPLES BY EXPOSURE POINT FOR RESIDENT, SITE WORKER, CONSTRUCTION WORKER
(Direct Contact, and Homegrown Produce Pathways)
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)
East of South Street On-Facility	Resident, Construction Worker, & Site Worker	SB-09 / S-2-3 / 04-23-01	2 - 6
		SS-09 / 04-23-01	0 - 1
		SB-09A / S-2 / 09-07-06	2 - 5.5
		OW-114 / S-2 / 09-07-06	2 - 5.5
		SB-09A / S-3 / 09-07-06	6 - 7.5
		SB-10 / S-3 / 06-07-01	8 - 9.3
		SS-10 / 06-07-01	0 - 1
		SB-11 / S-2-3 / 06-07-01	2 - 6
		SS-11 / 06-07-01	0 - 1
		SB-12 / S-1-2 / 04-17-01	0 - 4
		OW-105-3 / 04-17-01	0 - 4
		SS-12 / 04-17-01	0 - 1
		SB-13A / S-3-4 / 04-13-01	4 - 8
		OW-105-2 / 04-13-01	4 - 8
		SS-13 / 04-13-01	0 - 1
		SS-14 / 04-13-01	0 - 1
		SB-14 / S-3-4 / 04-13-01	4 - 8
		SS-15 / 04-16-01	0 - 1
		SB-15 / S-2-3 / 04-16-01	2 - 6
		SB-16 / S-3-4 / 06-06-01	4 - 8
		SS-16 / 06-06-01	0 - 1
		SB-17 / S-4-5 / 04-05-01	6 - 10
		SS-17 / 04-05-01	0 - 1
		SS-18 / 04-11-01	0 - 1
		SB-18 / S-2-3 / 04-11-01	2 - 5.4
		SB-19 / S-1-2 / 06-08-01	0.4 - 4
		OW-110 / 06-08-01	0.4 - 4
		SS-19 / 06-08-01	0 - 1
		SB-20 / S-2-3 / 06-12-01	2 - 6
		SS-20 / 06-12-01	0 - 1
		SB-21 / S-3-4 / 04-02-01	4 - 8
		SS-21 / 04-02-01	0 - 1
		SB-22 / S-3 / 06-13-01	4 - 5.1
		SS-22 / 06-13-01	0 - 1
		SS-23 / 04-11-01	0 - 1
		SB-23 / S-2-3 / 04-11-01	2 - 6
		SS-24 / 04-12-01	0 - 1
		SB-24 / S-3-4 / 04-12-01	4 - 8
		SS-25 / 03-29-01	0 - 1
		OW-104-1 / 03-29-01	0 - 1
		SB-25 / S-4-5 / 03-29-01	6 - 10
		OW-104-2 / S-4-5 / 03-29-01	6 - 10
		SB-26 / S-2-3 / 03-30-01	2 - 5.7
		SS-26 / 03-30-01	0 - 1
		UST-1 / S-1-2 / 04-04-01	0.2 - 5
		UST-1 / S-3-4 / 04-04-01	5 - 9
		UST-2 / S-1-2 / 04-05-01	0.3 - 4
		UST-2 / S-3-4 / 04-05-01	4 - 8
		UST-3 / S-1-2 / 04-04-01	0.2 - 4
		UST-3 / S-3-4 / 04-04-01	4 - 8
Lot 283	Resident & Construction Worker	FP-01 / 10-10-01	0 - 1
		OW-404 / 10-10-01	0 - 1
		OW-505 / 10-10-01	0 - 1

TABLE 5
FUTURE SOIL SAMPLES BY EXPOSURE POINT FOR RESIDENT, SITE WORKER, CONSTRUCTION WORKER
(Direct Contact, and Homegrown Produce Pathways)
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)
Lot 282	Resident & Construction Worker	FP-02 / 10-10-01	0 - 1
Lot 210	Resident & Construction Worker	FP-03 / 10-10-01	0 - 1
Lot 230	Resident & Construction Worker	FP-04 / 10-10-01	0 - 1
Lot 257	Resident & Construction Worker	FP-05 / 10-10-01	0 - 1
		FP-05 / 0-1 / 08-05-03	0 - 1
		OW-410 / 08-05-03	0 - 1
		OW-509 / 08-05-03	0 - 1
		FP-05 / 1-3 / 08-05-03	1 - 3
Orlando Property	Resident & Construction Worker	FP-06 / 10-10-01	0 - 1
		FP-06 / 0-1 / 08-05-03	0 - 1
		SS-66 / 07-09-01	0 - 1
		SS-67 / 07-11-01	0 - 1
		SS-68 / 07-11-01	0 - 1
		SS-69 / 07-10-01	0 - 1
		SS-70 / 07-10-01	0 - 1
		OW-108 / 07-10-01	0 - 1
		SS-71 / 07-10-01	0 - 1
		SS-72 / 07-10-01	0 - 1
		SS-73 / 07-10-01	0 - 1
		FP-06 / 1-3 / 08-05-03	1 - 3
		SB-66 / S-3-4 / 07-10-01	4 - 8
		SB-68 / S-2-3 / 07-11-01	2 - 6
		SB-72 / S-1-2 / 07-10-01	0 - 4
Lot 342	Resident & Construction Worker	FP-08 / 10-10-01	0 - 1
Lot 360	Resident	FP-09 / 10-10-01	0 - 1
		FP-09 / 0-1 / 08-05-03	0 - 1
		FP-09A / 0-1' / 10-13-06	0 - 1
		FP-09B / 0-1' / 10-13-06	0 - 1
		FP-09C / 0-1' / 10-13-06	0 - 1
		FP-09D / 0-1' / 10-13-06	0 - 1
		FP-09E / 0-1' / 10-13-06	0 - 1
		FP-09F / 0-1' / 10-13-06	0 - 1
		OW-412 / 0-1' / 10-13-06	0 - 1
Lot 350	Resident	FP-10 / 10-10-01	0 - 1
Gleason Court Vacant Lot	Resident & Construction Worker	SS-64 / 03-23-01	0 - 1
		SS-65 / 03-26-01	0 - 1
		SB-64 / S-3-4 / 03-23-01	4 - 8
		SB-65 / S-4-5 / 03-26-01	6 - 11
Gleason Court Lot 122	Resident & Construction Worker	SS-62 / 04-17-01	0 - 1
		OW-105-1 / 04-17-01	0 - 1
		SS-63 / 04-02-01	0 - 1
		SB-62 / S-3-4 / 04-17-01	4 - 8
		SB-63 / S-1-2 / 04-02-01	0 - 4
Gleason Court Lot 124	Resident & Construction Worker	SS-60 / 04-25-01	0 - 1
		SS-61 / 04-25-01	0 - 1
		SB-60 / S-4-5 / 04-25-01	6 - 8.5
		SB-61 / S-1-2 / 04-25-01	0 - 4
Gleason Court Lot 125	Resident & Construction Worker	SS-58 / 04-26-01	0 - 1
		SS-59 / 04-26-01	0 - 1
		SB-58 / S-2-3 / 04-26-01	2 - 5.5
		SB-59 / S-4-5 / 04-26-01	6 - 10
Lot 208	Resident & Construction Worker	SS-34 / 05-02-01	0 - 1
		SS-35 / 05-02-01	0 - 1
		SB-35 / S-1-2 / 05-02-01	0 - 3.5

TABLE 5
FUTURE SOIL SAMPLES BY EXPOSURE POINT FOR RESIDENT, SITE WORKER, CONSTRUCTION WORKER
(Direct Contact, and Homegrown Produce Pathways)
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)
Old Railroad and Former Lower Mill Pond Area	Resident & Construction Worker	SS-01 / 05-09-01	0 - 1
		SB-01 / S-1-2 / 05-09-01	0 - 3.4
		SS-02 / 04-26-01	0 - 1
		SS-03 / 05-09-01	0 - 1
		SS-04 / 03-21-01	0 - 1
		SB-04 / S-4-5 / 03-21-01	6 - 10
		SS-05 / 03-19-01	0 - 1
		SB-05 / S-2-3 / 03-19-01	2 - 6
		SS-06 / 03-15-01	0 - 1
		SB-06 / S-4-5 / 03-16-01	6 - 10
		SS-07 / 03-15-01	0 - 1
		SB-07 / S-3 / 03-15-01	4 - 6
		SS-08 / 03-14-01	0 - 1
		SB-08A / S-4-5 / 03-15-01	6 - 9.3
Vacant Lot 209	Resident & Construction Worker	SS-36 / 02-21-01	0 - 1
West of South Street On-Facility	Resident, Construction Worker, & Site Worker	SB-27 / S-2-3 / 06-15-01	2 - 6
		SS-27 / 06-15-01	0 - 1
		SS-28 / 07-23-01	0 - 1
		SB-28 / S-3-4 / 07-23-01	4 - 8
		SS-29 / 03-28-01	0 - 1
		SS-30 / 03-28-01	0 - 1
		SB-30 / S-4-5 / 03-28-01	6 - 10
		SS-31 / 02-26-01	0 - 1
		OW-102 / 02-26-01	0 - 1
		SB-31 / S-3-4 / 02-26-01	4 - 8
		SS-32 / 02-22-01	0 - 1
		SS-33 / 02-23-01	0 - 1
		SS-37 / 04-23-01	0 - 1
		SS-38 / 04-23-01	0 - 1
		SB-38 / S-2-3 / 04-23-01	2 - 4
		SS-39 / 02-22-01	0 - 1
		SS-40 / 2-26-01	0 - 1
		SB-40 / S-2-3 / 02-26-01	2 - 6
		SB-49 / S-1-2 / 04-24-01	0 - 4
		SB-49 / S-3-4 / 04-24-01	4 - 8
		OW-106 / 04-24-01	4 - 8
		SB-50 / S-1-2 / 04-24-01	0 - 4
		SB-50 / S-3-4 / 04-24-01	4 - 8
		SB-54 / S-1 / 05-03-01	0.4 - 1.4
		SB-55 / S-1 / 05-03-01	0.3 - 1.3
		SB-56 / S-1 / 05-03-01	0.8 - 1.8
		OW-107 / 05-03-01	0.8 - 1.8
		SB-57 / S-1 / 05-03-01	0.5 - 1.5
		SH-05S / S-1 / 02-05-01	6.5 - 8.5

Notes:
1. Figures 4 and 5 show the locations of the samples presented in this table.
2. A future construction worker is not evaluated in Lots 350 and 360 because these are wetland areas where future excavations are unlikely to occur.
3. Samples collected between 0 and 10 feet were included at future soil exposure points based on USEPA Region I guidance (USEPAReg1, 1995).
4. Samples inside the AOC are excluded because it is subject to a deed restriction (i.e., future excavation and building construction is restricted).
5. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.

TABLE 6
SUMMARY OF COPCs IN FUTURE SOIL FOR RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

COPCs	East of South Street On-Facility	Lot 283	Lot 282	Lot 210	Lot 230	Lot 257	Orlando Property	Lot 342	Lot 360	Lot 350	Gleason Court Vacant Lot	Gleason Court Lot 122	Gleason Court Lot 124	Gleason Court Lot 125	Lot 208	Old Railroad and Former Lower Mill Pond Area	Vacant Lot 209	West of South Street On-Facility
Antimony	x								x	x						x		
Arsenic[(1)]	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Barium														x				
Benz(a)anthracene	x	x				x	x		x					x		x		x
Benzo(a)pyrene	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x
Benzo(b)fluoranthene	x	x		x		x	x		x				x	x		x		x
Benzo(k)fluoranthene	x															x		
Chromium[(1)]	x					x	x	x	x							x		x
Chrysene	x															x		x
Cyanide (weak acid dissociable)															x			
Dibenz(a,h)anthracene	x	x				x	x		x				x	x		x		x
Dibenzofuran	x																	
Indeno(1,2,3-cd)pyrene	x					x	x									x		x
Lead[(1)]	x	x				x	x		x					x				x
Manganese	x	x	x	x		x	x				x	x	x	x	x	x	x	x
Mercury[(1)]	x																	x
Methylnaphthalene (2-)	x																	
Naphthalene	x																	
Nickel[(1)]				x														
Trichloroethene	x																	
Vanadium	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Zinc[(1)]	x																	

Notes:
x = chemical is a COPC
COPC selection is shown in Table 2.2 of Appendix C.
Footnotes:
(1) This chemical is evaluated in the homegrown produce pathway for all areas where it is a COPC. See text for discussion.

TABLE 7
SUMMARY OF COPCs IN FUTURE SOIL FOR CONSTRUCTION WORKER AND SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

COPCs	East of South Street On-Facility	Lot 283	Lot 282	Lot 210	Lot 230	Lot 257	Orlando Property	Lot 342	Gleason Court Vacant Lot	Gleason Court Lot 122	Gleason Court Lot 124	Gleason Court Lot 125	Lot 208	Old Railroad and Former Lower Mill Pond Area	Vacant Lot 209	West of South Street On-Facility
Antimony	x															
Arsenic	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Benz(a)anthracene	x	x				x	x					x		x		x
Benzo(a)pyrene	x	x		x	x	x	x		x	x	x	x		x		x
Benzo(b)fluoranthene	x			x		x	x				x	x		x		x
Benzo(k)fluoranthene	x													x		
Chrysene	x													x		x
Dibenz(a,h)anthracene	x													x		x
Indeno(1,2,3-cd)pyrene	x					x	x							x		x
Lead	x	x				x	x					x				x
Methylnaphthalene (2-)	x															
Naphthalene	x															
Trichloroethene	x															
Vanadium	x															
Zinc	x															

Notes:
x = chemical is a COPC
COPC selection is shown in Table 2.2 of Appendix C.
As shown on Table 1, the site worker is only evaluated in two exposure areas for direct contact with soil, East of South Street On-Facility and West of South Street On-Facility.
The construction worker is evaluated in all areas.

TABLE 8
CURRENT SOIL AND SOIL GAS SAMPLES FOR THE RESIDENT AND SITE WORKER INDOOR AIR EXPOSURE POINTS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)
Off-Site Residential Building 1	Resident	SS-31 / 02-26-01	0 - 1
		OW-102 / 02-26-01	0 - 1
		SB-31 / S-3-4 / 02-26-01	4 - 8
Off-Site Residential Building 2	Resident	SB-49 / S-1-2 / 04-24-01	0 - 4
		SB-49 / S-3-4 / 04-24-01	4 - 8
		OW-106 / 04-24-01	4 - 8
		SB-50 / S-1-2 / 04-24-01	0 - 4
		SB-50 / S-3-4 / 04-24-01	4 - 8
		SS-31 / 02-26-01	0 - 1
		OW-102 / 02-26-01	0 - 1
		SB-31 / S-3-4 / 02-26-01	4 - 8
Lot 283	Resident	FP-01 / 10-10-01	0 - 1
		OW-404 / 10-10-01	0 - 1
Lot 282	Resident	FP-02 / 10-10-01	0 - 1
Lot 210	Resident	FP-03 / 10-10-01	0 - 1
Orlando Property	Resident	FP-06 / 10-10-01	0 - 1
		FP-06 / 0-1 / 08-05-03	0 - 1
		FP-06 / 1-3 / 08-05-03	1 - 3
		SS-66 / 07-09-01	0 - 1
		SB-66 / S-3-4 / 07-10-01	4 - 8
Gleason Court Lot 122	Resident	SS-62 / 04-17-01	0 - 1
		OW-105-1 / 04-17-01	0 - 1
		SS-63 / 04-02-01	0 - 1
		SB-62 / S-3-4 / 04-17-01	4 - 8
		SB-63 / S-1-2 / 04-02-01	0 - 4
		SS-61 / 04-25-01	0 - 1
		SB-61 / S-1-2 / 04-25-01	0 - 4
		SS-64 / 03-23-01	0 - 1
		SB-64 / S-3-4 / 03-23-01	4 - 8
Gleason Court Lot 124	Resident	SV-02 / 09-07-06	4'
		SV-03 / 09-07-06	3.5'
		SV-05 / 09-07-06	4'
Gleason Court Lot 125	Resident	SV-02 / 09-07-06	4'
		SV-04 / 09-07-06	4'
		SV-05 / 09-07-06	4'
Off-Site Residential Building 3	Resident	SB-21 / S-3-4 / 04-02-01	4 - 8
		SS-21 / 04-02-01	0 - 1
Off-Site Residential Building 4	Resident	SS-65 / 03-26-01	0 - 1
		SB-65 / S-4-5 / 03-26-01	6 - 11
East of South Street On-Facility Building 1	Site Worker	SV-07 / 09-06-06	1.5'
		SV-08 / 09-06-06	0.75'
East of South Street On-Facility Building 2	Site Worker	SV-09 / 09-06-06	0.75'
		SV-10 / 09-06-06	0.75'
East of South Street On-Facility Building 3	Site Worker	SS-17 / 04-05-01	0 - 1
		SB-17 / S-4-5 / 04-05-01	6 - 10
		SS-18 / 04-11-01	0 - 1
		SB-18 / S-2-3 / 04-11-01	2 - 5.4
		SS-19 / 06-08-01	0 - 1
		SB-19 / S-1-2 / 06-08-01	0.4 - 4
		OW-110 / 06-08-01	0.4 - 4
		SS-20 / 06-12-01	0 - 1
		SB-20 / S-2-3 / 06-12-01	2 - 6
		SS-21 / 04-02-01	0 - 1
		SB-21 / S-3-4 / 04-02-01	4 - 8
		SS-22 / 06-13-01	0 - 1
		SB-22 / S-3 / 06-13-01	4 - 5.1
		SS-23 / 04-11-01	0 - 1
		SB-23 / S-2-3 / 04-11-01	2 - 6
		SS-24 / 04-12-01	0 - 1
		SB-24 / S-3-4 / 04-12-01	4 - 8
		SS-25 / 03-29-01	0 - 1
		OW-104-1 / 03-29-01	0 - 1
		SB-25 / S-4-5 / 03-29-01	6 - 10
		SS-27 / 06-15-01	0 - 1
		SB-27 / S-2-3 / 06-15-01	2 - 6
		SS-28 / 07-23-01	0 - 1
		SB-28 / S-3-4 / 07-23-01	4 - 8
		SS-58 / 04-26-01	0 - 1
		SB-58 / S-2-3 / 04-26-01	2 - 5.5
		SS-59 / 04-26-01	0 - 1
		SB-59 / S-4-5 / 04-26-01	6 - 10
		UST-3 / S-1-2 / 04-04-01	0.2 - 4
		UST-3 / S-3-4 / 04-04-01	4 - 8

TABLE 8
CURRENT SOIL AND SOIL GAS SAMPLES FOR THE RESIDENT AND SITE WORKER INDOOR AIR EXPOSURE POINTS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)
East of South Street On-Facility Building 4	Site Worker	SS-12 / 04-17-01	0 - 1
		SB-12 / S-1-2 / 04-17-01	0 - 4
		SS-13 / 04-13-01	0 - 1
		SB-13A / S-3-4 / 04-13-01	4 - 8
		SS-14 / 04-13-01	0 - 1
		SB-14 / S-3-4 / 04-13-01	4 - 8
		SS-15 / 04-16-01	0 - 1
		SB-15 / S-2-3 / 04-16-01	2 - 6
		SB-16 / S-3-4 / 06-06-01	0 - 1
		SS-16 / 06-06-01	4 - 8
		SS-17 / 04-05-01	0 - 1
		SB-17 / S-4-5 / 04-05-01	6 - 10
		SS-25 / 03-29-01	0 - 1
		OW-104-1 / 03-29-01	0 - 1
		SB-25 / S-4-5 / 03-29-01	6 - 10
		SS-26 / 03-30-01	0 - 1
		SB-26 / S-2-3 / 03-30-01	2 - 5.7
		UST-1 / S-1-2 / 04-04-01	0.2 - 5
		UST-1 / S-3-4 / 04-04-01	5 - 9
		UST-2 / S-1-2 / 04-05-01	0.3 - 4
		UST-2 / S-3-4 / 04-05-01	4 - 8
East of South Street On-Facility Building 5	Site Worker	SS-15 / 04-16-01	0 - 1
		SB-15 / S-2-3 / 04-16-01	2 - 6
		SS-16 / 06-06-01	0 - 1
		SB-16 / S-3-4 / 06-06-01	4 - 8
		SS-17 / 04-05-01	0 - 1
		SB-17 / S-4-5 / 04-05-01	6 - 10
		SS-25 / 03-29-01	0 - 1
		OW-104-1 / 03-29-01	0 - 1
		SB-25 / S-4-5 / 03-29-01	6 - 10
		SS-26 / 03-30-01	0 - 1
		SB-26 / S-2-3 / 03-30-01	2 - 5.7
		SB-56 / S-1 / 05-03-01	0.8 - 1.8
		OW-107 / 05-03-01	0.8 - 1.8
		SB-57 / S-1 / 05-03-01	0.5 - 1.5
		UST-2 / S-1-2 / 04-05-01	0.3 - 4
		UST-2 / S-3-4 / 04-05-01	4 - 8

Notes:
1. Figures 4 and 5 show the locations of the samples presented in this table. Figures 12 and 13 show 100-ft buffers around currently occupied buildings in relation to Site soil samples.
2. All soil samples above the water table and within 100 feet of an occupied building were included for the current soil to indoor air exposure points.
3. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.

TABLE 9
SUMMARY OF COPCs IN CURRENT SOIL AND SOIL GAS FOR THE INDOOR AIR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

COPCs	Off-Site Residential Building 1	Off-Site Residential Building 2	Lot 283	Orlando Property	Gleason Court Lot 124	Gleason Court Lot 125	Off-Site Residential Building 3	East of South Street On-Facility Building 1	East of South Street On-Facility Building 2	East of South Street On-Facility Building 3	East of South Street On-Facility Building 4	East of South Street On-Facility Building 5
Benzene								x	x		x	x
Carbon tetrachloride								x				
Chloroform			x									
Ethylbenzene											x	
Heptachlor							x			x		
Methylene chloride								x				
Methylnaphthalene (2-)										x	x	x
Naphthalene	x	x	x	x	x	x	x		x	x	x	x
Tetrachloroethene									x			
Trichloroethene					x	x		x	x			
Trichlorofluoromethane										x		
Trimethylbenzene (1,2,4-)					x	x			x			
Trimethylbenzene (1,3,5-)					x	x						

Notes:
x = chemical is a COPC
COPC selection is shown in Table 2.3 of Appendix C.
As shown in Table 2.3 of Appendix C, no COPCs were selected at the following exposure points: Lot 282, Lot 210, Gleason Court Lot 122 and Off-Site Residential Building 4.

TABLE 10
FUTURE SOIL AND SOIL GAS SAMPLES FOR THE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER AIR EXPOSURE POINTS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)
Lots South of AOC	Resident & Construction Worker	SB-41 / S-1-2 / 03-20-01	3 - 7
		OW-103 / S-1-2 / 03-20-01	3 - 7
		SB-41D / S-5-6 / 07-27-01	15 - 22
		SB-42 / S-3-4 / 07-27-01	10 - 15.9
		OW-109 / 07-27-01	10 - 15.9
		SB-42 / S-1-2 / 07-27-01	2.7 - 7
		SB-43 / S-3-4 / 08-01-01	6 - 9
		SB-43 / S-1-2 / 08-01-01	3 - 6
		SB-44 / S-3-4 / 07-31-01	8 - 12
		SB-44 / S-1-2 / 07-31-01	4 - 8
		SB-44 / S-7 / 07-31-01	17.5 - 18
East of South Street On-Facility (SB-09 area)	Resident, Site Worker, & Construction Worker	SV-01 / 09-07-06	4'
		OW-1001 / 09-07-06	4'
		SV-02 / 09-07-06	4'
		SV-03 / 09-07-06	3.5'
		SV-04 / 09-07-06	4'
		SV-05 / 09-07-06	4'
		SV-06 / 09-07-06	4'
		SV-07 / 09-06-06	1.5
		SV-08 / 09-06-06	0.75
		SV-09 / 09-06-06	0.75
		SV-10 / 09-06-06	0.75
East of South Street On-Facility (non-SB-09 area)	Resident, Site Worker, & Construction Worker	SS-11 / 06-07-01	0 - 1
		SB-11 / S-2-3 / 06-07-01	2 - 6
		SS-12 / 04-17-01	0 - 1
		SB-12 / S-1-2 / 04-17-01	0 - 4
		SS-13 / 04-13-01	0 - 1
		SB-13A / S-3-4 / 04-13-01	4 - 8
		SS-14 / 04-13-01	0 - 1
		SB-14 / S-3-4 / 04-13-01	4 - 8
		SS-15 / 04-16-01	0 - 1
		SB-15 / S-2-3 / 04-16-01	2 - 6
		SS-16 / 06-06-01	0 - 1
		SB-16 / S-3-4 / 06-06-01	4 - 8
		SS-17 / 04-05-01	0 - 1
		SB-17 / S-4-5 / 04-05-01	6 - 10
		SS-18 / 04-11-01	0 - 1
		SB-18 / S-2-3 / 04-11-01	2 - 5.4
		SS-21 / 04-02-01	0 - 1
		SB-21 / S-3-4 / 04-02-01	4 - 8
		SS-22 / 06-13-01	0 - 1
		SB-22 / S-3 / 06-13-01	4 - 5.1
		SS-23 / 04-11-01	0 - 1
		SB-23 / S-2-3 / 04-11-01	2 - 6
		SS-24 / 04-12-01	0 - 1
		SB-24 / S-3-4 / 04-12-01	4 - 8
		SS-25 / 03-29-01	0 - 1
		OW-104-1 / 03-29-01	0 - 1
		SB-25 / S-4-5 / 03-29-01	6 - 10
		SS-26 / 03-30-01	0 - 1
		SB-26 / S-2-3 / 03-30-01	2 - 5.7
		UST-1 / S-1-2 / 04-04-01	0.2 - 5
		UST-1 / S-3-4 / 04-04-01	5 - 9
		UST-2 / S-1-2 / 04-05-01	0.3 - 4
		UST-2 / S-3-4 / 04-05-01	4 - 8
		UST-3 / S-1-2 / 04-04-01	0.2 - 4
		UST-3 / S-3-4 / 04-04-01	4 - 8
Lot 283	Resident & Construction Worker	FP-01 / 10-10-01	0 - 1
		OW-404 / 10-10-01	0 - 1
Lot 282	Resident & Construction Worker	FP-02 / 10-10-01	0 - 1
Lot 210	Resident & Construction Worker	FP-03 / 10-10-01	0 - 1
Lot 230	Resident & Construction Worker	FP-04 / 10-10-01	0 - 1
Lot 257	Resident & Construction Worker	FP-05 / 10-10-01	0 - 1
		FP-05 / 0-1 / 08-05-03	0 - 1
		OW-410 / 08-05-03	0 - 1
		FP-05 / 1-3 / 08-05-03	1 - 3

TABLE 10
FUTURE SOIL AND SOIL GAS SAMPLES FOR THE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER AIR EXPOSURE POINTS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)
Orlando Property	Resident & Construction Worker	FP-06 / 10-10-01	0 - 1
		FP-06 / 0-1 / 08-05-03	0 - 1
		SS-66 / 07-09-01	0 - 1
		SS-67 / 07-11-01	0 - 1
		SS-68 / 07-11-01	0 - 1
		SS-69 / 07-10-01	0 - 1
		SS-70 / 07-10-01	0 - 1
		OW-108 / 07-10-01	0 - 1
		SS-71 / 07-10-01	0 - 1
		SS-72 / 07-10-01	0 - 1
		SS-73 / 07-10-01	0 - 1
		FP-06 / 1-3 / 08-05-03	1 - 3
		SB-66 / S-3-4 / 07-10-01	4 - 8
		SB-68 / S-2-3 / 07-11-01	2 - 6
		SB-72 / S-1-2 / 07-10-01	0 - 4
Lot 342	Resident & Construction Worker	FP-08 / 10-10-01	0 - 1
Lot 360	Resident & Construction Worker	FP-09 / 10-10-01	0 - 1
		FP-09 / 0-1 / 08-05-03	0 - 1
		FP-09 / 1-3 / 08-05-03	1 - 3
		FP-09A / 0-1'	0 - 1
		FP-09A / 1-3'	1 - 3
		FP-09B / 0-1'	0 - 1
		FP-09B / 1-3'	1 - 3
		FP-09C / 0-1'	0 - 1
		FP-09C / 1-3'	1 - 3
		FP-09D / 0-1'	0 - 1
		FP-09D / 1-3'	1 - 3
		FP-09E / 0-1'	0 - 1
		FP-09E / 1-3'	1 - 3
		FP-09F / 0-1'	0 - 1
		OW-412 / 0-1'	0 - 1
		FP-09F / 1-3'	1 - 3
Lot 350	Resident & Construction Worker	FP-10 / 10-10-01	0 - 1
Gleason Court Vacant Lot	Resident & Construction Worker	SS-64 / 03-23-01	0 - 1
		SS-65 / 03-26-01	0 - 1
		SB-64 / S-3-4 / 03-23-01	4 - 8
		SB-65 / S-4-5 / 03-26-01	6 - 11
Gleason Court Lot 122	Resident & Construction Worker	SS-62 / 04-17-01	0 - 1
		OW-105-1 / 04-17-01	0 - 1
		SS-63 / 04-02-01	0 - 1
		SB-62 / S-3-4 / 04-17-01	4 - 8
		SB-63 / S-1-2 / 04-02-01	0 - 4
Gleason Court Lot 124	Resident & Construction Worker	SV-02 / 09-07-06	4'
		SV-03 / 09-07-06	4'
		SV-05 / 09-07-06	4'
Gleason Court Lot 125	Resident & Construction Worker	SV-02 / 09-07-06	4'
		SV-04 / 09-07-06	4'
		SV-05 / 09-07-06	4'
Lot 208	Resident & Construction Worker	SS-34 / 05-02-01	0 - 1
		SS-35 / 05-02-01	0 - 1
		SB-35 / S-1-2 / 05-02-01	0 - 3.5
Old Railroad and Former Lower Mill Pond Area	Resident & Construction Worker	SS-01 / 05-09-01	0 - 1
		SB-01 / S-1-2 / 05-09-01	0 - 3.4
		SS-02 / 04-26-01	0 - 1
		SS-03 / 05-09-01	0 - 1
		SS-04 / 03-21-01	0 - 1
		SB-04 / S-4-5 / 03-21-01	6 - 10
		SS-05 / 03-19-01	0 - 1
		SB-05 / S-2-3 / 03-19-01	2 - 6
		SS-06 / 03-15-01	0 - 1
		SB-06 / S-4-5 / 03-16-01	6 - 10
		SS-07 / 03-15-01	0 - 1
		SB-07 / S-3 / 03-15-01	4 - 6
		SS-08 / 03-14-01	0 - 1
		SB-08A / S-4-5 / 03-15-01	6 - 9.3
Vacant Lot 209	Resident & Construction Worker	SS-36 / 02-21-01	0 - 1

TABLE 10
FUTURE SOIL AND SOIL GAS SAMPLES FOR THE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER AIR EXPOSURE POINTS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)
West of South Street On-Facility	Resident, Site Worker & Construction Worker	SB-27 / S-2-3 / 06-15-01	2 - 6
		SS-27 / 06-15-01	0 - 1
		SS-28 / 07-23-01	0 - 1
		SB-28 / S-3-4 / 07-23-01	4 - 8
		SS-29 / 03-28-01	0 - 1
		SS-30 / 03-28-01	0 - 1
		SB-30 / S-4-5 / 03-28-01	6 - 10
		SS-31 / 02-26-01	0 - 1
		OW-102 / 02-26-01	0 - 1
		SB-31 / S-3-4 / 02-26-01	4 - 8
		SS-32 / 02-22-01	0 - 1
		SS-33 / 02-23-01	0 - 1
		SS-37 / 04-23-01	0 - 1
		SS-38 / 04-23-01	0 - 1
		SB-38 / S-2-3 / 04-23-01	2 - 4
		SS-39 / 02-22-01	0 - 1
		SS-40 / 2-26-01	0 - 1
		SB-40 / S-2-3 / 02-26-01	2 - 6
		SB-49 / S-1-2 / 04-24-01	0 - 4
		SB-49 / S-3-4 / 04-24-01	4 - 8
		OW-106 / 04-24-01	4 - 8
		SB-50 / S-1-2 / 04-24-01	0 - 4
		SB-50 / S-3-4 / 04-24-01	4 - 8
		SB-54 / S-1 / 05-03-01	0.4 - 1.4
		SB-55 / S-1 / 05-03-01	0.3 - 1.3
		SB-56 / S-1 / 05-03-01	0.8 - 1.8
		OW-107 / 05-03-01	0.8 - 1.8
		SB-57 / S-1 / 05-03-01	0.5 - 1.5
		SB-45 / S-4-5 / 07-19-01	10 - 14
		SB-45 / S-1-2 / 07-19-01	3 - 7
		SB-46 / S-1-2 / 07-18-01	3 - 5.5
		SB-46B / S-1-2 / 07-18-01	8 - 12
		SB-47 / S-3-4 / 07-25-01	5 - 5
		SB-47 / S-1-2 / 07-25-01	1 - 5
		SB-48 / S-1-2 / 12-14-00	0.5 - 4
		SB-48A / S-3-4 / 12-14-00	4 - 7.3
		SB-51 / S-1-2 / 12-7-00	0.8 - 4
		SB-51 / S-5-6 / 12-7-00	8 - 12
		SB-52 / S-1-2 / 04-18-01	4 - 8
		SB-52 / S-4-5 / 04-18-01	10 - 14
		SB-53 / S-1-2 / 07-13-01	2.3 - 7
		UST-4 / S-1-2 / 12-11-00	1 - 4
		UST-4 / S-3-4 / 12-11-00	4 - 7.3
		OW-101 / S-1-2 / 12-12-00	0.5 - 4
		UST-5 / S-1-2 / 12-12-00	0.5 - 4
		UST-5 / S-3-4 / 12-13-00	4 - 6.8
		UST-6 / S-1-2 / 12-13-00	0.4 - 4
		UST-6 / S-3-4 / 12-13-00	4 - 8

Notes:

1. Figures 4 and 5 show the locations of the samples presented in this table.
2. Future soil to indoor air exposure is evaluated for a resident and a site worker. Future exposure to trench vapor from soil is evaluated for a construction worker.
3. Since future building locations are not known, all soil samples above the water table are included.
4. Soil samples within the AOC are included because these samples could be within a 100-ft lateral distance to future building locations.
5. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.

TABLE 11
SUMMARY OF COPCs IN FUTURE SOIL AND SOIL GAS FOR THE INDOOR AIR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

COPCs	Lots South of the AOC	East of South Street On-Facility (SB-09 area)	East of South Street On-Facility (non-SB-09 area)	Lot 283	Lot 257	Orlando Property	Lot 360	Lot 350	Gleason Court Lot 124	Gleason Court Lot 125	Lot 208	Old Railroad and Former Lower Mill Pond Area	West of South Street On-Facility
Benzene	x	x	x										x
Carbon Disulfide	x												x
Carbon tetrachloride		x											
Chloroform	x	x		x									x
Dichloroethene (cis-1,2-)		x											
Ethylbenzene		x	x										
Heptachlor			x										
Methylene chloride		x										x	
Methylnaphthalene (2-)			x										x
Naphthalene	x	x	x	x	x	x	x	x	x	x	x	x	x
Tetrachloroethene		x											
Trichloroethene		x	x						x	x			
Trichlorofluoromethane	x												x
Trimethylbenzene (1,2,4-)		x							x	x			
Trimethylbenzene (1,3,5-)		x							x	x			

Notes:
x = chemical is a COPC
COPC selection is shown in Table 2.4 of Appendix C.
As shown in Table 2.4 of Appendix C, no COPCs were selected at the following exposure points: Lot 282, Lot 210, Lot 230, Lot 342, Gleason Court Vacant Lot, Gleason Court Lot 122, and Vacant Lot 209

TABLE 12
SUMMARY OF COPCs IN FUTURE SOIL AND SOIL GAS FOR THE TRENCH VAPOR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

COPCs	Lots South of the AOC	East of South Street On-Facility (SB-09 area)	East of South Street On-Facility (non-SB-09 area)	Lot 283	Lot 282	Lot 210	Lot 230	Lot 257	Lot 342	Lot 360	Lot 350	Gleason Court Vacant Lot	Lot 208	Old Railroad and Former Lower Mill Pond Area	Orlando Property	West of South Street On-Facility
Acetone	x		x											x		x
Benzene	x		x													x
Carbon Disulfide	x		x													x
Chloroform	x			x												x
Methylene chloride														x		
Methylnaphthalene (2-)	x		x					x		x				x	x	x
Naphthalene	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
Toluene			x													x
Trichloroethene		x	x													
Trichlorofluoromethane	x		x										x			x
Xylene (m,p-)			x													
Xylene (o-)			x													

Notes:
x = chemical is a COPC
COPC selection is shown in Table 2.4 of Appendix C.
As shown in Table 2.4 of Appendix C, no COPCs were selected at the following exposure points: Gleason Court Lot 122, Gleason Court Lot 124, Gleason Court Lot 125 and Vacant Lot 209.

TABLE 13
FUTURE GROUNDWATER (TAP WATER) SAMPLES BY EXPOSURE POINT FOR THE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Depth To Water (feet)
Off-site groundwater west of Neponset River	Resident	SH-24R / 11-06-03	1.54
		SH-24S / 11-06-03	1.82
		WP-03 / 11-05-03	4.90
Off-site groundwater east of Neponset River (SH-27)	Resident	SH-27D / 11-19-03	11.01
		OW-209 / 11-19-03	11.01
		SH-27R / 11-20-03	10.53
		SH-27S / 11-21-03	10.65
Off-site groundwater east of Neponset River (SH-28)	Resident	SH-28D / 11-06-03	6.75
		SH-28R / 11-07-03	6.28
		SH-28S / 11-06-03	8.45
Off-facility groundwater Lot 208 / Lot 209	Resident	SH-15D / 05-17-02	2.65
		SH-15D / 09-10-01	3.68
		SH-15D / 11-04-03	2.64
		SH-15S / 05-20-02	4.64
		SH-15S / 09-10-01	5.31
		SH-15S / 10-28-03	4.54
		SH-26S / 10-28-03	1.12
		WP-05 / 11-07-03	1.39
		WP-06 / 10-28-03	1.82
		WP-07 / 10-27-03	1.98
On-Site Groundwater	Resident	SH-01D / 05-22-02	15.9
		SH-01D / 09-12-01	20.22
		SH-01D / 10-29-03	16.79
		SH-01R / 05-22-02	15.54
		SH-01R / 09-13-01	17.24
		SH-01R / 10-30-03	16.28
		SH-01S / 09-12-01	16.32
		SH-01S / 05-21-02	13.82
		SH-01S / 10-28-03	15.45
		SH-02D / 09-13-01	16.50
		SH-02D / 05-23-02	14.44
		SH-02D / 10-30-03	15.35
		SH-02R / 11-04-03	14.56
		SH-02R / 09-12-01	14.74
		SH-02R / 05-16-02	14.42
		SH-02S / 10-29-03	15.96
		OW-210 / 10-29-03	15.96
		SH-02S / 09-12-01	16.97
		SH-02S / 05-24-02	14.72
		SH-03D / 09-12-01	18.78
		SH-03D / 05-23-02	17.31
		SH-03D / 11-03-03	17.66
		SH-03S / 09-11-01	20.02
		SH-03S / 05-16-02	18.73
		SH-03S / 11-03-03	18.63
		SH-04D / 11-05-03	2.46
		SH-04D / 05-21-02	2.45
		SH-04D / 09-11-01	3.38
		SH-04S / 09-11-01	5.94
		SH-04S / 05-20-02	5.05
		SH-04S / 10-28-03	5.07
		SH-05D / 05-21-02	3.24
		SH-05D / 09-11-01	4.64
		SH-05D / 11-04-03	3.42
		SH-05R-A / 11-10-03	1.98
		SH-05R-B / 11-11-03	1.78
		SH-05S / 09-11-01	6.36
		OW-204 / 09-11-01	6.36
		SH-05S / 05-21-02	4.84
		OW-208 / 05-21-02	4.84
		SH-05S / 10-29-03	4.15
		SH-06D / 09-06-01	6.48

TABLE 13
FUTURE GROUNDWATER (TAP WATER) SAMPLES BY EXPOSURE POINT FOR THE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Depth To Water (feet)
On-Site Groundwater Cont'd	Resident	OW-202-1 / 09-06-01	6.48
		SH-06D / 05-22-02	5.23
		OW-206-1 / 05-22-02	5.23
		SH-06D / 10-29-03	5.88
		SH-06R-A / 11-05-03	5.91
		SH-06R-B / 11-06-03	7.32
		SH-06S / 09-06-01	6.37
		SH-06S / 05-22-02	4.01
		SH-06S / 10-29-03	5.32
		SH-07D / 09-07-01	11.23
		SH-07D / 05-22-02	9.45
		SH-07D / 10-30-03	9.39
		SH-07S / 09-07-01	10.61
		SH-07S / 05-22-02	8.37
		SH-07S / 10-29-03	8.95
		SH-08D / 09-07-01	10.46
		SH-08D / 05-20-02	7.99
		SH-08D / 10-29-03	9.05
		SH-08S / 09-06-01	7.26
		SH-08S / 05-21-02	5.54
		SH-08S / 10-28-03	6.77
		SH-09D / 09-07-01	14.65
		SH-09D / 05-23-02	13.08
		SH-09D / 10-28-03	14.07
		SH-09S / 09-07-01	14.10
		SH-09S / 10-31-03	12.81
		SH-09S / 05-17-02	12.77
		SH-10S / 05-23-02	17.40
		SH-10S / 09-10-01	18.50
		SH-10S / 10-31-03	17.35
		SH-11S / 05-16-02	14.13
		SH-11S / 09-07-01	15.41
		SH-11S / 11-03-03	14.10
		SH-12D / 09-12-01	18.46
		SH-12D / 05-17-02	17.16
		SH-12D / 11-03-03	17.30
		SH-12S / 09-11-01	19.58
		SH-12S / 05-17-02	18.13
		SH-12S / 11-03-03	18.17
		SH-13S / 09-11-01	17.91
		OW-203 / 09-11-01	17.91
		SH-13S / 05-16-02	16.98
		OW-207 / 05-16-02	16.98
		SH-13S / 11-03-03	16.95
		SH-14D / 11-04-03	1.89
		SH-14D / 05-20-02	1.71
		SH-14D / 09-10-01	2.66
		SH-14S / 11-04-03	4.49
		SH-14S / 09-10-01	4.88
		SH-14S / 05-20-02	3.98
		SH-16S / 09-11-01	5.12
		SH-16S / 05-17-02	3.14
		SH-16S / 11-19-03	3.50
		SH-17D / 11-20-03	7.36
		OW-211 / 11-20-03	7.36
		SH-17R / 11-20-03	7.13
		SH-17S / 05-20-02	6.05
		SH-17S / 11-19-03	7.11
		SH-17S / 09-06-01	8.12
		SH-18D / 09-04-01	15.11
		SH-18D / 05-15-02	13.70
		SH-18S / 09-04-01	16.31

TABLE 13
FUTURE GROUNDWATER (TAP WATER) SAMPLES BY EXPOSURE POINT FOR THE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Depth To Water (feet)
On-Site Groundwater Cont'd	Resident	SH-18S / 05-15-02	15.11
		SH-19D / 09-05-01	10.65
		SH-19D / 05-16-02	9.32
		SH-19R / 05-16-02	8.38
		SH-19R / 09-05-01	9.87
		SH-19S / 09-05-01	9.93
		OW-201 / 09-05-01	9.93
		SH-19S / 05-21-02	8.52
		OW-205 / 05-21-02	8.52
		SH-20S / 05-17-02	8.40
		SH-20S / 09-05-01	9.68
		SH-21S / 05-16-02	5.54
		SH-21S / 09-06-01	6.60
		SH-22S / 05-17-02	10.02
		SH-22S / 09-05-01	16.23
		SH-25D / 11-05-03	3.17
		SH-25S / 11-05-03	4.16
		WP-01 / 11-04-03	5.35
		WP-02 / 11-04-03	3.68
		WP-04 / 11-07-03	1.75

Notes:
1. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.
2. Monitoring well SH-23S is excluded because it is considered a background well (see text for discussion).

TABLE 14
SUMMARY OF COPCs IN GROUNDWATER (TAP WATER)
Blackburn and Union Privileges Site
Walpole, Massachusetts

COPCs	Off-site groundwater west of Neponset River	Off-site groundwater east of Neponset River (SH-27)	Off-site groundwater east of Neponset River (SH-28)	Off-facility groundwater Lot 208 / Lot 209	On-Site Groundwater
pH				x	x
Acenaphthene					x
Acenaphthylene					x
Antimony		x			x
Arsenic	x	x	x	x	x
Barium					x
Benz(a)anthracene					x
Benzene				x	x
Benzo(a)pyrene		x		x	x
Benzo(b)fluoranthene					x
bis(2-Ethylhexyl)phthalate					x
Cadmium					x
Carbazole					x
Chloroform					x
Chromium				x	x
Cyanide					x
Dibenz(a,h)anthracene				x	x
Ethylbenzene					x
Fluorene					x
Indeno(1,2,3-cd)pyrene					x
Lead				x	x
Manganese	x	x	x	x	x
Mercury					x
Methylene chloride					x
Methylnaphthalene (2-)				x	x
Methylphenol (4-)					x
Methyl tert-butyl ether (MTBE)					x
Naphthalene				x	x
Nickel					x
Nitrophenol (4-)		x			
Pyrene					x
Selenium					x
Styrene					x
Thallium					x
Toluene					x
Trichloroethene		x	x		x
Vanadium		x		x	x
Xylene (m,p-)					x
Xylene (o-)					x
Zinc					x

Notes:
x = chemical is a COPC
COPC selection is shown in Table 2.5 of Appendix C.

TABLE 15
FUTURE GROUNDWATER SAMPLES BY EXPOSURE POINT FOR CONSTRUCTION WORKER DERMAL CONTACT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Depth To Water (feet)
East of South Street On-Facility	Construction Worker	SH-19S / 05-21-02	8.52
		OW-205 / 05-21-02	8.52
		SH-19S / 09-05-01	9.93
		OW-201 / 09-05-01	9.93
		SH-20S / 05-17-02	8.4
		SH-20S / 09-05-01	9.68
		SH-21S / 05-16-02	5.54
		SH-21S / 09-06-01	6.6
		SH-22S / 05-17-02	10.02
		SH-22S / 09-05-01	16.23
Old Railroad and Former Lower Mill Pond Area	Construction Worker	WP-02 / 11-04-03	3.68
West of South Street On-Facility	Construction Worker	SH-04S / 09-11-01	5.94
		SH-04S / 05-20-02	5.05
		SH-04S / 10-28-03	5.07
		SH-05S / 09-11-01	6.36
		OW-204 / 09-11-01	6.36
		SH-05S / 05-21-02	4.84
		OW-208 / 05-21-02	4.84
		SH-05S / 10-29-03	4.15
		SH-14S / 05-20-02	3.98
		SH-14S / 09-10-01	4.88
		SH-14S / 11-04-03	4.49
		SH-16S / 09-11-01	5.12
		SH-16S / 05-17-02	3.14
		SH-16S / 11-19-03	3.5
		SH-17S / 09-06-01	8.12
		SH-17S / 05-20-02	6.05
		SH-17S / 11-19-03	7.11
		SH-25S / 11-05-03	4.16
		WP-04 / 11-07-03	1.75
		WP-05 / 11-07-03	1.39
West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Construction Worker	SH-26S / 10-28-03	1.12
		SH-28S / 11-06-03	8.45
		WP-06 / 10-28-03	1.82
		WP-07 / 10-27-03	1.98
		SH-15S / 05-20-02	4.64
		SH-15S / 09-10-01	5.31
		SH-15S / 10-28-03	4.54

Notes:

1. Figure 6 shows the locations of the samples presented in this table.
2. Only groundwater wells where the depth to groundwater is 10 feet or less (on at least one sampling date in the case of wells that were sampled on multiple dates) were included at future groundwater exposure points. SH-27S and SH-18S were excluded for this reason.
3. WP-01 is excluded because this sample is in a wetland area; therefore exposure to WP-01 during construction activities is not expected.
4. Monitoring well SH-23S is excluded because it is considered a background well (see text for discussion).
5. WP-03 and SH-24 are excluded because they are on the south side of the Neponset River (i.e., opposite the Site), and not impacted by Site contamination (see text for discussion).
6. The AOC is subject to a deed restriction (i.e., future excavation and building construction is restricted) therefore groundwater samples from this area are excluded.
7. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.

TABLE 16
SUMMARY OF COPCs IN GROUNDWATER FOR CONSTRUCTION WORKER DERMAL CONTACT
Blackburn and Union Privileges Site
Walpole, Massachusetts

COPCs	East of South Street On-Facility	Old Railroad and Former Lower Mill Pond Area	West of South Street On-Facility	West of South Street Off-Facility/Off-Site Groundwater Exposure Area
pH			x	x
Antimony			x	
Arsenic	x	x	x	x
Barium			x	
Benz(a)anthracene	x		x	
Benzene			x	x
Benzo(a)pyrene	x		x	x
Benzo(b)fluoranthene	x		x	
bis(2-Ethylhexyl)phthalate			x	
Chloroform	x			
Chromium	x	x	x	x
Dibenz(a,h)anthracene	x		x	x
Hexanone (2-)			x	
Indeno(1,2,3-cd)pyrene	x			
Manganese	x	x	x	x
Methylnaphthalene (2-)			x	x
Naphthalene	x		x	x
Nickel			x	
Phenanthrene			x	
Thallium	x			
Trichloroethene	x		x	
Vanadium			x	x
Xylene (m,p-)			x	

Notes:
x = chemical is a COPC
COPC selection is shown in Table 2.6 of Appendix C.

TABLE 17
CURRENT GROUNDWATER SAMPLES FOR THE RESIDENT
AND SITE WORKER INDOOR AIR EXPOSURE POINTS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Depth To Water (feet)
East of South Street On-Facility Building 3	Site Worker	SH-18S / 09-04-01	16.31
		SH-18S / 05-15-02	15.11
		SH-19S / 09-05-01	9.93
		OW-201 / 09-05-01	9.93
		SH-19S / 05-21-02	8.52
		OW-205 / 05-21-02	8.52
		SH-22S / 09-05-01	16.23
		SH-22S / 05-17-02	10.02
East of South Street On-Facility Building 4	Site Worker	SH-19S / 09-05-01	9.93
		OW-201 / 09-05-01	9.93
		SH-19S / 05-21-02	8.52
		OW-205 / 05-21-02	8.52
		SH-20S / 09-05-01	9.68
		SH-20S / 05-17-02	8.4
		SH-21S / 09-06-01	6.6
		SH-21S / 05-16-02	5.54
		SH-22S / 09-05-01	16.23
		SH-22S / 05-17-02	10.02
East of South Street On-Facility Building 5	Site Worker	SH-19S / 09-05-01	9.93
		OW-201 / 09-05-01	9.93
		SH-19S / 05-21-02	8.52
		OW-205 / 05-21-02	8.52
		SH-20S / 09-05-01	9.68
		SH-20S / 05-17-02	8.4
		SH-21S / 09-06-01	6.6
		SH-21S / 05-16-02	5.54
		SH-22S / 09-05-01	16.23
		SH-22S / 05-17-02	10.02
		WP-01 / 11-04-03	5.35
West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Resident	SH-16S / 05-17-02	3.14
		SH-16S / 09-11-01	5.12
		SH-16S / 11-19-03	3.5
		SH-17S / 09-06-01	8.12
		SH-17S / 05-20-02	6.05
		SH-17S / 11-19-03	7.11
		SH-27S / 11-21-03	10.65
		WP-06 / 10-28-03	1.82
		SH-28S / 11-06-03	8.45

Notes:
1. Figure 6 shows the locations of the samples presented in this table. Figure 14 shows the 100-ft buffers around currently occupied buildings in relation to Site groundwater samples.
2. Only shallow groundwater samples where the sample depth is less than 100 feet (all site groundwater is less than 100 feet deep) and the sample location is within 100 feet of an occupied building were included at current groundwater to indoor air exposure points.
3. Monitoring well SH-23S is excluded because it is considered a background well (see text for discussion).

4. WP-03 and SH-24 are excluded because they are on the south side of the Neponset River (i.e., opposite the Site), and not impacted by Site contamination (see text for discussion).
5. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.

TABLE 18
FUTURE GROUNDWATER SAMPLES FOR THE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER AIR EXPOSURE POINTS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Depth To Water (feet)
Lots South of the AOC	Resident & Construction Worker	SH-10S / 05-23-02	17.4
		SH-10S / 09-10-01	18.5
		SH-10S / 10-31-03	17.35
		SH-11S / 05-16-02	14.13
		SH-11S / 09-07-01	15.41
		SH-11S / 11-03-03	14.1
		SH-12S / 05-17-02	18.59 & 18.13
		SH-12S / 09-11-01	19.58
		SH-12S / 11-03-03	18.17
		SH-13S / 05-16-02	16.98
		OW-207 / 05-16-02	16.98
		SH-13S / 09-11-01	17.91
		OW-203 / 09-11-01	17.91
		SH-13S / 11-03-03	16.95
East of South Street On-Facility	Resident, Site Worker, & Construction Worker	SH-19S / 05-21-02	8.52
		OW-205 / 05-21-02	8.52
		SH-19S / 09-05-01	9.93
		OW-201 / 09-05-01	9.93
		SH-20S / 05-17-02	8.4
		SH-20S / 09-05-01	9.68
		SH-21S / 05-16-02	5.54
		SH-21S / 09-06-01	6.6
		SH-22S / 05-17-02	10.02
		SH-22S / 09-05-01	16.23
West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Resident & Construction Worker	SH-26S / 10-28-03	1.12
		SH-27S / 11-21-03	10.65
		SH-28S / 11-06-03	8.45
		WP-06 / 10-28-03	1.82
		WP-07 / 10-27-03	1.98
		SH-15S / 05-20-02	4.64
		SH-15S / 09-10-01	5.31
		SH-15S / 10-28-03	4.54
Old Railroad and Former Lower Mill Pond Area	Resident & Construction Worker	WP-02 / 11-04-03	3.68
West of South Street On-Facility	Resident, Site Worker, & Construction Worker	SH-04S / 09-11-01	5.94
		SH-04S / 05-20-02	5.05
		SH-04S / 10-28-03	5.07
		SH-05S / 09-11-01	6.36
		OW-204 / 09-11-01	6.36
		SH-05S / 05-21-02	4.84
		OW-208 / 05-21-02	4.84
		SH-05S / 10-29-03	4.15
		SH-14S / 05-20-02	3.98
		SH-14S / 09-10-01	4.88
		SH-14S / 11-04-03	4.49
		SH-16S / 09-11-01	5.12
		SH-16S / 05-17-02	3.14
		SH-16S / 11-19-03	3.5
		SH-17S / 09-06-01	8.12
		SH-17S / 05-20-02	6.05
		SH-17S / 11-19-03	7.11
		SH-18S / 09-04-01	16.31
		SH-18S / 05-15-02	15.11
		SH-25S / 11-05-03	4.16
		WP-04 / 11-07-03	1.75
		WP-05 / 11-07-03	1.39
		SH-01S / 05-21-02	13.82
		SH-01S / 09-12-01	16.32
		SH-01S / 10-28-03	15.45

TABLE 18
FUTURE GROUNDWATER SAMPLES FOR THE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER AIR EXPOSURE POINTS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Depth To Water (feet)
West of South Street On-Facility	Resident, Site Worker, & Construction Worker	SH-02S / 10-29-03	15.96
		OW-210 / 10-29-03	15.96
		SH-02S / 05-24-02	14.72
		SH-02S / 09-12-01	16.97
		SH-03S / 05-16-02	18.73
		SH-03S / 09-11-01	20.02
		SH-03S / 11-03-03	18.63
		SH-06S / 05-22-02	4.01
		SH-06S / 09-06-01	6.37
		SH-06S / 10-29-03	5.32
		SH-07S / 09-07-01	10.61
		OW-202-2 / 09-07-01	10.61
		SH-07S / 05-22-02	8.37
		OW-206-2 / 05-22-02	8.37
		SH-07S / 10-29-03	8.95
		SH-08S / 05-21-02	5.54
		SH-08S / 09-06-01	7.26
		SH-08S / 10-28-03	6.77
		SH-09S / 05-17-02	12.77
		SH-09S / 09-07-01	14.1
		SH-09S / 10-31-03	12.81

Notes:

1. Figure 6 shows the locations of the samples presented in this table.
2. Future groundwater to indoor air exposure is evaluated for a resident and a site worker. Future exposure to trench vapor from groundwater is evaluated for a construction worker.
3. Since future building locations are not known, this scenario includes all shallow groundwater samples.
4. Monitoring well SH-23S is excluded because it is considered a background well (see text for discussion).
5. WP-01 is excluded because this sample is in a wetland area and therefore unlikely to be within 100 feet of a future building in the Old Railorad Former Mill Pond area
6. WP-03 and SH-24 are excluded because they are on the south side of the Neponset River (i.e., opposite the Site), and not impacted by Site contamination (see text for discussion).
7. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.

TABLE 19
SUMMARY OF COPCs FOR FUTURE GROUNDWATER TO AIR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

COPCs	West of South Street Off-Facility/Off-Site Groundwater Exposure Area Indoor Air	West of South Street On-Facility Indoor Air
Benzene	x	x
Hexanone (2-)		x
Naphthalene	x	x

Notes:
x = chemical is a COPC
COPC selection is shown in Table 2.8 for indoor air and Table 2.8a for trench vapor in Appendix C.
As shown in Table 2.8, of Appendix C, no COPCs were selected for a future resident exposed to indoor air at the following exposure points: Lots South of the AOC, East of South Street On-Facility, and Old Railroad and Former Lower Mill Pond Area
No COPCs were selected for a construction worker exposed to trench vapor at the following exposure point: Old Railroad and Former Lower Mill Pond Area

TABLE 20
CURRENT/FUTURE SEDIMENT SAMPLES BY EXPOSURE POINT FOR FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)	Water Above Sediment (feet)
Lewis Pond	Fisher & Wader	LP-01 & OW-402 & OW-503 / 07-31-01	0 - 0.5	0.26
		LP-01 / 12-18-02	0 - 0.5	1.42
		LP-02 / 07-31-01	0 - 0.3	0 (1)
		LP-03 / 07-31-01	0 - 0.4	0 (1)
		LP-04 / 07-31-01	0 - 0.5	0.36
		LP-05 / 07-30-01	0 - 0.5	0 (1)
		LP-06 / 07-30-01	0 - 0.5	0 (1)
		LP-06 / 12-18-02	0 - 0.5	NM (2)
		LP-07 / 07-30-01	0 - 0.5	0 (1)
		LP-08 / 07-30-01	0 - 0.5	0.62
		LP-09 / 07-30-01	0 - 0.5	1.34
		LP-09 / 12-18-02	0 - 0.5	2.8
		LP-10 / 07-30-01	0 - 0.5	1.55
Neponset River East of South Street	Fisher & Wader	NR-1 & OW-401 & OW-502 / 07-26-01	0 - 0.3	0.29
		NR-2 / 07-26-01	0 - 0.2	0.66
		NR-3 / 07-26-01	0 - 0.2	0.54
Neponset River West of South Street	Fisher & Wader	NR-4 / 07-26-01	0 - 0.5	0.1
		NR-5 / 07-26-01	0 - 0.2	0.43
		NR-5 / 12-18-02	0 - 0.5	0.68
		NR-6 / 07-26-01	0 - 0.3	0.38
		NR-7 / 07-25-01	0 - 0.1	0.35
		NR-7 / 12-18-02	0 - 0.5	1.26
		NR-8 / 07-25-01	0 - 0.2	0.51
		NR-8 / 12-18-02	0 - 0.5	1.5
Former Mill Tailrace	Wader	TR-1 / 07-25-01	0 - 0.5	0 (1)
		TR-2 / 07-25-01	0 - 0.4	0.36
		TR-3 / 0-2.5 / 08-06-03	0 - 2.5	NM (3)
		TR-3 / 07-25-01	0 - 0.4	0.51
		TR-3 & OW-409 / 12-16-02	0 - 0.5	1.4
		TR-4 / 0-3.0 / 08-07-03	0 - 3	NM (3)
		TR-4 / 07-25-01	0 - 0.4	0 (1)
		TR-5 / 0-2.9 / 08-06-03	0 - 2.9	NM (3)
		TR-5 / 07-25-01	0 - 0.6	0 (1)

Notes:
NM = Not measured.
OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.
Footnotes:
(1) There was no water above the sediment at the time of sampling.
(2) Unable to collect depth measurement due to ice around stake.
(3) Sample was analyzed for asbestos only. The depth of standing water was not measured.

TABLE 21
CURRENT/FUTURE SURFACE WATER SAMPLES BY EXPOSURE POINT FOR FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date
Neponset River East of South Street	Fisher & Wader	SW-102 / 04-05-01 SW-102 / 08-01-01 SW-103 / 04-04-01 SW-103 / 08-01-01
Neponset River West of South Street	Fisher & Wader	SW-105 / 04-04-01 SW-105 / 08-01-01 SW-108 / 04-04-01 SW-108 / 08-01-01
Former Mill Tailrace	Wader	SW-106 / 04-04-01 OW-301 / 04-04-01 SW-106 & OW-302 & OW-504 (08-01-01) SW-107 / 04-04-01 SW-107 / 08-01-01

Notes:
OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.

TABLE 22
CURRENT/FUTURE FISH TISSUE SAMPLES BY EXPOSURE POINT FOR FISHER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date
Lewis Pond	Fisher	LPF-1 / 08-19-03 LPF-2 / 08-19-03 LPF-3 / 08-19-03 LPF-4 / 08-19-03 LPF-5 / 08-19-03
Neponset River	Fisher	NRF-1 / 08-18-03 NRF-2 / 08-18-03 NRF-3 / 08-18-03 NRF-4 / 08-18-03 NRF-5 / 08-18-03

Notes:
All samples are fish fillets.

TABLE 23
SUMMARY OF COPCs IN SEDIMENT, SURFACE WATER AND FISH
Blackburn and Union Privileges Site
Walpole, Massachusetts

	Sediment				Surface Water			Fish Tissue	
COPCs	**Lewis Pond**	**Neponset River East of South Street**	**Neponset River West of South Street**	**Former Mill Tailrace**	**Neponset River East of South Street**	**Neponset River West of South Street**	**Former Mill Tailrace**	**Lewis Pond**	**Neponset River**
Antimony	x								
Arsenic	x	x	x	x			x	x	x
Benz(a)anthracene	x		x	x			x		
Benzo(a)pyrene	x	x	x	x			x	x	x
Benzo(b)fluoranthene	x		x	x			x	x	
Beryllium	x								
bis(2-Ethylhexyl)phthalate								x	x
Cadmium	x								
Chromium - Total	x			x			x		
Dibenz(a,h)anthracene	x		x	x			x		x
Indeno(1,2,3-cd)pyrene	x		x	x			x		
Lead	x			x				x	x
Manganese	x	x	x	x	x	x	x		
Mercury								x	x
Naphthalene							x		
Nickel	x								
Vanadium	x	x	x	x			x		
Zinc									x

Notes:
x = chemical is a COPC
COPC selection is shown in Table 2.9 for sediment, Table 2.10 for surface water, and Table 2.11 for fish tissue in Appendix C.

Table 24
Soil pH Data
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)	pH (s.u.)
Lot 208	Current Resident	SS-34 / 05-02-01	0 - 1	5.4
		SS-35 / 05-02-01	0 - 1	5.28
	Future Resident & Future Construction Worker	SS-34 / 05-02-01	0 - 1	5.4
		SS-35 / 05-02-01	0 - 1	5.28
		SB-35 / S-1-2 / 05-02-01	0 - 3.5	5.74
West of South Street On-Facility and Vacant Lot 209	Current Trespasser	SS-31 / 02-26-01	0 - 1	6.5
		OW-102 / 02-26-01	0 - 1	6.5
		SS-32 / 02-22-01	0 - 1	5.58
		SS-33 / 02-23-01	0 - 1	7.47
		SS-36 / 02-21-01	0 - 1	6.5
		SS-37 / 04-23-01	0 - 1	4.77
		SS-38 / 04-23-01	0 - 1	4.54
		SS-39 / 02-22-01	0 - 1	6.27
		SS-40 / 2-26-01	0 - 1	6.88
		SB-49 / S-1-2 / 04-24-01	0 - 4	6.28; 5.57
		SB-50 / S-1-2 / 04-24-01	0 - 4	6.93; 6.01
Vacant Lot 209	Future Resident & Future Construction Worker	SS-36 / 02-21-01	0 - 1	6.5
West of South Street On-Facility	Future Resident, Future Construction Worker & Future Site Worker	SS-31 / 02-26-01	0 - 1	6.5
		OW-102 / 02-26-01	0 - 1	6.5
		SB-31 / S-3-4 / 02-26-01	4 - 8	6.4; 7.65
		SS-32 / 02-22-01	0 - 1	5.58
		SS-33 / 02-23-01	0 - 1	7.47
		SS-37 / 04-23-01	0 - 1	4.77
		SS-38 / 04-23-01	0 - 1	4.54
		SB-38 / S-2-3 / 04-23-01	2 - 4	5
		SS-39 / 02-22-01	0 - 1	6.27
		SS-40 / 2-26-01	0 - 1	6.88
		SB-40 / S-2-3 / 02-26-01	2 - 6	8.39
		SB-49 / S-1-2 / 04-24-01	0 - 4	6.28; 5.57
		SB-49 / S-3-4 / 04-24-01	4 - 8	5.64;6.03
		OW-106 / 04-24-01	4 - 8	5.64;6.03
		SB-50 / S-1-2 / 04-24-01	0 - 4	6.93; 6.01
		SB-50 / S-3-4 / 04-24-01	4 - 8	6.3; 6.31
		SB-54 / S-1 / 05-03-01	0.4 - 1.4	9.91
		SB-55 / S-1 / 05-03-01	0.3 - 1.3	10.6
		SB-56 / S-1 / 05-03-01	0.8 - 1.8	9.47
		OW-107 / 05-03-01	0.8 - 1.8	9.47
		SB-57 / S-1 / 05-03-01	0.5 - 1.5	8.02
		SH-05S / S-1 / 02-05-01	6.5 - 8.5	9.26

Notes:
1. Only samples where pH was measured are shown on this table.
2. Figures 4 and 5 show the locations of the samples presented in this table.
3. Samples collected between 0 and 10 feet were included at future soil exposure points based on USEPA Region I guidance (USEPAReg1, 1995).
4. Samples inside the AOC are excluded because it is subject to a deed restriction (i.e., future excavation and building construction is restricted).
5. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.
6. Soil pH is compared to the Federal and MCP pH range (2.0 – 12.5), above or below which defines a hazardous material. pH levels from all soil samples analyzed are within the MCP and Federal pH range.

Table 25
Groundwater pH Data
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Depth To Water (feet)	pH (s.u.)
East of South Street On-Facility	Future Construction Worker	SH-19S / 05-21-02	8.52	5.8
		OW-205 / 05-21-02	8.52	5.8
		SH-19S / 09-05-01	9.93	6.07
		OW-201 / 09-05-01	9.93	6.07
		SH-20S / 05-17-02	8.4	6.11
		SH-20S / 09-05-01	9.68	6.07
		SH-21S / 05-16-02	5.54	5.9
		SH-21S / 09-06-01	6.6	5.88
		SH-22S / 05-17-02	10.02	5.99
Old Railroad and Former Lower Mill Pond Area	Future Construction Worker	WP-02 / 11-04-03	3.68	6.19
West of South Street On-Facility	Future Construction Worker	**SH-04S / 09-11-01**	**5.94**	**11.92**
		SH-04S / 05-20-02	**5.05**	**11.44**
		SH-04S / 10-28-03	**5.07**	**11.29**
		SH-05S / 09-11-01	**6.36**	**11.99**
		OW-204 / 09-11-01	**6.36**	**11.99**
		SH-05S / 05-21-02	**4.84**	**11.7**
		OW-208 / 05-21-02	**4.84**	**11.7**
		SH-05S / 10-29-03	**4.15**	**9.7**
		SH-14S / 05-20-02	3.98	6.95
		SH-14S / 09-10-01	4.88	6.39
		SH-14S / 11-04-03	4.49	6.55
		SH-16S / 09-11-01	5.12	7.59
		SH-16S / 05-17-02	3.14	7.32
		SH-16S / 11-19-03	3.5	7.3
		SH-17S / 09-06-01	8.12	5.96
		SH-17S / 05-20-02	6.05	6.4
		SH-17S / 11-19-03	7.11	6.25
		SH-25S / 11-05-03	4.16	6.39
		WP-04 / 11-07-03	1.75	5.64
		WP-05 / 11-07-03	1.39	5.24
West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Future Construction Worker	**SH-26S / 10-28-03**	**1.12**	**10.95**
		SH-28S / 11-06-03	8.45	5.9
		WP-06 / 10-28-03	**1.82**	**10.11**
		WP-07 / 10-27-03	**1.98**	**10.82**
		SH-15S / 05-20-02	**4.64**	**11.9**
		SH-15S / 09-10-01	**5.31**	**10.22**
		SH-15S / 10-28-03	**4.54**	**10.13**
Off-site groundwater west of Neponset River	Future Resident	SH-24R / 11-06-03	1.54	7.9
		SH-24S / 11-06-03	1.82	5.89
		WP-03 / 11-05-03	4.90	5.31
Off-site groundwater east of Neponset River (SH-27)	Future Resident	SH-27D / 11-19-03	11.01	6.67
		OW-209 / 11-19-03	11.01	6.67
		SH-27R / 11-20-03	10.53	6.65
		SH-27S / 11-21-03	10.65	5.84
Off-site groundwater east of Neponset River (SH-28)	Future Resident	SH-28D / 11-06-03	6.75	6.9
		SH-28R / 11-07-03	6.28	7.82
		SH-28S / 11-06-03	8.45	5.9
Off-facility groundwater Lot 208 / Lot 209	Future Resident	SH-15D / 05-17-02	2.65	5.88
		SH-15D / 09-10-01	3.68	5.98
		SH-15D / 11-04-03	2.64	6.13
		SH-15S / 05-20-02	**4.64**	**11.9**
		SH-15S / 09-10-01	**5.31**	**10.33**
		SH-15S / 10-28-03	**4.54**	**10.13**
		SH-26S / 10-28-03	**1.12**	**10.95**
		WP-05 / 11-07-03	1.39	5.24
		WP-06 / 10-28-03	**1.82**	**10.11**
		WP-07 / 10-27-03	**1.98**	**10.82**
On-Site Groundwater	Future Resident	**SH-01D / 05-22-02**	**15.90**	**14.01**
		SH-01D / 09-12-01	**20.22**	**14.06**
		SH-01D / 10-29-03	**16.79**	**13.47**

Table 25
Groundwater pH Data
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Depth To Water (feet)	pH (s.u.)
On-Site Groundwater Cont'd	Future Resident	**SH-01R / 05-22-02**	**15.54**	**13.86**
		SH-01R / 09-13-01	**17.24**	**13.24**
		SH-01R / 10-30-03	**16.28**	**13.41**
		SH-01S / 05-21-02	**13.82**	**9.37**
		SH-01S / 10-28-03	**15.45**	**11.18**
		SH-02D / 09-13-01	**16.50**	**11.92**
		SH-02D / 05-23-02	**14.44**	**12.55**
		SH-02D / 10-30-03	15.35	6.59
		SH-02R / 11-04-03	14.56	7.35
		SH-02R / 09-12-01	14.74	7.23
		SH-02R / 05-16-02	14.42	7.3
		SH-02S / 10-29-03	15.96	6.78
		OW-210 / 10-29-03	15.96	6.78
		SH-02S / 09-12-01	16.97	6.69
		SH-02S / 05-24-02	14.72	6.67
		SH-03D / 09-12-01	18.78	7.16
		SH-03D / 05-23-02	17.31	7.04
		SH-03D / 11-03-03	17.66	7.08
		SH-03S / 09-11-01	20.02	6.32
		SH-03S / 05-16-02	18.73	6.54
		SH-03S / 11-03-03	18.63	6.28
		SH-04D / 11-05-03	2.46	7.18
		SH-04D / 05-21-02	2.45	7.14
		SH-04D / 09-11-01	3.38	7.11
		SH-04S / 09-11-01	**5.94**	**11.92**
		SH-04S / 05-20-02	**5.05**	**11.44**
		SH-04S / 10-28-03	**5.07**	**11.29**
		SH-05D / 05-21-02	3.24	6.86
		SH-05D / 09-11-01	4.64	7.15
		SH-05D / 11-04-03	3.42	6.86
		SH-05R-A / 11-10-03	1.98	8.01
		SH-05R-B / 11-11-03	1.78	8.48
		SH-05S / 09-11-01	**6.36**	**11.99**
		OW-204 / 09-11-01	**6.36**	**11.99**
		SH-05S / 05-21-02	**4.84**	**11.7**
		OW-208 / 05-21-02	**4.84**	**11.7**
		SH-05S / 10-29-03	**4.15**	**9.7**
		SH-06D / 09-06-01	**6.48**	**12.51**
		OW-202-1 / 09-06-01	**6.48**	**12.51**
		SH-06D / 05-22-02	**5.23**	**13.08**
		OW-206-1 / 05-22-02	**5.23**	**13.08**
		SH-06D / 10-29-03	**5.88**	**12.78**
		SH-06R-A / 11-05-03	5.91	6.72
		SH-06R-B / 11-06-03	7.32	6.76
		SH-06S / 09-06-01	**6.37**	**9.9**
		SH-06S / 05-22-02	**4.01**	**9.98**
		SH-06S / 10-29-03	**5.32**	**9.88**
		SH-07D / 09-07-01	**11.23**	**13.22**
		SH-07D / 05-22-02	**9.45**	**13.77**
		SH-07D / 10-30-03	**9.39**	**13.38**
		SH-07S / 09-07-01	**10.61**	**9.02**
		SH-07S / 05-22-02	8.37	7.17
		SH-07S / 10-29-03	**8.95**	**8.84**
		SH-08D / 09-07-01	**10.46**	**10.28**
		SH-08D / 05-20-02	**7.99**	**10.16**
		SH-08D / 10-29-03	**9.05**	**9.95**
		SH-08S / 09-06-01	7.26	6.57
		SH-08S / 05-21-02	5.54	6.71
		SH-08S / 10-28-03	6.77	6.65
		SH-09D / 09-07-01	**14.65**	**11.13**

Table 25
Groundwater pH Data
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Depth To Water (feet)	pH (s.u.)
On-Site Groundwater Cont'd	Future Resident	**SH-09D / 05-23-02**	**13.08**	**11.77**
		SH-09D / 10-28-03	**14.07**	**11.56**
		SH-09S / 09-07-01	14.10	7.52
		SH-09S / 10-31-03	12.81	7.41
		SH-09S / 05-17-02	12.77	6.58
		SH-10S / 05-23-02	17.40	6.3
		SH-10S / 09-10-01	18.50	6.17
		SH-10S / 10-31-03	17.35	5.93
		SH-11S / 05-16-02	14.13	6.34
		SH-11S / 09-07-01	15.41	6.59
		SH-11S / 11-03-03	14.10	6.34
		SH-12D / 09-12-01	18.46	6.49
		SH-12D / 05-17-02	17.16	6.36
		SH-12D / 11-03-03	17.30	6
		SH-12S / 09-11-01	19.58	6.21
		SH-12S / 05-17-02	18.13	6.41
		SH-12S / 11-03-03	18.17	6.45
		SH-13S / 09-11-01	17.91	6.49
		OW-203 / 09-11-01	17.91	6.49
		SH-13S / 05-16-02	16.98	6.47
		OW-207 / 05-16-02	16.98	6.47
		SH-13S / 11-03-03	16.95	6.52
		SH-14D / 11-04-03	1.89	6.7
		SH-14D / 05-20-02	1.71	6.37
		SH-14D / 09-10-01	2.66	6.17
		SH-14S / 11-04-03	4.49	6.55
		SH-14S / 09-10-01	4.88	6.39
		SH-14S / 05-20-02	3.98	6.95
		SH-16S / 09-11-01	5.12	7.59
		SH-16S / 05-17-02	3.14	7.32
		SH-16S / 11-19-03	3.50	7.3
		SH-17D / 11-20-03	**7.36**	**10.93**
		OW-211 / 11-20-03	**7.36**	**10.93**
		SH-17R / 11-20-03	**7.13**	**10**
		SH-17S / 05-20-02	6.05	6.4
		SH-17S / 11-19-03	7.11	6.25
		SH-17S / 09-06-01	8.12	5.96
		SH-18D / 05-15-02	13.70	6.12
		SH-18S / 05-15-02	15.11	5.95
		SH-19D / 09-05-01	10.65	5.78
		SH-19D / 05-16-02	9.32	5.63
		SH-19R / 05-16-02	8.38	7.58
		SH-19S / 09-05-01	9.93	5.97
		OW-201 / 09-05-01	9.93	5.97
		SH-19S / 05-21-02	8.52	5.8
		OW-205 / 05-21-02	8.52	5.8
		SH-20S / 05-17-02	8.40	6.11
		SH-20S / 09-05-01	9.68	6.07
		SH-21S / 05-16-02	5.54	5.9
		SH-21S / 09-06-01	6.60	5.88
		SH-22S / 05-17-02	10.02	5.99
		SH-25D / 11-05-03	3.17	6.49
		SH-25S / 11-05-03	4.16	6.39
		WP-01 / 11-04-03	5.35	6.27
		WP-02 / 11-04-03	3.68	6.19
		WP-04 / 11-07-03	1.75	5.64

Notes:

1. Only samples where pH was measured and the result was not rejected during data validation are shown on this table.
2. Figure 6 shows the locations of the samples presented in this table.
4. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.
5. **Bold** Sample IDs exceed the Federal Secondary Drinking Water Standard (SMCL) of pH 6.5 to 8.5 s.u.

Table 26
Sediment pH Data
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	Sample Depth (feet)	Water Above Sediment (feet)	pH (s.u.)
Lewis Pond	Current/Future Fisher & Wader	LP-01 & OW-402 & OW-503 / 07-31-01	0 - 0.5	0.26	6.5
		LP-01 / 12-18-02	0 - 0.5	1.42	6.2
		LP-02 / 07-31-01	0 - 0.3	0 (1)	5.4
		LP-03 / 07-31-01	0 - 0.4	0 (1)	5.7
		LP-04 / 07-31-01	0 - 0.5	0.36	6.2
		LP-05 / 07-30-01	0 - 0.5	0 (1)	5.7
		LP-06 / 07-30-01	0 - 0.5	0 (1)	5.6
		LP-06 / 12-18-02	0 - 0.5	NM (2)	5.9
		LP-07 / 07-30-01	0 - 0.5	0 (1)	6.4
		LP-08 / 07-30-01	0 - 0.5	0.62	6.7
		LP-09 / 07-30-01	0 - 0.5	1.34	6.8
		LP-09 / 12-18-02	0 - 0.5	2.8	6.2
		LP-10 / 07-30-01	0 - 0.5	1.55	7
Neponset River East of South Street	Current/Future Fisher & Wader	NR-1 & OW-401 & OW-502 / 07-26-01	0 - 0.3	0.29	6.3
		NR-2 / 07-26-01	0 - 0.2	0.66	6.5
		NR-3 / 07-26-01	0 - 0.2	0.54	6.3
Neponset River West of South Street	Current/Future Fisher & Wader	NR-4 / 07-26-01	0 - 0.5	0.1	6.4
		NR-5 / 07-26-01	0 - 0.2	0.43	7.1
		NR-5 / 12-18-02	0 - 0.5	0.68	6.2
		NR-6 / 07-26-01	0 - 0.3	0.38	7.8
		NR-7 / 07-25-01	0 - 0.1	0.35	6.4
		NR-7 / 12-18-02	0 - 0.5	1.26	6
		NR-8 / 07-25-01	0 - 0.2	0.51	7.5
		NR-8 / 12-18-02	0 - 0.5	1.5	6.2
Former Mill Tailrace	Current/Future Wader	TR-1 / 07-25-01	0 - 0.5	0 (1)	10.3
		TR-2 / 07-25-01	0 - 0.4	0.36	8.4
		TR-3 / 07-25-01	0 - 0.4	0.51	9.4
		TR-3 & OW-409 / 12-16-02	0 - 0.5	1.4	8.5
		TR-4 / 07-25-01	0 - 0.4	0 (1)	9.4
		TR-5 / 07-25-01	0 - 0.6	0 (1)	8.5

Notes:
1. NM = Not measured.
2. Only samples where pH was measured are shown on this table.
3. OW sample IDs signify field duplicates. Field duplicate samples are listed below the corresponding primary sample.
4. Sediment pH is compared to the Federal and MCP pH range (2.0 – 12.5), above or below which defines a hazardous material. pH levels from all sediment samples analyzed are within the MCP and Federal pH range.

Footnotes:
(1) There was no water above the sediment at the time of sampling.
(2) Unable to collect depth measurement due to ice around stake.

Table 27
Surface Water pH Data
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	Receptor Exposed	Sample ID / Sample Date	pH (s.u.)
Neponset River East of South Street	Current/Future Fisher & Wader	SW-102 / 04-05-01	6.2
		SW-102 / 08-01-01	7.1
		SW-103 / 04-04-01	6.4
		SW-103 / 08-01-01	7.2
Neponset River West of South Street	Current/Future Fisher & Wader	SW-105 / 04-04-01	6.9
		SW-105 / 08-01-01	8.4
		SW-108 / 04-04-01	6.3
		SW-108 / 08-01-01	7
Former Mill Tailrace	Current/Future	**SW-106 / 04-04-01**	**10**
		SW-106 & OW-302 & OW-504 (08-01-01)	**9.3**
		SW-107 / 04-04-01	8.2
		SW-107 / 08-01-01	9

Notes:
1. Only samples where pH was measured are shown on this table.
2. OW sample IDs signify field duplicates.
3. **Bold** pH values exceed the National Ambient Water Quality Criteria for human health consumption of water and organisms (pH 5-9 s.u.).

Table 28
Current Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
Gleason Court Lot 122	Soil	Soil	Ingestion and Dermal	Child	1.E-05	0.3	7.1 Child; 7.1 Adult; 9.1 RME
				Adult	6.E-06	0.04	
				Total Resident	2.E-05	---	
		Plant tissue	Ingestion	Child	1.E-05	0.3	
				Adult	3.E-05	0.2	
				Total Resident	4.E-05	---	
	All	All	All	Child	2.E-05	0.6	
				Adult	3.E-05	0.2	
				Total Resident	6.E-05	---	
Gleason Court Lot 124	Soil	Soil	Ingestion and Dermal	Child	4.E-06	0.04	7.2 Child; 7.2 Adult; 9.2 RME
				Adult	2.E-06	0.004	
				Total Resident	6.E-06	---	
	Soil Gas	Indoor Air	Inhalation	Child	2E-09 - 1E-07	0.04	
				Adult	9E-09 - 5E-07	0.04	
				Total Resident	1E-08 - 6E-07	---	
	All	All	All	Child	4.E-06	0.07	
				Adult	2.E-06	0.04	
				Total Resident	6.E-06	---	
Gleason Court Lot 125	Soil	Soil	Ingestion and Dermal	Child	1.E-05	0.09	7.3 Child; 7.3 Adult; 9.3 RME
				Adult	5.E-06	0.01	
				Total Resident	1.E-05	---	
		Plant tissue	Ingestion	Child	2.E-06	0.04	
				Adult	4.E-06	0.02	
				Total Resident	5.E-06	---	
	Soil Gas	Indoor Air	Inhalation	Child	1E-09 - 8E-08	0.04	
				Adult	6E-09 - 3E-07	0.04	
				Total Resident	7E-09 - 4E-07	---	
	All	All	All	Child	1.E-05	0.2	
				Adult	9.E-06	0.07	
				Total Resident	2.E-05	---	
Gleason Court Vacant Lot	Soil	Soil	Ingestion and Dermal	Child	2.E-05	0.4	7.4 Child; 7.4 Adult; 9.4 RME
				Adult	7.E-06	0.05	
				Total Resident	2.E-05	---	
Orlando Property	Soil	Soil	Ingestion and Dermal	Child	1.E-05	0.2	7.5 Child; 7.5 Adult; 9.5 RME
				Adult	5.E-06	0.02	
				Total Resident	2.E-05	---	
		Indoor Air	Inhalation	Child	---	0.3	
				Adult	---	0.3	
				Total Resident	---	---	
		Plant tissue	Ingestion	Child	3.E-06	0.2	
				Adult	6.E-06	0.1	
				Total Resident	9.E-06	---	
	All	All	All	Child	1.E-05	0.7	
				Adult	1.E-05	0.5	
				Total Resident	2.E-05	---	
Lot 208	Soil	Soil	Ingestion and Dermal	Child	3.E-06	0.1	7.6 Child; 7.6 Adult; 9.6 RME
				Adult	1.E-06	0.01	
				Total Resident	4.E-06	---	
		Plant tissue	Ingestion	Child	3.E-06	0.07	
				Adult	6.E-06	0.04	
				Total Resident	9.E-06	---	
	All	All	All	Child	6.E-06	0.2	
				Adult	8.E-06	0.05	
				Total Resident	1.E-05	---	

Table 28
Current Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
Lot 210	Soil	Soil	Ingestion and Dermal	Child	6.E-06	0.2	7.7 Child; 7.7 Adult; 9.7 RME
				Adult	3.E-06	0.02	
				Total Resident	9.E-06	---	
		Plant tissue	Ingestion	Child	3.E-06	0.1	
				Adult	7.E-06	0.07	
				Total Resident	1.E-05	---	
	All	All	All	Child	9.E-06	0.3	
				Adult	1.E-05	0.09	
				Total Resident	2.E-05	---	
Lot 230	Soil	Soil	Ingestion and Dermal	Child	7.E-06	0.2	7.8 Child; 7.8 Adult; 9.8 RME
				Adult	3.E-06	0.02	
				Total Resident	1.E-05	---	
		Plant tissue	Ingestion	Child	5.E-06	0.1	
				Adult	1.E-05	0.08	
				Total Resident	2.E-05	---	
	All	All	All	Child	1.E-05	0.3	
				Adult	2.E-05	0.1	
				Total Resident	3.E-05	---	
Lot 257	Soil	Soil	Ingestion and Dermal	Child	1.E-05	0.3	7.9 Child; 7.9 Adult; 9.9 RME
				Adult	6.E-06	0.04	
				Total Resident	2.E-05	---	
		Plant tissue	Ingestion	Child	8.E-06	0.4	
				Adult	2.E-05	0.2	
				Total Resident	3.E-05	---	
	All	All	All	Child	2.E-05	0.7	
				Adult	3.E-05	0.3	
				Total Resident	5.E-05	---	
Lot 282	Soil	Soil	Ingestion and Dermal	Child	8.E-06	0.2	7.10 Child; 7.10 Adult; 9.10 RME
				Adult	3.E-06	0.03	
				Total Resident	1.E-05	---	
		Plant tissue	Ingestion	Child	7.E-06	0.2	
				Adult	2.E-05	0.1	
				Total Resident	2.E-05	---	
	All	All	All	Child	1.E-05	0.4	
				Adult	2.E-05	0.1	
				Total Resident	3.E-05	---	
Lot 283	Soil	Soil	Ingestion and Dermal	Child	8.E-06	0.2	7.11 Child; 7.11 Adult; 9.11 RME
				Adult	4.E-06	0.02	
				Total Resident	1.E-05	---	
		Indoor Air	Inhalation	Child	8.E-09	0.09	
				Adult	3.E-08	0.09	
				Total Resident	4.E-08	---	
		Plant tissue	Ingestion	Child	4.E-06	0.1	
				Adult	9.E-06	0.06	
				Total Resident	1.E-05	---	
	All	All	All	Child	1.E-05	0.4	
				Adult	1.E-05	0.2	
				Total Resident	2.E-05	---	
Lot 342	Soil	Soil	Ingestion and Dermal	Child	5.E-06	0.2	7.12 Child; 7.12 Adult; 9.12 RME
				Adult	2.E-06	0.02	
				Total Resident	7.E-06	---	
		Plant tissue	Ingestion	Child	4.E-06	0.3	
				Adult	1.E-05	0.2	
				Total Resident	2.E-05	---	
	All	All	All	Child	9.E-06	0.5	
				Adult	1.E-05	0.2	
				Total Resident	2.E-05	---	

Table 28
Current Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
Lot 360	Soil	Soil	Ingestion and Dermal	Child	2.E-05	0.7	7.13 Child; 7.13 Adult; 9.13 RME
				Adult	8.E-06	0.07	
				Total Resident	2.E-05	---	
		Plant tissue	Ingestion	Child	1.E-05	1	
				Adult	3.E-05	0.6	
				Total Resident	5.E-05	---	
	All	All	All	Child	3.E-05	**2** (1)	
				Adult	4.E-05	0.7	
				Total Resident	7.E-05	---	
Off-Site Res Building 1	Soil	Indoor Air	Inhalation	Child	---	0.02	7.14 Child; 7.14 Adult; 9.14 RME
				Adult	---	0.02	
				Total Resident	---	---	
Off-Site Res Building 2	Soil	Indoor Air	Inhalation	Child	---	0.2	7.15 Child; 7.15 Adult; 9.15 RME
				Adult	---	0.2	
				Total Resident	---	---	
Off-Site Res Building 3	Soil	Indoor Air	Inhalation	Child	1.E-07	0.1	7.16 Child; 7.16 Adult; 9.16 RME
				Adult	5.E-07	0.1	
				Total Resident	6.E-07	---	

Notes:
1. Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4.
2. Cancer risk ranges represent risks using the lower end of the TCE and benzene cancer slope factor / inhalation unit risk range to the upper end of the range. Benzene cancer slope factor range is 1.5E-02 to 5.5E-02 (per mg/kg-d); inhalation unit risk range is 2.2E-06 to 7.8E-06 (per ug/m3). TCE cancer slope factor range is 2E-02 to 4E-01 (per mg/kg-d); inhalation unit risk range is 2E-06 to 1.1E-04 (per ug/m3). See Tables 6.1 and 6.2 in Appendix J.
Footnote:
(1) While the cumulative hazard index (HI) for the child resident on Lot 360 is greater than 1, the cumulative target organ-specific HIs are less than or equal to 1. See section 6.4.1 of text.

Table 29
Current Resident Risk Summary
Central Tendency Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
Lot 360	Soil	Soil	Ingestion and Dermal	Child	3.E-06	0.3	7.13 Child; 7.13 Adult; 9.13 CT
				Adult	1.E-06	0.03	
				Total Resident	4.E-06	---	

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4

Table 30
Current Trespasser Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Cancer Risk Range	Total Non-Cancer Hazard Index	Table Numbers
West of South Street On-Facility and Vacant Lot 209	Soil	Soil	Ingestion and Dermal	6.E-06	0.05	7.17; 9.17 RME
Old Railroad and Former Lower Mill Pond Area	Soil	Soil	Ingestion and Dermal	3.E-05	0.2	7.18; 9.18 RME
Lot 350	Soil	Soil	Ingestion and Dermal	1.E-06	0.03	7.19; 9.19 RME

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4

Table 31
Current Site Worker Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
East of South Street On-Facility Building 1	Soil	Soil	Ingestion and Dermal	6.E-05	0.02	7.20; 9.20 RME
	Soil Gas	Indoor Air	Inhalation	2.E-06	0.2	
	All	All	All	6.E-05	0.2	
East of South Street On-Facility Building 2	Soil	Soil	Ingestion and Dermal	6.E-05	0.02	7.21; 9.21 RME
	Soil Gas	Indoor Air	Inhalation	2E-08 - 6E-08	0.001	
	All	All	All	6.E-05	0.02	
East of South Street On-Facility Building 3	Soil	Soil	Ingestion and Dermal	6.E-05	0.02	7.22; 9.22 RME
		Indoor Air	Inhalation	2.E-08	0.03	
	All	All	All	6.E-05	0.05	
East of South Street On-Facility Building 4	Soil	Soil	Ingestion and Dermal	6.E-05	0.02	7.23; 9.23 RME
		Indoor Air	Inhalation	3E-07 - 1E-06	0.1	
	All	All	All	6.E-05	0.1	
East of South Street On-Facility Building 5	Soil	Soil	Ingestion and Dermal	6.E-05	0.02	7.24; 9.24 RME
		Indoor Air	Inhalation	3E-08 - 1E-07	0.09	
	All	All	All	6.E-05	0.1	

Notes:
1. Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4.
2. Cancer risk ranges represent risks using the lower end of the TCE and benzene cancer slope factor / inhalation unit risk range to the upper end of the range. Benzene cancer slope factor range is 1.5E-02 to 5.5E-02 (per mg/kg-d); inhalation unit risk range is 2.2E-06 to 7.8E-06 (per ug/m3). TCE cancer slope factor range is 2E-02 to 4E-01 (per mg/kg-d); inhalation unit risk range is 2E-06 to 1.1E-04 (per ug/m3). See Tables 6.1 and 6.2 in Appendix J.
3. Soil (ingestion and dermal) risks for each exposure point were calculated from the same data set.

Table 32
Current/Future Wader Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Cancer Risk Range	Total Non-Cancer Hazard Index	Table Numbers
Lewis Pond	Sediment	Sediment	Ingestion and Dermal	4E-06	0.1	7.21; 9.21 RME
Neponset River East of South Street	Surface Water	Surface Water	Dermal	---	0.0007	7.22; 9.22 RME
	Sediment	Sediment	Ingestion and Dermal	3E-07	0.008	
	All	All	All	3E-07	0.009	
Neponset River West of South Street	Surface Water	Surface Water	Dermal	---	0.001	7.23; 9.23 RME
	Sediment	Sediment	Ingestion and Dermal	1E-06	0.01	
	All	All	All	1E-06	0.01	
Former Mill Tailrace	Surface Water	Surface Water	Dermal	7E-08	0.03	7.24; 9.24 RME
	Sediment	Sediment	Ingestion and Dermal	3E-06	0.04	
	All	All	All	3E-06	0.08	

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4

Table 33
Current/Future Fisher Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk Range	Total Non-Cancer Hazard Index	Table Numbers
Lewis Pond	Sediment	Sediment	Ingestion and Dermal	Child	---	**---**	7.25 Child; 7.25 Adult; 9.25 RME
				Adult	5.E-06	0.05	
				Total Fisher	5.E-06	**---**	
	Fish	Fish tissue	Ingestion	Child	1.E-05	0.5	
				Adult	2.E-05	0.2	
				Total Fisher	3.E-05	**---**	
	All	All	All	Child	1.E-05	0.5	
				Adult	3.E-05	0.3	
				Total Fisher	4.E-05	**---**	
Neponset River East of South Street	Surface Water	Surface Water	Dermal	Child	---	**---**	7.26 Child; 7.26 Adult; 9.26 RME
				Adult	---	0.0006	
				Total Fisher	---	**---**	
	Sediment	Sediment	Ingestion and Dermal	Child	---	**---**	
				Adult	4.E-07	0.004	
				Total Fisher	4.E-07	**---**	
	Fish	Fish tissue	Ingestion	Child	3.E-05	**2**	
				Adult	5.E-05	0.7	
				Total Fisher	8.E-05	**---**	
	All	All	All	Child	3.E-05	**2**	
				Adult	5.E-05	0.7	
				Total Fisher	8.E-05	**---**	
Neponset River West of South Street	Surface Water	Surface Water	Dermal	Child	---	**---**	7.27 Child; 7.27 Adult; 9.27 RME
				Adult	---	0.001	
				Total Fisher	---	**---**	
	Sediment	Sediment	Ingestion and Dermal	Child	---	**---**	
				Adult	2.E-06	0.006	
				Total Fisher	2.E-06	**---**	
	Fish	Fish tissue	Ingestion	Child	3.E-05	**2**	
				Adult	5.E-05	0.7	
				Total Fisher	8.E-05	**---**	
	All	All	All	Child	3.E-05	**2**	
				Adult	5.E-05	0.7	
				Total Fisher	8.E-05	**---**	

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4

Table 34
Current/Future Fisher Risk Summary
Central Tendency Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk Range	Total Non-Cancer Hazard Index	Table Numbers
Neponset River East of South Street	Surface Water	Surface Water	Dermal	Child	---	**---**	7.26 Child; 7.26 Adult; 9.26 CT
				Adult	---	0.0001	
				Total Fisher	---	**---**	
	Sediment	Sediment	Ingestion and Dermal	Child	---	**---**	
				Adult	7.E-09	0.0003	
				Total Fisher	7.E-09	**---**	
	Fish	Fish tissue	Ingestion	Child	1.E-06	0.3	
				Adult	2.E-06	0.1	
				Total Fisher	3.E-06	**---**	
	All	All	All	Child	1.E-06	0.3	
				Adult	2.E-06	0.1	
				Total Fisher	3.E-06	**---**	
Neponset River West of South Street	Surface Water	Surface Water	Dermal	Child	---	**---**	7.27 Child; 7.27 Adult; 9.27 CT
				Adult	---	0.0002	
				Total Fisher	---	**---**	
	Sediment	Sediment	Ingestion and Dermal	Child	---	**---**	
				Adult	6.E-08	0.0007	
				Total Fisher	6.E-08	**---**	
	Fish	Fish tissue	Ingestion	Child	1.E-06	0.3	
				Adult	2.E-06	0.1	
				Total Fisher	3.E-06	**---**	
	All	All	All	Child	1.E-06	0.3	
				Adult	2.E-06	0.1	
				Total Fisher	3.E-06	**---**	

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4

Table 35
Future Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
East of South Street On-Facility (SB-09 area)	Soil	Soil [(1)]	Ingestion and Dermal	Child	**2.E-04**	0.6	7.32 Child; 7.32 Adult; 9.32 RME
				Adult	8E-05 - 9E-05	0.06	
				Total Resident	**3.E-04**	---	
		Plant tissue [(1)]	Ingestion	Child	3.E-06	0.5	
				Adult	7.E-06	0.3	
				Total Resident	1.E-05	---	
	Soil Gas	Indoor Air	Inhalation	Child	2E-06 - 1E-04	0.3	
				Adult	9E-06 - **5E-04**	0.3	
				Total Resident	1E-05 - **6E-04**	---	
	All	All	All	Child	**2E-04 - 3E-04**	1	
				Adult	**1E-04 - 5E-04**	0.7	
				Total Resident	**3E-04 - 8E-04**	---	
East of South Street On-Facility (non-SB-09 area)	Soil	Soil [(1)]	Ingestion and Dermal	Child	**2.E-04**	0.6	7.33 Child; 7.33 Adult; 9.33 RME
				Adult	8E-05 - 9E-05	0.06	
				Total Resident	**3.E-04**	---	
		Indoor Air	Inhalation	Child	2E-07 - 3E-07	**2**	
				Adult	6E-07 - 1E-06	**2**	
				Total Resident	8E-07 - 2E-06	---	
		Plant tissue [(1)]	Ingestion	Child	3.E-06	0.5	
				Adult	7.E-06	0.3	
				Total Resident	1.E-05	---	
	All	All	All	Child	**2.E-04**	**3**	
				Adult	9.E-05	**2**	
				Total Resident	**3.E-04**	---	
West of South Street On-Facility	Soil	Soil	Ingestion and Dermal	Child	3.E-05	0.3	7.34 Child; 7.34 Adult; 9.34 RME
				Adult	1.E-05	0.03	
				Total Resident	4.E-05	---	
		Plant tissue	Ingestion	Child	7.E-06	0.3	
				Adult	2.E-05	0.2	
				Total Resident	3.E-05	---	
	Soil/Groundwater	Indoor Air	Inhalation	Child	6E-07 - 2E-06	0.7	
				Adult	2E-06 - 8E-06	0.7	
				Total Resident	3E-06 - 1E-05	---	
	All	All	All	Child	4.E-05	1	
				Adult	3E-05 - 4E-05	0.9	
				Total Resident	7E-05 - 8E-05	---	
Gleason Court Lot 122	Soil	Soil	Ingestion and Dermal	Child	1.E-05	0.3	7.35 Child; 7.35 Adult; 9.35 RME
				Adult	5.E-06	0.03	
				Total Resident	2.E-05	---	
		Plant tissue	Ingestion	Child	1.E-05	0.3	
				Adult	2.E-05	0.2	
				Total Resident	3.E-05	---	
	All	All	All	Child	2.E-05	0.6	
				Adult	3.E-05	0.2	
				Total Resident	5.E-05	---	
Gleason Court Lot 124	Soil	Soil	Ingestion and Dermal	Child	6.E-06	0.1	7.36 Child; 7.36 Adult; 9.36 RME
				Adult	3.E-06	0.01	
				Total Resident	9.E-06	---	
		Plant tissue	Ingestion	Child	3.E-06	0.07	
				Adult	7.E-06	0.04	
				Total Resident	1.E-05	---	
	Soil Gas	Indoor Air	Inhalation	Child	2E-09 - 1E-07	0.04	
				Adult	9E-09 - 5E-07	0.04	
				Total Resident	1E-08 - 6E-07	---	
	All	All	All	Child	9.E-06	0.2	
				Adult	1.E-05	0.09	
				Total Resident	2.E-05	---	
Gleason Court Lot 125	Soil	Soil	Ingestion and Dermal	Child	1.E-05	0.2	7.37 Child; 7.37 Adult; 9.37 RME
				Adult	7.E-06	0.03	
				Total Resident	2.E-05	---	
		Plant tissue	Ingestion	Child	6.E-06	0.2	
				Adult	2.E-05	0.1	
				Total Resident	2.E-05	---	
	Soil Gas	Indoor Air	Inhalation	Child	1E-09 - 8E-08	0.04	
				Adult	6E-09 - 3E-07	0.04	
				Total Resident	7E-09 - 4E-07	---	
	All	All	All	Child	2.E-05	0.4	
				Adult	2.E-05	0.2	
				Total Resident	4.E-05	---	

Table 35
Future Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
Gleason Court Vacant Lot	Soil	Soil	Ingestion and Dermal	Child	1.E-05	0.4	7.38 Child; 7.38 Adult; 9.38 RME
				Adult	6.E-06	0.04	
				Total Resident	2.E-05	---	
		Plant tissue	Ingestion	Child	1.E-05	0.3	
				Adult	3.E-05	0.2	
				Total Resident	4.E-05	---	
	All	All	All	Child	3.E-05	0.7	
				Adult	4.E-05	0.2	
				Total Resident	7.E-05	---	
Old Railroad and Former Lower Mill Pond Area	Soil	Soil	Ingestion and Dermal	Child	1.E-04	**2**	7.39 Child; 7.39 Adult; 9.39 RME
				Adult	7.E-05	0.2	
				Total Resident	**2.E-04**	---	
		Indoor Air	Inhalation	Child	7.E-09	0.5	
				Adult	3.E-08	0.5	
				Total Resident	4.E-08	---	
		Plant tissue	Ingestion	Child	7.E-05	**2**	
				Adult	**2.E-04**	1	
				Total Resident	**3.E-04**	---	
	All	All	All	Child	**2.E-04**	**5**	
				Adult	**3.E-04**	**2**	
				Total Resident	**5.E-04**	---	
Orlando Property	Soil	Soil	Ingestion and Dermal	Child	1.E-05	0.1	7.40 Child; 7.40 Adult; 9.40 RME
				Adult	5.E-06	0.02	
				Total Resident	1.E-05	---	
		Indoor Air	Inhalation	Child	---	0.3	
				Adult	---	0.3	
				Total Resident	---	---	
		Plant tissue	Ingestion	Child	2.E-06	0.2	
				Adult	5.E-06	0.1	
				Total Resident	8.E-06	---	
	All	All	All	Child	1.E-05	0.6	
				Adult	1.E-05	0.4	
				Total Resident	2.E-05	---	
Lot 208	Soil	Soil	Ingestion and Dermal	Child	3.E-06	0.1	7.41 Child; 7.41 Adult; 9.41 RME
				Adult	1.E-06	0.01	
				Total Resident	4.E-06	---	
		Indoor Air	Inhalation	Child	---	0.06	
				Adult	---	0.06	
				Total Resident	---	---	
		Plant tissue	Ingestion	Child	3.E-06	0.07	
				Adult	6.E-06	0.04	
				Total Resident	9.E-06	---	
	Groundwater [(2)]	Indoor Air	Inhalation	Child	1E-07 - 5E-07	0.1	
				Adult	5E-07 - 2E-06	0.1	
				Total Resident	6E-07 - 3E-06	---	
	All	All	All	Child	6E-06 - 7E-06	0.3	
				Adult	9E-06 - 1E-05	0.2	
				Total Resident	1E-05 - 2E-05	---	
Vacant Lot 209	Soil	Soil	Ingestion and Dermal	Child	3.E-06	0.1	7.42 Child; 7.42 Adult; 9.42 RME
				Adult	1.E-06	0.01	
				Total Resident	4.E-06	---	
		Plant tissue	Ingestion	Child	3.E-06	0.07	
				Adult	6.E-06	0.04	
				Total Resident	9.E-06	---	
	Groundwater [(2)]	Indoor Air	Inhalation	Child	1E-07 - 5E-07	0.1	
				Adult	5E-07 - 2E-06	0.1	
				Total Resident	6E-07 - 3E-06	---	
	All	All	All	Child	5E-06 - 6E-06	0.3	
				Adult	9E-06 - 1E-05	0.2	
				Total Resident	1E-05 - 2E-05	---	
Lot 210	Soil	Soil	Ingestion and Dermal	Child	6.E-06	0.2	7.43 Child; 7.43 Adult; 9.43 RME
				Adult	3.E-06	0.02	
				Total Resident	9.E-06	---	
		Plant tissue	Ingestion	Child	3.E-06	0.1	
				Adult	7.E-06	0.07	
				Total Resident	1.E-05	---	
	All	All	All	Child	9.E-06	0.3	
				Adult	1.E-05	0.09	
				Total Resident	2.E-05	---	

Table 35
Future Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
Lot 230	Soil	Soil	Ingestion and Dermal	Child	7.E-06	0.2	7.44 Child; 7.44 Adult; 9.44 RME
				Adult	3.E-06	0.02	
				Total Resident	1.E-05	---	
		Plant tissue	Ingestion	Child	5.E-06	0.1	
				Adult	1.E-05	0.08	
				Total Resident	2.E-05	---	
	All	All	All	Child	1.E-05	0.3	
				Adult	2.E-05	0.1	
				Total Resident	3.E-05	---	
Lot 257	Soil	Soil	Ingestion and Dermal	Child	1.E-05	0.3	7.45 Child; 7.45 Adult; 9.45 RME
				Adult	6.E-06	0.04	
				Total Resident	2.E-05	---	
		Indoor Air	Inhalation	Child	---	0.02	
				Adult	---	0.02	
				Total Resident	---	---	
		Plant tissue	Ingestion	Child	8.E-06	0.4	
				Adult	2.E-05	0.2	
				Total Resident	3.E-05	---	
	All	All	All	Child	2.E-05	0.7	
				Adult	3.E-05	0.3	
				Total Resident	5.E-05	---	
Lot 282	Soil	Soil	Ingestion and Dermal	Child	8.E-06	0.2	7.46 Child; 7.46 Adult; 9.46 RME
				Adult	3.E-06	0.03	
				Total Resident	1.E-05	---	
		Plant tissue	Ingestion	Child	7.E-06	0.2	
				Adult	2.E-05	0.1	
				Total Resident	2.E-05	---	
	All	All	All	Child	1.E-05	0.4	
				Adult	2.E-05	0.1	
				Total Resident	3.E-05	---	
Lot 283	Soil	Soil	Ingestion and Dermal	Child	8.E-06	0.2	7.47 Child; 7.47 Adult; 9.47 RME
				Adult	4.E-06	0.02	
				Total Resident	1.E-05	---	
		Indoor Air	Inhalation	Child	8.E-09	0.09	
				Adult	3.E-08	0.09	
				Total Resident	4.E-08	---	
		Plant tissue	Ingestion	Child	4.E-06	0.1	
				Adult	9.E-06	0.06	
				Total Resident	1.E-05	---	
	All	All	All	Child	1.E-05	0.4	
				Adult	1.E-05	0.2	
				Total Resident	2.E-05	---	
Lot 342	Soil	Soil	Ingestion and Dermal	Child	5.E-06	0.2	7.48 Child; 7.48 Adult; 9.48 RME
				Adult	2.E-06	0.02	
				Total Resident	7.E-06	---	
		Plant tissue	Ingestion	Child	4.E-06	0.3	
				Adult	1.E-05	0.2	
				Total Resident	2.E-05	---	
	All	All	All	Child	9.E-06	0.5	
				Adult	1.E-05	0.2	
				Total Resident	2.E-05	---	
Lot 350	Soil	Soil	Ingestion and Dermal	Child	7.E-06	0.3	7.49 Child; 7.49 Adult; 9.49 RME
				Adult	3.E-06	0.03	
				Total Resident	9.E-06	---	
		Indoor Air	Inhalation	Child	---	0.1	
				Adult	---	0.1	
				Total Resident	---	---	
		Plant tissue	Ingestion	Child	6.E-06	0.2	
				Adult	1.E-05	0.09	
				Total Resident	2.E-05	---	
	All	All	All	Child	1.E-05	0.5	
				Adult	2.E-05	0.2	
				Total Resident	3.E-05	---	

Table 35
Future Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
Lot 360	Soil	Soil	Ingestion and Dermal	Child	2.E-05	0.7	7.50 Child; 7.50 Adult; 9.50 RME
				Adult	8.E-06	0.07	
				Total Resident	2.E-05	---	
		Indoor Air	Inhalation	Child	---	0.07	
				Adult	---	0.07	
				Total Resident	---	---	
		Plant tissue	Ingestion	Child	1.E-05	1	
				Adult	3.E-05	0.6	
				Total Resident	5.E-05	---	
	All	All	All	Child	3.E-05	**2**	
				Adult	4.E-05	0.7	
				Total Resident	7.E-05	---	
Lots South of the AOC	Soil	Indoor Air	Inhalation	Child	8E-08 - 1E-07	0.06	7.51 Child; 7.51 Adult; 9.51 RME
				Adult	3E-07 - 4E-07	0.06	
				Total Resident	4E-07 - 5E-07	---	
West of South Street Off-Facility/Off-Site Groundwater Exposure Area [2]	Groundwater	Indoor Air	Inhalation	Child	1E-07 - 5E-07	0.1	7.52 Child; 7.52 Adult; 9.52 RME
				Adult	5E-07 - 2E-06	0.1	
				Total Resident	7E-07 - 2E-06	---	
Off-site groundwater west of Neponset River	Groundwater	Tap Water	Ingestion	Child	8.E-06	0.7	7.53 Child; 7.53 Adult; 9.53 RME
				Adult	9.E-06	0.2	
				Total Resident	2.E-05	---	
Off-site groundwater east of Neponset River (SH-27)	Groundwater	Tap Water	Ingestion and Dermal	Child	2E-05 - 4E-05	**5**	7.54 Child; 7.54 Adult; 9.54 RME
				Adult	2E-05 - 5E-05	1	
				Total Resident	5E-05 - 9E-05	---	
		Shower Vapor	Inhalation	Child	2E-07 - 9E-06	0.02	
				Adult	3E-07 - 2E-05	0.01	
				Total Resident	5E-07 - 3E-05	---	
	All	All	All	Child	2E-05 - 5E-05	**5**	
				Adult	2E-05 - 6E-05	1	
				Total Resident	5E-05 - 1E-04	---	
Off-site groundwater east of Neponset River (SH-28)	Groundwater	Tap Water	Ingestion and Dermal	Child	1.E-05	**3**	7.55 Child; 7.55 Adult; 9.55 RME
				Adult	1.E-05	1	
				Total Resident	2E-05 - 3E-05	---	
		Shower Vapor	Inhalation	Child	1E-08 - 7E-07	0.002	
				Adult	3E-08 - 2E-06	0.001	
				Total Resident	4E-08 - 2E-06	---	
	All	All	All	Child	1.E-05	**3**	
				Adult	1E-05 - 2E-05	1	
				Total Resident	2E-05 - 3E-05	---	
Off-facility groundwater Lot 208 / Lot 209	Groundwater	Tap Water	Ingestion and Dermal	Child	**7.E-04**	**30**	7.56 Child; 7.56 Adult; 9.56 RME
				Adult	**8.E-04**	**8**	
				Total Resident	**2.E-03**	---	
		Shower Vapor	Inhalation	Child	2E-07 - 5E-07	**3**	
				Adult	3E-07 - 1E-06	**2**	
				Total Resident	5E-07 - 2E-06	---	
	All	All	All	Child	**7.E-04**	**30**	
				Adult	**8.E-04**	**10**	
				Total Resident	**2.E-03**	---	
On-Site Groundwater	Groundwater	Tap Water	Ingestion and Dermal	Child	**8.E-03**	**400**	7.57 Child; 7.57 Adult; 9.57 RME
				Adult	**9.E-03**	**100**	
				Total Resident	**2.E-02**	---	
		Shower Vapor	Inhalation	Child	3E-05 - 8E-05	**200**	
				Adult	6E-05 - **2E-04**	**100**	
				Total Resident	8E-05 - **3E-04**	---	
	All	All	All	Child	**8.E-03**	**600**	
				Adult	**9E-03 - 1E-02**	**200**	
				Total Resident	**2.E-02**	---	

Notes:
1. Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4.
2. Cancer risk ranges represent risks using the lower end of the TCE and benzene cancer slope factor / inhalation unit risk range to the upper end of the range. Benzene cancer slope factor range is 1.5E-02 to 5.5E-02 (per mg/kg-d); inhalation unit risk range is 2.2E-06 to 7.8E-06 (per ug/m3). TCE cancer slope factor range is 2E-02 to 4E-01 (per mg/kg-d); inhalation unit risk range is 2E-06 to 1.1E-04 (per ug/m3). See Tables 6.1 and 6.2 in Appendix J.
Footnotes:
(1) Soil (ingestion, dermal) risks for the "SB-09 area" and the "non-SB-09 area" exposure points were calculated from the same soil data set.
(2) The groundwater to indoor air risk from West of South Street Off-Facility/Off-Site Groundwater are from groundwater concentrations from Lots 208 and 209. See section 2.2.2.4 and 3.2.6.2 of text. Risk from groundwater to indoor air from this area is added to soil risks from Lot 208 and 209.

Table 36
Future Resident Risk Summary
Central Tendency Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
East of South Street On-Facility (SB-09 area)	Soil	Soil [(1)]	Ingestion and Dermal	Child	2E-05 - 3E-05	0.3	7.32 Child; 7.32 Adult; 9.32 CT
				Adult	9.E-06	0.03	
				Total Resident	3.E-05	---	
	Soil Gas	Indoor Air	Inhalation	Child	9E-08 - 3E-06	0.06	
				Adult	2E-07 - 9E-06	0.04	
				Total Resident	3E-07 - 1E-05	---	
	All	All	All	Child	2E-05 - 3E-05	0.3	
				Adult	1E-05 - 2E-05	0.07	
				Total Resident	3E-05 - 5E-05	---	
East of South Street On-Facility (non-SB-09 area)	Soil	Soil [(1)]	Ingestion and Dermal	Child	2E-05 - 3E-05	0.3	7.33 Child; 7.33 Adult; 9.33 CT
				Adult	9.E-06	0.03	
				Total Resident	3.E-05	---	
		Indoor Air	Inhalation	Child	7E-08 - 3E-07	**2**	
				Adult	2E-07 - 6E-07	1	
				Total Resident	3E-07 - 9E-07	---	
	All	All	All	Child	2E-05 - 3E-05	**2**	
				Adult	1.E-05	1	
				Total Resident	3E-05 - 4E-05	---	
Old Railroad and Former Lower Mill Pond Area	Soil	Soil	Ingestion and Dermal	Child	2.E-05	1	7.39 Child; 7.39 Adult; 9.39 CT
				Adult	8.E-06	0.1	
				Total Resident	3.E-05	---	
		Indoor Air	Inhalation	Child	3.E-09	0.4	
				Adult	8.E-09	0.3	
				Total Resident	1.E-08	---	
	All	All	All	Child	2.E-05	1	
				Adult	8.E-06	0.4	
				Total Resident	3.E-05	---	
Lot 360	Soil	Soil	Ingestion and Dermal	Child	3.E-06	0.3	7.50 Child; 7.50 Adult; 9.50 CT
				Adult	1.E-06	0.03	
				Total Resident	4.E-06	---	
		Indoor Air	Inhalation	Child	---	0.06	
				Adult	---	0.04	
				Total Resident	---	---	
	All	All	All	Child	3.E-06	0.3	
				Adult	1.E-06	0.07	
				Total Resident	4.E-06	---	
Off-site groundwater east of Neponset River (SH-27)	Groundwater	Tap Water	Ingestion and Dermal	Child	2E-06 - 4E-06	**2**	7.54 Child; 7.54 Adult; 9.54 CT
				Adult	3E-06 - 5E-06	0.5	
				Total Resident	5E-06 - 9E-06	---	
		Shower Vapor	Inhalation	Child	2E-08 - 9E-07	0.007	
				Adult	3E-08 - 2E-06	0.004	
				Total Resident	5E-08 - 3E-06	---	
	All	All	All	Child	2E-06 - 5E-06	**2**	
				Adult	3E-06 - 7E-06	0.5	
				Total Resident	5E-06 - 1E-05	---	
Off-site groundwater east of Neponset River (SH-28)	Groundwater	Tap Water	Ingestion and Dermal	Child	1E-06 - 2E-06	0.8	7.55 Child; 7.55 Adult; 9.55 CT
				Adult	2.E-06	0.3	
				Total Resident	3.E-06	---	
		Shower Vapor	Inhalation	Child	2E-09 - 1E-07	0.0008	
				Adult	4E-09 - 2E-07	0.0004	
				Total Resident	5E-09 - 3E-07	---	
	All	All	All	Child	1E-06 - 2E-06	0.8	
				Adult	2.E-06	0.3	
				Total Resident	3E-06 - 4E-06	---	

Table 36
Future Resident Risk Summary
Central Tendency Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
Off-facility groundwater Lot 208 / Lot 209	Groundwater	Tap Water	Ingestion and Dermal	Child	6.E-05	**6**	7.56 Child; 7.56 Adult; 9.56 CT
				Adult	7.E-05	**2**	
				Total Resident	1.E-04	**---**	
		Shower Vapor	Inhalation	Child	1E-08 - 5E-08	0.8	
				Adult	3E-08 - 1E-07	0.5	
				Total Resident	4E-08 - 1E-07	**---**	
	All	All	All	Child	6.E-05	**7**	
				Adult	7.E-05	**3**	
				Total Resident	1.E-04	**---**	
On-Site Groundwater	Groundwater	Tap Water	Ingestion and Dermal	Child	1.E-04	**20**	7.57 Child; 7.57 Adult; 9.57 CT
				Adult	**2.E-04**	**6**	
				Total Resident	**3.E-04**	**---**	
		Shower Vapor	Inhalation	Child	3E-07 - 1E-06	**6**	
				Adult	6E-07 - 2E-06	**4**	
				Total Resident	9E-07 - 4E-06	**---**	
	All	All	All	Child	1.E-04	**20**	
				Adult	**2.E-04**	**10**	
				Total Resident	**3.E-04**	**---**	

Notes:
1. Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4
2. Cancer risk ranges represent risks using the lower end of the TCE and benzene cancer slope factor / inhalation unit risk range to the upper end of the range. Benzene cancer slope factor range is 1.5E-02 to 5.5E-02 (per mg/kg-d); inhalation unit risk range is 2.2E-06 to 7.8E-06 (per ug/m3). TCE cancer slope factor range is 2E-02 to 4E-01 (per mg/kg-d); inhalation unit risk range is 2E-06 to 1.1E-04 (per ug/m3). See Tables 6.1 and 6.2 in Appendix J.
Footnotes:
(1) Soil (ingestion, dermal) risks for the "SB-09 area" and the "non-SB-09 area" exposure points were calculated from the same soil data set.

Table 37
Future Site Worker Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
East of South Street On-Facility (SB-09 area)	Soil	Soil [(1)]	Ingestion and Dermal	1.E-04	0.05	7.58; 9.58 RME
	Soil Gas	Indoor Air	Inhalation	3E-06 - **2E-04**	0.1	
	All	All	All	1E-04 - **3E-04**	0.2	
East of South Street On-Facility (non-SB-09 area)	Soil	Soil [(1)]	Ingestion and Dermal	1.E-04	0.05	7.59; 9.59 RME
		Indoor Air	Inhalation	2E-07 - 6E-07	0.6	
	All	All	All	1.E-04	0.7	
West of South Street On-Facility	Soil	Soil	Ingestion and Dermal	2.E-05	0.02	7.60; 9.60 RME
	Soil/Groundwater	Indoor Air	Inhalation	9E-07 - 3E-06	0.2	
	All	All	All	2.E-05	0.3	

Notes:
1. Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4
2. Cancer risk ranges represent risks using the lower end of the TCE and benzene cancer slope factor / inhalation unit risk range to the upper end of the range. Benzene cancer slope factor range is 1.5E-02 to 5.5E-02 (per mg/kg-d); inhalation unit risk range is 2.2E-06 to 7.8E-06 (per ug/m3). TCE cancer slope factor range is 2E-02 to 4E-01 (per mg/kg-d); inhalation unit risk range is 2E-06 to 1.1E-04 (per ug/m3). See Tables 6.1 and 6.2 in Appendix J.
Footnotes:
(1) Soil (ingestion, dermal) risks for the "SB-09 area" and the "non-SB-09 area" exposure points were calculated from the same soil data set.

Table 38
Future Site Worker Risk Summary
Central Tendency Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
East of South Street On-Facility (SB-09 area)	Soil	Soil [(1)]	Ingestion and Dermal	1.E-05	0.02	7.58; 9.58 CT
	Soil Gas	Indoor Air	Inhalation	1E-07 - 4E-06	0.01	
	All	All	All	1E-05 - 2E-05	0.04	

Notes:
1. Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4.
2. Cancer risk ranges represent risks using the lower end of the TCE and benzene cancer slope factor / inhalation unit risk range to the upper end of the range. Benzene cancer slope factor range is 1.5E-02 to 5.5E-02 (per mg/kg-d); inhalation unit risk range is 2.2E-06 to 7.8E-06 (per ug/m3). TCE cancer slope factor range is 2E-02 to 4E-01 (per mg/kg-d); inhalation unit risk range is 2E-06 to 1.1E-04 (per ug/m3). See Tables 6.1 and 6.2 in Appendix J.

Table 39
Future Construction Worker Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
East of South Street On-Facility (SB-09 area)	Soil	Soil [1]	Ingestion and Dermal	1.E-05	0.1	7.61; 9.61 RME
		Dust [1]	Inhalation	1.E-10	0.00001	
	Groundwater	Groundwater	Dermal	2E-09 - 3E-09	0.005	
	Soil Gas	Trench Vapor	Inhalation	6E-07 - 3E-05	0.05	
	All	All	All	1E-05 - 4E-05	0.2	
East of South Street On-Facility (non-SB-09 area)	Soil	Soil [1]	Ingestion and Dermal	1.E-05	0.1	7.62; 9.62 RME
		Dust [1]	Inhalation	1.E-10	0.00001	
		Trench Vapor	Inhalation	4E-07 - 2E-06	**2**	
	Groundwater	Groundwater	Dermal	2E-09 - 3E-09	0.005	
	All	All	All	1.E-05	**2**	
West of South Street On-Facility	Soil	Soil	Ingestion and Dermal	2.E-06	0.07	7.63; 9.63 RME
		Dust	Inhalation	1.E-10	0.000001	
		Trench Vapor	Inhalation	2.E-07	0.5	
	Groundwater	Groundwater	Dermal	6.E-08	0.1	
	All	All	All	2.E-06	0.7	
Gleason Court Lot 122	Soil	Soil	Ingestion and Dermal	7.E-07	0.1	7.64; 9.64 RME
		Dust	Inhalation	2.E-10	0.00000003	
	All	All	All	7.E-07	0.1	
Gleason Court Lot 124	Soil	Soil	Ingestion and Dermal	4.E-07	0.03	7.65; 9.65 RME
		Dust	Inhalation	5.E-11	0.00000009	
	All	All	All	4.E-07	0.03	
Gleason Court Lot 125	Soil	Soil	Ingestion and Dermal	9.E-07	0.06	7.66; 9.66 RME
		Dust	Inhalation	1.E-10	0.0000003	
	All	All	All	9.E-07	0.06	
Gleason Court Vacant Lot	Soil	Soil	Ingestion and Dermal	9.E-07	0.1	7.67; 9.67 RME
		Dust	Inhalation	2.E-10	0.00000002	
		Trench Vapor	Inhalation	---	0.07	
	All	All	All	9.E-07	0.2	
Old Railroad and Former Lower Mill Pond Area	Soil	Soil	Ingestion and Dermal	9.E-06	0.7	7.68; 9.68 RME
		Dust	Inhalation	1.E-09	0.000005	
		Trench Vapor	Inhalation	5.E-07	1	
	Groundwater	Groundwater	Dermal	4.E-10	0.01	
	All	All	All	1.E-05	**2**	
Orlando Property	Soil	Soil	Ingestion and Dermal	6.E-07	0.02	7.69; 9.69 RME
		Dust	Inhalation	4.E-11	0.0000003	
		Trench Vapor	Inhalation	---	0.4	
	All	All	All	6.E-07	0.5	
Lot 208	Soil	Soil	Ingestion and Dermal	2.E-07	0.02	7.70; 9.70 RME
		Dust	Inhalation	4.E-11	---	
		Trench Vapor	Inhalation	---	0.1	
	Groundwater[2]	Groundwater	Dermal	2.E-08	0.05	
	All	All	All	2.E-07	0.3	
Vacant Lot 209	Soil	Soil	Ingestion and Dermal	2.E-07	0.02	7.71; 9.71 RME
		Dust	Inhalation	4.E-11	---	
	Groundwater[2]	Groundwater	Dermal	2.E-08	0.05	
	All	All	All	2.E-07	0.07	

Table 39
Future Construction Worker Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
Lot 210	Soil	Soil	Ingestion and Dermal	4.E-07	0.03	7.72; 9.72 RME
		Dust	Inhalation	5.E-11	0.0000001	
		Trench Vapor	Inhalation	---	0.1	
	Groundwater(2)	Groundwater	Dermal	2.E-08	0.05	
	All	All	All	4.E-07	0.2	
Lot 230	Soil	Soil	Ingestion and Dermal	4.E-07	0.05	7.73; 9.73 RME
		Dust	Inhalation	9.E-11	0.00000003	
		Trench Vapor	Inhalation	---	0.09	
	All	All	All	4.E-07	0.1	
Lot 257	Soil	Soil	Ingestion and Dermal	8.E-07	0.08	7.74; 9.74 RME
		Dust	Inhalation	1.E-10	0.0000002	
		Trench Vapor	Inhalation	---	0.03	
	All	All	All	8.E-07	0.1	
Lot 282	Soil	Soil	Ingestion and Dermal	4.E-07	0.07	7.75; 9.75 RME
		Dust	Inhalation	1.E-10	---	
		Trench Vapor	Inhalation	---	0.05	
	Groundwater(2)	Groundwater	Dermal	2.E-08	0.05	
	All	All	All	4.E-07	0.2	
Lot 283	Soil	Soil	Ingestion and Dermal	5.E-07	0.04	7.76; 9.76 RME
		Dust	Inhalation	6.E-11	0.0000001	
		Trench Vapor	Inhalation	2.E-06	0.3	
	Groundwater(2)	Groundwater	Dermal	2.E-08	0.05	
	All	All	All	2.E-06	0.4	
Lot 342	Soil	Soil	Ingestion and Dermal	3.E-07	0.04	7.77; 9.77 RME
		Dust	Inhalation	7.E-11	---	
		Trench Vapor	Inhalation	---	0.1	
	All	All	All	3.E-07	0.1	
Lot 350	Soil	Trench Vapor	Inhalation	---	0.1	7.78; 9.78 RME
Lot 360	Soil	Trench Vapor	Inhalation	---	0.1	7.79; 9.79 RME
Lots South of the AOC	Soil	Trench Vapor	Inhalation	2E-07 - 3E-07	0.3	7.80; 9.80 RME
West of South Street Off-Facility/Off-Site Groundwater Exposure Area (2)	Groundwater	Groundwater	Dermal	2.E-08	0.05	7.81; 9.81 RME

Notes:
1. Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4
2. Cancer risk ranges represent risks using the lower end of the TCE and benzene cancer slope factor / inhalation unit risk range to the upper end of the range. Benzene cancer slope factor range is 1.5E-02 to 5.5E-02 (per mg/kg-d); inhalation unit risk range is 2.2E-06 to 7.8E-06 (per ug/m3). TCE cancer slope factor range is 2E-02 to 4E-01 (per mg/kg-d); inhalation unit risk range is 2E-06 to 1.1E-04 (per ug/m3). See Tables 6.1 and 6.2 in Appendix J.
Footnotes:
(1) Soil (ingestion, dermal, dust) risks for the "SB-09 area" and the "non-SB-09 area" exposure points were calculated from the same soil data set.
(2) The groundwater dermal risk from West of South Street Off-Facility/Off-Site Groundwater are added to soil risks from all lots in this area (Lot 208, 209, 210, 282, and 283).

Table 40
Future Construction Worker Risk Summary
Central Tendency Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Cancer Risk	Total Non-Cancer Hazard Index	Table Numbers
East of South Street On-Facility (non-SB-09 area)	Soil	Soil [(1)]	Ingestion and Dermal	2.E-06	0.01	7.62; 9.62 CT
		Dust [(1)]	Inhalation	5.E-11	0.000004	
		Trench Vapor	Inhalation	1E-07 - 6E-07	0.8	
	Groundwater	Groundwater	Dermal	3E-10 - 6E-10	0.001	
	All	All	All	2.E-06	0.8	
Old Railroad and Former Lower Mill Pond Area	Soil	Soil	Ingestion and Dermal	1.E-06	0.1	7.68; 9.68 CT
		Dust	Inhalation	4.E-10	0.000002	
		Trench Vapor	Inhalation	6.E-08	0.3	
	Groundwater	Groundwater	Dermal	1.E-10	0.002	
	All	All	All	1.E-06	0.4	

Notes:
1. Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4.
2. Cancer risk ranges represent risks using the lower end of the TCE and benzene cancer slope factor / inhalation unit risk range to the upper end of the range. Benzene cancer slope factor range is 1.5E-02 to 5.5E-02 (per mg/kg-d); inhalation unit risk range is 2.2E-06 to 7.8E-06 (per ug/m3). TCE cancer slope factor range is 2E-02 to 4E-01 (per mg/kg-d); inhalation unit risk range is 2E-06 to 1.1E-04 (per ug/m3). See Tables 6.1 and 6.2 in Appendix J.
Footnotes:
(1) Soil (ingestion, dermal, dust) risks for the "SB-09 area" and the "non-SB-09 area" exposure points were calculated from the same soil data set.

Table 41
Summary of Risks and Hazards Exceeding USEPA's Risk Range and/or Hazard Index Limit, PBL > 5%, or Elevated pH Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Area	Timeframe	Receptor	Exposure Type	Cancer Risk	Max Target Organ Specific HI	PBL	Exposure Medium	Major Contributors [1] to Risk and Hazard	RAGS Tables/Worksheets
Residential Lot 257	Current	Resident	RME	---	---	13.40%	Soil	Lead	Lead Worksheet Appendix I
	Future	Construction Worker	RME	---	---	6.50%	Soil	Lead	Lead Worksheet Appendix I
Former Mill Tailrace	Current/Future	Wader	---	---	---	---	Surface Water	Elevated pH (9.3 to 10 s.u.)	Main Report Table 27
West of South Street On-Facility	Future	Construction Worker	---	---	---	---	Dermal Contact with Groundwater	Elevated pH (9.7 to 11.99 s.u.)	Main Report Table 25
East of South Street On-Facility (SB-09 area)	Future	Resident	RME	8.E-04	---	---	Soil	Benzo(a)pyrene	9.32 RME; 10.1 RME
							Indoor Air from Soil Gas	Trichloroethylene (TCE)	
		Site Worker	RME	3.E-04	---	---	Indoor Air from Soil Gas	Trichloroethylene (TCE)	9.58 RME; 10.4 RME
East of South Street On-Facility (non-SB-09 area)	Future	Resident	RME	3.E-04	2	---	Soil	Benzo(a)pyrene	9.33 RME; 10.2 RME
							Indoor Air from Soil	---	
			CT	---	2	---	Indoor Air from Soil	---	9.33 CT; 10.2 CT
		Construction Worker	RME	---	2	---	Trench Vapor from Soil	---	9.62 RME; 10.5 RME
Old Railroad and Former Lower Mill Pond Area	Future	Resident	RME	5.E-04	4	---	Soil	Arsenic	9.39 RME; 10.3 RME
							Plant tissue from Soil	Arsenic	
Off-facility groundwater Lot 208 / Lot 209	Future	Resident	RME	2.E-03	20	8.08%	Tap Water from Groundwater	Arsenic; Manganese; Vanadium	9.56 RME; 10.8 RME; Lead Worksheet Appendix I
								Lead	
							Shower Vapor [2] from Groundwater	Naphthalene	
			CT	---	4	---	Tap Water from Groundwater	Arsenic	9.56 CT; 10.8 CT
			---	---	---	---	Tap Water from Groundwater	Elevated pH (10.1 to 11.9 s.u.)	Main Report Table 25
		Construction Worker	---	---	---	---	Dermal Contact with Groundwater	Elevated pH (10.1 to 11.9 s.u.)	Main Report Table 25
Off-site groundwater east of Neponset River (SH-27)	Future	Resident	RME	---	2	---	Tap Water from Groundwater	Trichloroethylene (TCE); Manganese	9.54 RME; 10.6 RME
Off-site groundwater east of Neponset River (SH-28)	Future	Resident	RME	---	3	---	Tap Water from Groundwater	Manganese	9.55 RME; 10.7 RME

Table 41
Summary of Risks and Hazards Exceeding USEPA's Risk Range and/or Hazard Index Limit, PBL > 5%, or Elevated pH Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Area	Timeframe	Receptor	Exposure Type	Cancer Risk	Max Target Organ Specific HI	PBL	Exposure Medium	Major Contributors [1] to Risk and Hazard	RAGS Tables/Worksheets
On-Site Groundwater	Future	Resident	RME	2.E-02	300	---	Tap Water from Groundwater	Benzene; 2-Methylnaphthalene; Naphthalene; Benzo(a)pyrene; 4-Methylphenol; Antimony; Arsenic; Chromium VI; Manganese; Nickel; Vanadium; Zinc	9.57 RME; 10.9 RME
							Shower Vapor [2] from Groundwater	Benzene; 2-Methylnaphthalene; Naphthalene	
			CT	3.E-04	10	---	Tap Water from Groundwater	Arsenic; Manganese; Vanadium	9.57 CT; 10.9 CT; Main Report Table 25
							Shower Vapor [2] from Groundwater	Naphthalene	
			---	---	---	---	Tap Water from Groundwater	Elevated pH (8.8 to 14.1 s.u.)	

Notes:
(1) Chemicals that contribute non-cancer hazard > 1 and/or cancer risk > 10-4 for the given exposure medium are included
(2) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
(3) "--" means cancer risk is less than 10^{-4}, maximum target organ HI is less than 1, no chemicals have an HQ >1, PBL < 5%, or exposure type is neither RME nor CT.
(4) PBL = Percent probability of child or fetal blood lead exceeding 10 ug/dL.
(5) RAGS Table 9s are in Appendix L. RAGS Table 10s are in Appendix M.

TABLE 42
SUMMARY OF IEUBK LEAD MODEL RESULTS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Receptor	Exposure Medium	Exposure Point	Risk-based lead concentration[a] (mg/kg)	Arithmetic Mean Lead EPC (mg/kg)	Geomean Blood Lead Concentration (ug/dL)	Probability of Exceeding a Blood Lead Concentration of 10 ug/dL
Current Child Resident	Soil	Lot 257	400	**566** [b]	**5.941**	**13.40%**
	Soil	Lot 283	400	308 [c]	<10	<5%
	Soil	Lot 360	400	222 [b]	<10	<5%
	Soil	Orlando Property	400	92.5	<10	<5%
Current/Future Child Fish Consumer	Fish	Lewis Pond	NC	0.223 [b]	2.976	0.496%
	Fish	Neponset River	NC	0.197 [b]	2.965	0.485%
Future Child Resident	Soil	Lot 257	400	395	<10	<5%
	Soil	Lot 283	400	308 [c]	<10	<5%
	Soil	Gleason Court Lot 125	400	298	<10	<5%
	Soil	East of South Street On-Facility	400	291	<10	<5%
	Soil	Lot 360	400	222 [b]	<10	<5%
	Soil	West of South Street On-Facility	400	98.4	<10	<5%
	Soil	Orlando Property	400	73.1	<10	<5%
	Tap Water [d]	Off-facility groundwater Lot 208 / Lot 209	NC	**36**	**5.180**	**8.08%**
	Tap Water [d]	On-Site groundwater	NC	21	4.133	3.01%

Notes:
IEUBK modeling was only carried out to derive the risk-based soil concentration and for all EPCs exceeding the risk-based concentration, for the fish consumer, and the future child resident consuming groundwater from Off-Facility Groundwater Lot 208/209 and On-Site Groundwater.
NC = not calculated
EPCs in **bold** text are greater than the risk-based soil lead concentration derived using the IEUBK Model (400 mg/kg).

[a] The risk-based soil concentration (400 mg/kg) results in a geomean blood lead concentration of 4.6 ug/dL, with a less than 5% probability that the child's population blood lead concentration will exceed 10 ug/dL. See Appendix I for the IEUBK modeling results and corresponding lead worksheet for the risk-based soil concentration.

[b] See Appendix I for the IEUBK modeling results and corresponding lead worksheets for fish and for soil concentrations exceeding 400 mg/kg.

[c] Only one sample is included in this exposure point concentration, therefore, an arithmetic mean is not calculated and the maximum concentration is used as the EPC.

[d] Units are ug/L for groundwater exposure point concentration (EPC).

TABLE 43
SUMMARY OF ADULT LEAD MODEL RESULTS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Receptor	Exposure Medium	Exposure Point	Risk-based lead concentration [a] (mg/kg)	Arithmetic Mean Lead EPC (mg/kg)	Geomean Fetal Blood Lead Concentration (ug/dL) [b]	Probability of Exceeding a Fetal Blood Lead Concentration of 10 ug/dL [b]
Current Site Worker	Soil	East of South Street On-Facility	541	202	<10	<5%
Current/Future Fisher	Sediment & Fish	Lewis Pond	NC	1110; 0.223	7.9	2.3%
	Fish	Neponset River	2.2	0.197	<10	<5%
	Sediment	Former Mill Tailrace	3691	328	<10	<5%
Current/Future Wader	Sediment	Lewis Pond	5336	1110	<10	<5%
	Sediment	Former Mill Tailrace	5336	328	<10	<5%
Future Construction Worker	Soil	East of South Street On-Facility	312	291	<10	<5%
	Soil	Lot 283	312	308	<10	<5%
	Soil	Lot 257	312	**395**	**11**	**6.5%**
	Soil	Orlando Property	312	73.1	<10	<5%
	Soil	Gleason Court Lot 125	312	298	<10	<5%
	Soil	West of South Street On-Facility	312	98.4	<10	<5%
Future Site Worker	Soil	East of South Street On-Facility	541	291	<10	<5%
	Soil	West of South Street On-Facility	541	98.4	<10	<5%

Notes:
Lead modeling was carried out to derive the target risk-based concentrations and to calculate blood lead concentrations and probabilities of exceeding 10 ug/dL blood lead for all EPCs exceeding the risk based concentrations and for the Lewis Pond fisher exposed to sediment and fish.
EPCs in **bold** text are greater than the target lead concentration derived using the Adult Lead Model.
NC = not calculated

[a] The risk-based concentrations result in a geomean fetal blood lead concentration of less than 10 ug/dL, with a less than 5% probability that the population blood lead concentration for fetuses of female workers, fishers or waders will exceed 10 ug/dL. See Appendix I for the Adult Lead Model results and corresponding lead worksheet for the risk-based concentrations.

[b] See Appendix I for the Adult Lead Model results and corresponding lead worksheets for Lewis Pond fish and sediment and for EPCs that exceed the corresponding target risk-based concentration.

Table 44

Future Drinking Water Exposure Point Concentrations Comparison to MCLs

Reasonable Maximum Exposure

Blackburn and Union Privileges Site

Walpole, Massachusetts

Exposure Point	Chemical of Potential Concern	Units	Exposure Point Concentration	Area of Maximum Concentration	Location of Maximum Concentration	ARAR/TBC	Source
Off-site groundwater west of Neponset River	Arsenic	mg/L	0.00063	---	SH-24R	0.01	MCL
	Manganese	mg/L	0.13	---	WP-03	0.3	Lifetime Health Advisory
Off-site groundwater east of Neponset River (SH-27)	Antimony	mg/L	0.0022	---	SH-27D	0.006	MCL
	Arsenic	mg/L	0.0016	---	SH-27D	0.01	MCL
	Benzo(a)pyrene	mg/L	0.000014	---	SH-27S	0.0002	MCL
	Manganese	mg/L	**0.42**	---	SH-27R	0.3	Lifetime Health Advisory
	Nitrophenol (4-)	mg/L	0.0001	---	SH-27R	NA	NA
	Trichloroethene	mg/L	0.0051	---	SH-27R	0.005	MCL
	Vanadium	mg/L	0.0047	---	SH-27D	0.03	GW-1
Off-site groundwater east of Neponset River (SH-28)	Arsenic	mg/L	0.00092	---	SH-28R	0.01	MCL
	Manganese	mg/L	**0.76**	---	SH-28S	0.3	Lifetime Health Advisory
	Trichloroethene	mg/L	0.00043	---	SH-28R	0.005	MCL
Off-facility groundwater Lot 208 / Lot 209	**Arsenic**	mg/L	**0.059**	---	WP-07	0.01	MCL
	Benzene	mg/L	0.00457	---	SH-15S	0.005	MCL
	Benzo(a)pyrene	mg/L	0.000077	---	WP-07	0.0002	MCL
	Chromium	mg/L	0.03	---	SH-26S	0.1	MCL
	Dibenz(a,h)anthracene	mg/L	0.000025	---	WP-07	0.0005	GW-1
	Lead	mg/L	**0.17**	---	WP-07	0.015	MCL
	Manganese	mg/L	**0.62**	---	SH-26S	0.3	Lifetime Health Advisory
	Methylnaphthalene (2-)	mg/L	**0.0138**	---	SH-15S	0.01	GW-1
	Naphthalene	mg/L	0.0413	---	SH-15S	0.1	Lifetime Health Advisory
	Vanadium	mg/L	**0.22**	---	WP-07	0.03	GW-1
On-Site Groundwater	Acenaphthene	mg/L	0.0763	AOC	SH-01R	2	DWEL
	Acenaphthylene	mg/L	0.0787	AOC	SH-01R	0.3	GW-1 (proposed standard is 0.05, which is lower than the EPC)
	Antimony	mg/L	**0.034**	AOC	SH-07D	0.006	MCL
	Arsenic	mg/L	**0.631**	AOC	SH-06D	0.01	MCL
	Barium	mg/L	0.27	West of South Street On-Facility	WP-04	2	MCL
	Benzene	mg/L	**0.58**	AOC	SH-01R	0.005	MCL
	Benz(a)anthracene	mg/L	0.00078	AOC	SH-06D	0.001	GW-1
	Benzo(a)pyrene	mg/L	**0.0016**	AOC	SH-01R	0.0002	MCL
	Benzo(b)fluoranthene	mg/L	0.000405	East of South Street On-Facility	SH-21S	0.001	GW-1
	bis(2-Ethylhexyl)phthalate	mg/L	**0.0372**	West of South Street On-Facility	SH-14S	0.006	MCL
	Cadmium	mg/L	0.00182	AOC	SH-11S	0.005	MCL
	Carbazole	mg/L	0.0627	AOC	SH-01R	NA	
	Chloroform	mg/L	0.00032	East of South Street On-Facility	SH-21S	0.08	MCL
	Chromium	mg/L	**0.13**	West of South Street On-Facility	WP-04	0.1	MCL
	Cyanide	mg/L	0.00465	AOC / West of South Street On-Facility	SH-10S / SH-14D	0.2	MCL
	Dibenz(a,h)anthracene	mg/L	**0.000627**	AOC	SH-01R	0.0005	GW-1
	Ethylbenzene	mg/L	0.353	AOC	SH-01D	0.7	MCL
	Fluorene	mg/L	0.0487	AOC	SH-01R	1	DWEL
	Indeno(1,2,3-cd)pyrene	mg/L	0.000285	East of South Street On-Facility	SH-21S	0.0005	GW-1
	Lead	mg/L	**0.302**	AOC	SH-06S	0.015	MCL
	Manganese	mg/L	**3.9**	West of South Street On-Facility	WP-04	0.3	Lifetime Health Advisory

Table 44

Future Drinking Water Exposure Point Concentrations Comparison to MCLs

Reasonable Maximum Exposure

Blackburn and Union Privileges Site

Walpole, Massachusetts

Exposure Point	Chemical of Potential Concern	Units	Exposure Point Concentration	Area of Maximum Concentration	Location of Maximum Concentration	ARAR/TBC	Source
On-Site Groundwater Cont'd	Mercury	mg/L	0.0014	AOC	SH-01D	0.002	MCL
	Methylene chloride	mg/L	**0.034**	AOC	SH-01R	0.005	GW-1
	2-Methylnaphthalene	mg/L	**0.503**	AOC	SH-01R	0.01	GW-1
	4-Methylphenol	mg/L	0.092	AOC	SH-01R	NA	
	Methyl tert-butyl ether (MTBE)	mg/L	0.024	AOC	SH-09S	0.07	ORSG
	Naphthalene	mg/L	**3.13**	AOC	SH-01R	0.1	Lifetime Health Advisory
	Nickel	mg/L	**0.629**	AOC	SH-02D	0.1	Lifetime Health Advisory
	Pyrene	mg/L	0.0158	AOC	SH-01R	0.08	GW-1
	Selenium	mg/L	0.0196	AOC	SH-02D	0.05	MCL
	Styrene	mg/L	**0.267**	AOC	SH-01R	0.1	MCL
	Thallium	mg/L	0.000305	West of South Street On-Facility	SH-18D	0.002	MCL
	Toluene	mg/L	0.897	AOC	SH-01R	1	MCL
	Trichloroethene	mg/L	0.00253	West of South Street On-Facility	SH-05D	0.005	MCL
	Vanadium	mg/L	**3.35**	AOC	SH-01D	0.03	GW-1
	m/p-Xylene	mg/L	0.46	AOC	SH-01R	10	MCL (xylenes)
	o-Xylene	mg/L	0.217	AOC	SH-01R	10	MCL (xylenes)
	Zinc	mg/L	**4.84**	AOC	SH-11S	2	Lifetime Health Advisory

Notes:
AOC = Area of Containment
ARAR = Applicable and Relevant or Appropriate Requirement
NA = Not Applicable/ Not Available
TBC = To Be Considered
Chemicals where the EPC exceds the ARAR/TBC are showin in **BOLD** text.
The following ARARs/TBCs were compared to the groundwater EPCs in each area:
ARAR:
DWEL = Federal Drinking Water Equivalent Level (http://www.epa.gov/waterscience/criteria/drinking/standards/dwstandards.pdf)
Lifetime Health Advisory = Federal Drinking Water Health Advisory for lifetime exposure (http://www.epa.gov/waterscience/criteria/drinking/standards/dwstandards.pdf)
MCL = Federal Maximum Contaminant Levels for drinking water (http://www.epa.gov/safewater/mcl.html)
TBC:
Federal Drinking Water Advisory (taste and odor thresholds, not health based)
GW-1 = Massachusetts Method 1 standard for drinking water (http://mass.gov/dep/cleanup/laws/mcp-standards-0106.pdf)
ORSG = Massachusetts Office of Research and Standards Guidelines (http://www.mass.gov/dep/brp/dws/files/dwstand.doc).

The lowest of these ARARs is noted in the table, or the ORSG or GW-1 standard where no ARAR is available.

TABLE 45
RME Cancer Risk Using the Range of Trichlorethene and Benzene Cancer Slope Factors and Unit Risks
Blackburn and Union Privileges Site
Walpole, Massachusetts

Area	Scenario	Pathways	COPC	RME Cancer Risk	
				Low End	High End
West of South Street Off-Facility/Off-Site Groundwater (Lot 208 and 209)	Future resident	Indoor air from groundwater	Benzene	7E-07	**2E-06**
West of South Street On-Facility	Future resident	Indoor air from groundwater	Benzene	**3E-06**	**1E-05**
	Future site worker	Indoor air from groundwater	Benzene	8E-07	**3E-06**
East of South Street On-Facility (SB-09 area)	Future resident	Soil ingestion	Trichloroethene	1E-07	**2E-06**
		Indoor air from soil gas	Trichloroethene	**1E-05**	**6E-04**
	Future site worker	Indoor air from soil gas	Trichloroethene	**3E-06**	**2E-04**
	Future construction worker	Trench vapor from soil gas	Trichloroethene	6E-07	**3E-05**
East of South Street On-Facility (non-SB-09 area)	Future resident	Soil ingestion	Trichloroethene	1E-07	**2E-06**
Off-Facility Groundwater Lot 208/209 (tap water)	Future resident	Tap water ingestion, dermal & shower vapor inhalation	Benzene	**2E-06**	**7E-06**
On-Site Groundwater (tap water)	Future resident	Tap water ingestion, dermal & shower vapor inhalation	Trichloroethene	1E-06	**3E-05**
			Benzene	**2E-04**	**9E-04**
Off-Site Groundwater East of Neponset River (SH-27) (tap water)	Future resident	Tap water ingestion, dermal & shower vapor inhalation	Trichloroethene	**3E-06**	**7E-05**
Off-Site Groundwater East of Neponset River (SH-28) (tap water)	Future resident	Tap water ingestion, dermal & shower vapor inhalation	Trichloroethene	2E-07	**6E-06**

Notes:
1. **BOLD** Values exceed cancer risk of 10^{-6}.
2. The benzene cancer slope factor range is 1.5E-02 to 5.5E-02 (per mg/kg-d); inhalation unit risk range is 2.2E-06 to 7.8E-06 (per ug/m3).
The trichloroethene cancer slope factor range is 2E-02 to 4E-01 (per mg/kg-d); inhalation unit risk range is 2E-06 to 1.1E-04 (per ug/m3).
See Tables 6.1 and 6.2 in Appendix J.

Table 46
Comparison of Site and Reference Sediment and Fish Tissue Concentrations
Blackburn and Union Privileges Site
Walpole, Massachusetts

Chemical	Exposure Area / Reference Area	Maximum	Average	95% UCL
Fish (mg/kg)				
Arsenic	Neponset River	0.039	0.0312	0.0374
	Lewis Pond Reference Area (Lower Pond)	0.065	0.04	NC
Arsenic	Lewis Pond	0.1	0.053	0.0815
	Lewis Pond Reference Area (Lower Pond)	0.065	0.04	NC
Sediment (mg/kg)				
Arsenic	Lewis Pond	28.2	8.18	17.5
	Lewis Pond Reference Area (Lower Pond)	17	9.68	NC
Benzo(a)pyrene	Lewis Pond	3.7	1.83	2.18
	Lewis Pond Reference Area (Lower Pond)	6	3.06	NC
Benzo(a)pyrene	Former Mill Tailrace	3.2	1.26	2.32
	Neponset River Reference Area	0.12	0.028	NC

See the Baseline Ecological Risk Assessment for a discussion of Reference Area data.
NC = not calculated

MAIN REPORT FIGURES

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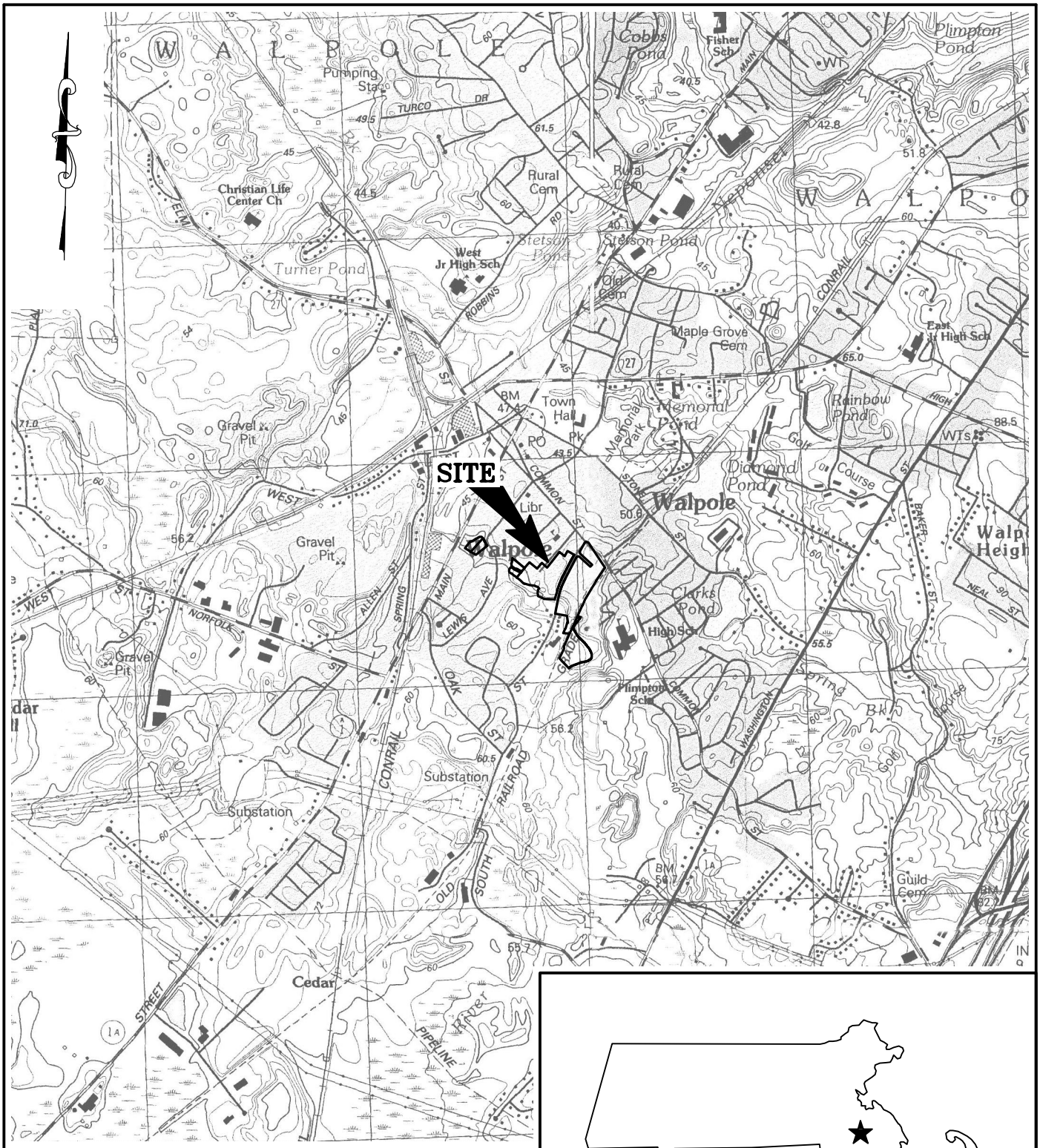

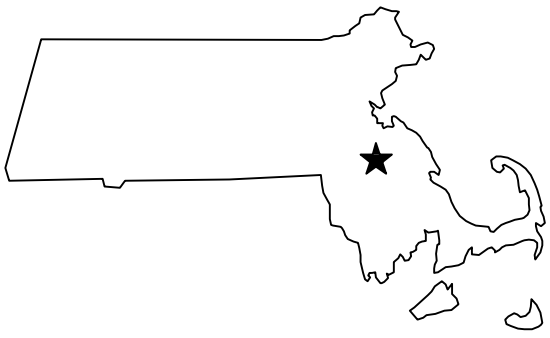

NOTES:

BASE MAP TAKEN FROM 7.5 MINUTE
USGS QUADRANGLE MAP:
MEDFIELD, MASSACHUSETTS (1987)
NORWOOD, MASSACHUSETTS (1985)

BLACKBURN & UNION PRIVILEGES SUPERFUND SITE WALPOLE, MASSACHUSETTS

BASELINE HUMAN HEALTH RISK ASSESSMENT
LOCUS PLAN

Sanborn, Head & Associates
Consulting Engineers & Scientists

SCALE: 1"=2000'	DRAWN BY: EMW	FILE NO. 2032
DATE: JUN 06	CHECKED BY: BAG	FIGURE NO.1

IMAGES: Q:\scans\1669loc.jpg
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FILE: Q:\CONCORD\2032.0\dwg\2032loc.dwg
LAYOUT: FIG1 RISK ASSESSMENT
CTB FILE: SHA STANDARD.CTB
PLOT DATE: 6-8-06

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NOTES:

1. THE BASE MAP WAS DRAWN FROM A PLAN PREPARED BY BRYANT ASSOCIATES, INC (BRYANT) OF BOSTON, MASSACHUSETTS TRANSMITTED ELECTRONICALLY TO SANBORN, HEAD AND ASSOCIATES, INC (SHA) ON SEPTEMBER 18, 2001. AERIAL MAPPING PROVIDED BY COL-EAST, INC OF NORTH ADAMS, MASSACHUSETTS FOR BRYANT WITH PHOTO CONTROL PROVIDED BY BRYANT. HORIZONTAL DATUM IS MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (N.A.D. 1983) AND VERTICAL DATUM IS N.G.V.D. 1929.

2. THE DEFINITION OF THE SITE, INCLUDING PROPERTIES IDENTIFIED AS ON- AND OFF-FACILITY IS BASED ON THE ADMINISTRATIVE ORDER BY CONSENT FOR REMEDIAL INVESTIGATION / FEASIBILITY STUDY, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA) DOCKET NO. 1-99-0027, EFFECTIVE OCTOBER 4, 1999 (ORDER).

3. PROPERTY LINE AND BUILDING LOCATION INFORMATION WERE ELECTRONICALLY TRANSMITTED TO SHA BY BRYANT AND THE TOWN OF WALPOLE. THE BLACK PROPERTY LINES AND BUILDING FOOTPRINTS WERE TRANSMITTED BY BRYANT AND ARE BASED ON AN ON-THE-GROUND SURVEY AND RECORD RESEARCH BY BRYANT. THE GRAYED BACK PROPERTY BOUNDARY AND BUILDING FOOTPRINTS WERE TRANSMITTED TO SHA BY THE TOWN OF WALPOLE. SELECTED PROPERTY BOUNDARIES AND SITE FEATURES ARE PRESENTED HEREIN. NOT ALL PROPERTY BOUNDARIES ARE SHOWN.

4. THE LOCATION OF THE CENTERLINE OF THE NEPONSET RIVER CULVERT WITHIN THE AREA OF CONTAINMENT (AOC) WAS LOCATED AND MARKED IN THE FIELD BY HAGER-RICHTER GEOSCIENCE, INC. (HRGI) OF SALEM, NEW HAMPSHIRE USING GROUND PENETRATING RADAR (GPR). THE MARKED LOCATIONS WERE SUBSEQUENTLY SURVEYED BY BRYANT.

<<DRAFT>>

N

ORLANDO PROPERTY RESIDENTIAL LOT
RESIDENTIAL LOT 342
RESIDENTIAL LOT 360
LEWIS POND
COMMERCIAL LOT 350
NEPONSET RIVER WEST OF SOUTH STREET
RESIDENTIAL LOT 257
RESIDENTIAL LOT 230
RESIDENTIAL LOT 282
RESIDENTIAL LOT 283
RESIDENTIAL LOT 210
VACANT LOT 209
FORMER MILL TAILRACE
AREA OF CONTAINMENT (AOC)
RESIDENTIAL LOT 208
LOTS SOUTH OF THE AOC
OFF-SITE RESIDENTIAL BUILDING 1
WEST OF SOUTH STREET OFF-FACILITY / OFF-SITE GROUNDWATER EXPOSURE AREA
OFF-SITE RESIDENTIAL BUILDING 2
WEST OF SOUTH STREET ON-FACILITY
NEPONSET RIVER EAST OF SOUTH STREET
OFF-SITE RESIDENTIAL BUILDING 3
OFF-SITE RESIDENTIAL BUILDING 4
GLEASON COURT LOT 125
GLEASON COURT VACANT LOT
OLD RAILROAD AND FORMER LOWER MILL POND AREA
GLEASON COURT LOT 122
EAST OF SOUTH STREET ON-FACILITY
GLEASON COURT LOT 124

SPRING VALLEY DRIVE
LEWIS AVENUE
MAIN STREET
LEWIS POND
WEST STREET
FRONT STREET
GREENWOOD ROAD
LEWIS AVENUE
RIVERSIDE PLACE
CLARK AVENUE
COMMON STREET
SOUTH STREET
LAMPLIGHTER LANE
FORMER MILL BUILDING
BUILDING NO. 5
BUILDING NO. 4
BUILDING NO. 3
BUILDING NO. 2
BUILDING NO. 1
GLEASON CT.
CASCADE TERRACE

LEGEND:

ON-SITE LOCATIONS
- OFF-FACILITY LOCATIONS
- ON-FACILITY LOCATIONS
- AREA OF CONTAINMENT

OFF-SITE LOCATIONS
- OFF-SITE LOCATIONS

ON-SITE SURFACE WATER BODIES
- LEWIS POND
- NEPONSET RIVER
- FORMER MILL TAILRACE
- FENCELINES
- BUILDING FOOTPRINTS AND PROPERTY LINES PROVIDED BY TOWN OF WALPOLE
- BUILDING FOOTPRINTS AND PROPERTY LINES SURVEYED BY BRYANT
- ASPHALT CAPPED PORTION OF AREA OF CONTAINMENT
- SOIL CAPPED PORTION OF AREA OF CONTAINMENT

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
Feet
150 0 150 300 450

Sanborn, Head & Associates, Inc.
Consulting Engineers & Scientists

DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

SITE VICINITY PLAN

PROJECT NUMBER : 2032

FIGURE NUMBER : 2

FILE: S:\CHDATA\2032\06\2032x06x\site\MCA_plans\BHHRA_Figure1_June06\Fig2-1MCA_BHHRA_SitePlan_060206.mxd
CAD FILE:
XREF FILE:
PLOT DATE: 06-02-06

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NOTES:

1. THR GROUNDWATER ELEVATION CONTOURS SHOWN ARE BASED ON GROUNDWATER LEVELS MEASURED BY SHA PERSONNEL ON MAY 25-26, 2004 .

2. THE GROUNDWATER ELEVATION CONTOURS WERE DEVELOPED USING GENERALLY ACCEPTED HYDROGEOLOGIC PRACTICES AND ARE INTENDED TO DEPICT INFERRED TRENDS IN GROUNDWATER LEVELS CONSISTENT WITH AVAILABLE INFORMATION. VARIATIONS IN GROUNDWATER ELEVATIONS ARE EXPECTED TO OCCUR DUE TO CHANGES IN PRECIPITATION, TEMPERATIURE, AND OTHER FACTORS NOT EVIDENT AT THE TIME WATER LEVEL MEASUREMENTS WERE COLLECTED. ACTUAL CONDITIONS MAY VARY FROM THOSE SHOWN AND OTHER INTERPRETATIONS ARE POSSIBLE.

3. A SURFACE WATER ELEVATION WAS INADVERTANTLY NOT COLLECTED FROM STAFF GAUGE SG-103.

4. SURFACE WATER ELEVATIONS FROM STAFF GAUGES SG-107 AND SG-108 WERE IGNORED IN CONSTRUCTING THE GROUNDWATER ELEVATION CONTOURS AS THE OBSERVED ELEVATIONS WERE INCONSISTENT WITH GROUNDWATER AND SURFACE WATER ELEVATIONS FROM SURROUNDING MONITORING WELLS AND STAFF GAUGES.

LEGEND:

144	GROUNDWATER ELEVATION CONTOUR (FEET AMSL) DASHED WHERE INFERRED
SH-08S	MONITORING WELL SAMPLING LOCATION AND DESIGNATION
WP-05	WELL POINT SAMPLING LOCATION AND DESIGNATION
SG-107	STAFF GAUGE SAMPLING LOCATION AND DESIGNATION

<<DRAFT>>

RESIDENTIAL LOT 282
RESIDENTIAL LOT 230
RESIDENTIAL LOT 283
RESIDENTIAL LOT 210
VACANT LOT 209
RESIDENTIAL LOT 208
AREA OF CONTAINMENT (AOC)
LOTS SOUTH OF THE AOC
OFF-SITE RESIDENTIAL BUILDING 1
OFF-SITE RESIDENTIAL BUILDING 2
WEST OF SOUTH STREET ON-FACILITY
OFF-SITE RESIDENTIAL BUILDING 3
OFF-SITE RESIDENTIAL BUILDING 4
GLEASON COURT LOT 125
GLEASON COURT VACANT LOT
GLEASON COURT LOT 122
GLEASON COURT LOT 124
EAST OF SOUTH STREET ON-FACILITY
OLD RAILROAD AND FORMER LOWER MILL POND AREA

LEWIS AVENUE
RIVERSIDE PLACE
CLARK AVENUE
COMMON STREET
SOUTH STREET
GLEASON COURT
LAMPLIGHTER LANE
CASCADE TERRACE
NEPONSET RIVER

SG-109A, SG-108, SG-107, SG-105A, SG-106A, SG-113-M, SG-113-E, SG-104, SG-102, SG-101AM, SG-101AE
WP-06, WP-07, WP-05, WP-03, WP-04, WP-02, WP-01
SH-24S, SH-28S, SH-26S, SH-15S, SH-04S, SH-25S, SH-14S, SH-05S, SH-16S, SH-13S, SH-12S, SH-03S, SH-06S, SH-17S, SH-11S, SH-02S, SH-01S, SH-07S, SH-09S, SH-10S, SH-08S, SH-20S, SH-18S, SH-19S, SH-21S, SH-22S, SH-23S
142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164
BUILDING NO.5, BUILDING NO.4, BUILDING NO.3, BUILDING NO.2, BUILDING NO.1, FORMER MILL BUILDING, GARAGE, HOUSE, HOUSE, APARTMENTS

GRAPHICAL SCALE
Feet
100 0 100 200 300

SHA
Sanborn, Head & Associates, Inc.
Consulting Engineers & Scientists

NO.	DATE	DESCRIPTION	BY

DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

SHALLOW GROUNDWATER CONTOURS
MAY 2004

PROJECT NUMBER :
2032

FIGURE NUMBER :
3

FILE: E:\DrProjs*JA2000s\2032\Activities\CA_2Activities\FA_3Figures_1Arc\06FIG_MCA_BHHRA_Groundwater_060106.mxd
DATE: 6/1/2006 - 10:20:06 AM
LAST PLOTTED: 06-20-06

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N

NOTES:

1. SOIL BORINGS SB-04 THROUGH SB-73 (EXCLUDING SB-34, SB-35, SB-37, SB-38, SB-54, SB-55, SB-56, AND SB-57) AND UST-1 THROUGH UST-6 AND SH-18S WERE COMPLETED BY D.L. MAHER COMPANY (MAHER) OF NORTH READING MASSACHUSETTS OR MAHER'S SUBCONTRACTOR BOART LONGYEAR OF SALT LAKE CITY, UTAH BETWEEN DECEMBER 2000 AND AUGUST 2001 UNDER THE DIRECTION OF SHA.

2. SOIL BORINGS SB-01, SB-02, SB-03, SB-34, SB-35, SB-37, SB-38, SB-54, SB-55, SB-56, AND SB-57 WERE COMPLETED BY SHA BETWEEN FEBRUARY 2001 AND MAY 2001 USING A HAND AUGER.

3. FLOOD PLAIN (FP) SAMPLING LOCATIONS (FP-01 THROUGH FP-10 EXCLUDING FP-07) WERE ESTABLISHED BY SHA IN OCTOBER 2001. SAMPLES WERE COLLECTED BY SHA FOR LABORATORY ANALYSES IN OCTOBER 2001 AND AUGUST 2003.

4. THE LOCATIONS AND ELEVATIONS OF SOIL BORINGS SB-01 THROUGH SB-73 (EXCLUDING SB-10, SB-11, SB-16, SB-19, SB-22, SB-26A, SB-27, SB-54, SB-55, SB-56, AND SB-57) AND FP-01 THROUGH FP-10 (EXCLUDING FP-07) AND UST-1 THROUGH UST-6 AND SH-18S WERE SURVEYED BY BRYANT ASSOCIATES, INC (BRYANT) OF BOSTON, MASSACHUSETTS BETWEEN APRIL AND DECEMBER 2001 AND WERE TRANSMITTED ELECTRONICALLY TO SHA THROUGH JANUARY 2002.

5. THE LOCATIONS OF SOIL BORINGS SB-10, SB-11, SB-16, SB-19, SB-22, SB-26A, SB-27, SB-54, SB-55, SB-56, AND SB-57 (LOCATED WITHIN BUILDING INTERIORS) WERE ESTIMATED IN THE FIELD USING TAPE MEASUREMENTS FROM PROMINENT SITE FEATURES BY SHA. THE ACCURACY OF THESE LOCATIONS IS LIMITED TO THE METHOD OF MEASURMENT USED.

6. SOIL BORING SB-09A WAS COMPLETED BY ESN NORTH ATLANTIC OF SCARBOROUGH, MAINE ON SEPTEMBER 7, 2006 UNDER THE DIRECTION OF SHA. THE LOCATION AND ELEVATION OF SB-09A WAS SURVEYED BY BRYANT AND TRANSMITTED ELECTRONICALLY TO SHA IN NOVEMBER 2006.

7. SOIL GAS SAMPLES WERE COLLECTED ON SEPTEMBER 6 AND 7 2006. THE LOCATIONS AND ELEVATIONS OF SOIL GAS EXPLORATION LOCATIONS WERE SURVEYED BY BRYANT ASSOCIATES, INC. (BRYANT) IN NOVEMBER 2006 AND WERE TRANSMITTED ELECTRONICALLY TO SHA ON NOVEMBER 27, 2006.

8. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.

LEGEND

- FP-1 — FLOOD PLAIN SAMPLING LOCATION AND DESIGNATION
- SB-18 — SOIL BORING LOCATION AND DESIGNATION
- SH-05S — MONITORING WELL LOCATION AND DESIGNATION
- UST-2 — SOIL BORING LOCATION AND DESIGNATION TARGETED FOR FORMER UNDERGROUND STORAGE TANK (UST)
- SV-01 — SOIL GAS SAMPLING LOCATION AND DESIGNATION

<<02 DRAFT>>

RESIDENTIAL LOT 282
RESIDENTIAL LOT 283
RESIDENTIAL LOT 230
RESIDENTIAL LOT 210
VACANT LOT 209
RESIDENTIAL LOT 208
AREA OF CONTAINMENT (AOC)
LOTS SOUTH OF THE AOC
OFF-SITE RESIDENTIAL BUILDING 1
OFF-SITE RESIDENTIAL BUILDING 2
OFF-SITE RESIDENTIAL BUILDING 3
OFF-SITE RESIDENTIAL BUILDING 4
WEST OF SOUTH STREET ON-FACILITY
EAST OF SOUTH STREET ON-FACILITY
OLD RAILROAD AND FORMER LOWER MILL POND AREA
GLEASON COURT LOT 125
GLEASON COURT VACANT LOT
GLEASON COURT LOT 122
GLEASON COURT LOT 124
LEWIS AVENUE
RIVERSIDE PLACE
CLARK AVENUE
SOUTH STREET
COMMON STREET
GLEASON COURT
LAMPLIGHTER LANE
CASCADE TERRACE
NEPONSET RIVER
FORMER MILL BUILDING
GARAGE
HOUSE
APARTMENTS
BUILDING NO.1
BUILDING NO.2
BUILDING NO.3
BUILDING NO.4
BUILDING NO.5

GRAPHICAL SCALE
30 0 30 60 Feet

GRAPHICAL SCALE
100 0 100 200 300 Feet

Sanborn, Head & Associates, Inc.
Consulting Engineers & Scientists

NO.	DATE	DESCRIPTION	BY

DRAWN BY: LAA
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

SOIL BORINGS / SAMPLE LOCATIONS INCLUDED IN THE BASELINE HUMAN HEALTH RISK ASSESSMENT - ON-FACILITY AND NEAR FACILITY

PROJECT NUMBER: 2032
FIGURE NUMBER: 4

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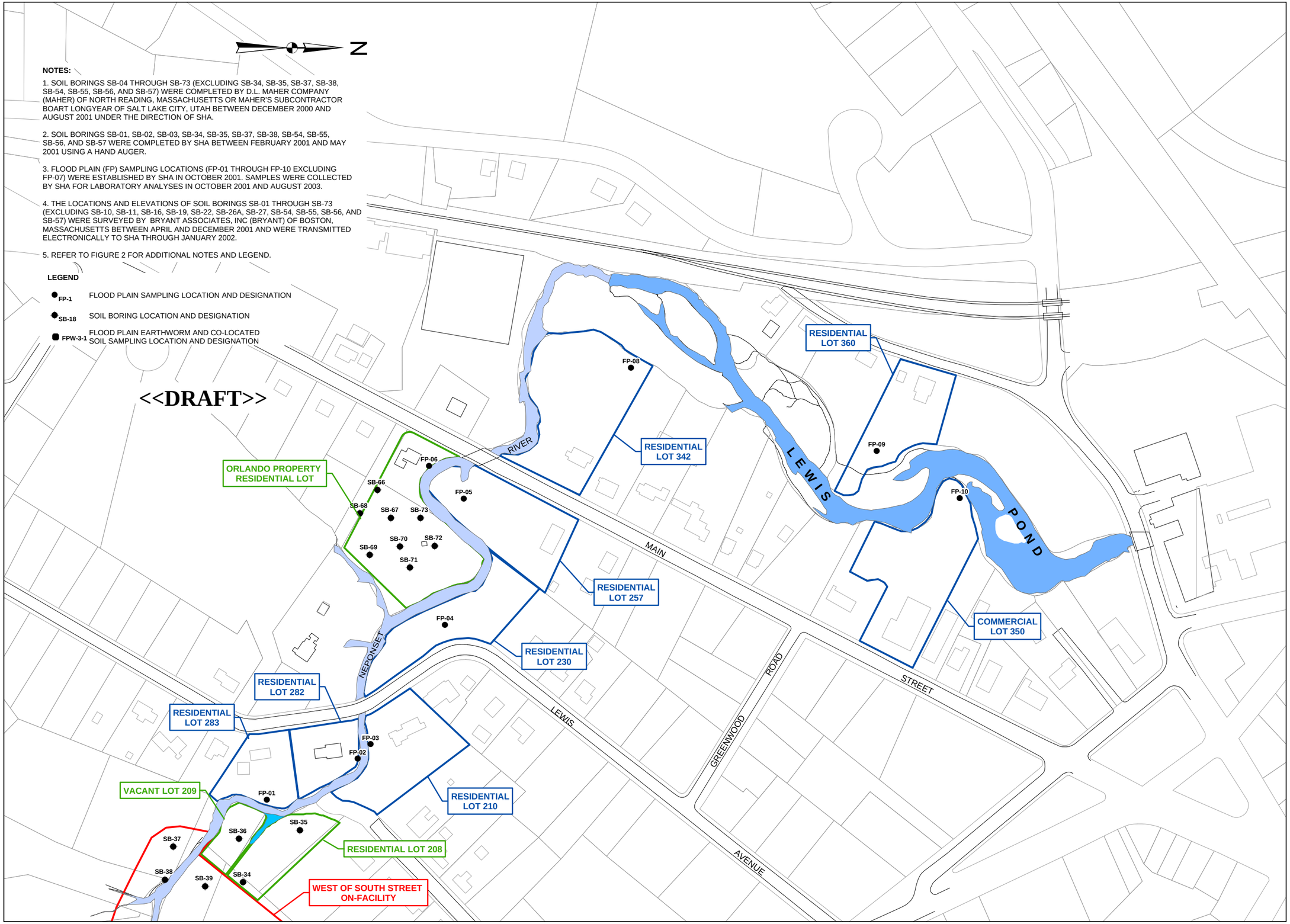

NOTES:

1. SOIL BORINGS SB-04 THROUGH SB-73 (EXCLUDING SB-34, SB-35, SB-37, SB-38, SB-54, SB-55, SB-56, AND SB-57) WERE COMPLETED BY D.L. MAHER COMPANY (MAHER) OF NORTH READING, MASSACHUSETTS OR MAHER'S SUBCONTRACTOR BOART LONGYEAR OF SALT LAKE CITY, UTAH BETWEEN DECEMBER 2000 AND AUGUST 2001 UNDER THE DIRECTION OF SHA.

2. SOIL BORINGS SB-01, SB-02, SB-03, SB-34, SB-35, SB-37, SB-38, SB-54, SB-55, SB-56, AND SB-57 WERE COMPLETED BY SHA BETWEEN FEBRUARY 2001 AND MAY 2001 USING A HAND AUGER.

3. FLOOD PLAIN (FP) SAMPLING LOCATIONS (FP-01 THROUGH FP-10 EXCLUDING FP-07) WERE ESTABLISHED BY SHA IN OCTOBER 2001. SAMPLES WERE COLLECTED BY SHA FOR LABORATORY ANALYSES IN OCTOBER 2001 AND AUGUST 2003.

4. THE LOCATIONS AND ELEVATIONS OF SOIL BORINGS SB-01 THROUGH SB-73 (EXCLUDING SB-10, SB-11, SB-16, SB-19, SB-22, SB-26A, SB-27, SB-54, SB-55, SB-56, AND SB-57) WERE SURVEYED BY BRYANT ASSOCIATES, INC (BRYANT) OF BOSTON, MASSACHUSETTS BETWEEN APRIL AND DECEMBER 2001 AND WERE TRANSMITTED ELECTRONICALLY TO SHA THROUGH JANUARY 2002.

5. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.

LEGEND

- FP-1 — FLOOD PLAIN SAMPLING LOCATION AND DESIGNATION
- SB-18 — SOIL BORING LOCATION AND DESIGNATION
- FPW-3-1 — FLOOD PLAIN EARTHWORM AND CO-LOCATED SOIL SAMPLING LOCATION AND DESIGNATION

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
100 0 100 200 300 Feet

SHA
Sanborn, Head & Associates, Inc.
Consulting Engineers & Scientists

DRAWN BY: LAS
DESIGNED BY: LAS
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

SOIL BORINGS / SAMPLE LOCATIONS INCLUDED IN THE BASELINE HUMAN HEALTH RISK ASSESSMENT - WEST OF FACILITY LOCATIONS

PROJECT NUMBER : 2032

FIGURE NUMBER : 5

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NOTES:

1. MONITORING WELLS SH-01S/D/R THROUGH SH-23S (EXCLUDING SH-05R-A, SH-05R-B, SH-06R-A, SH-06R-B, SH-17D AND SH-17R) WERE COMPLETED BY D.L. MAHER COMPANY (MAHER) OF NORTH READING, MASSACHUSETTS OR MAHER'S SUBCONTRACTOR BOART LONGYEAR OF SALT LAKE CITY, UTAH BETWEEN DECEMBER 2000 AND AUGUST 2001 WITH OBSERVATION BY SANBORN, HEAD & ASSOCIATES, INC. (SHA).

2. MONITORING WELLS SH-05R-A, SH-05R-B, SH-06R-A, SH-06R-B, SH-17D, SH-17R, SH-24S, SH-24R, SH-25S, SH-25D, SH-26S, SH-27S, SH-27D, SH-27R, SH-28S, SH-28D, AND SH-28R WERE COMPLETED BY ENVIRONMENTAL DRILLING, INC. (EDI) OF STERLING, MASSACHUSETTS BETWEEN AUGUST AND NOVEMBER 2003 WITH OBSERVATION BY SHA.

3. WELL POINTS WP-01 THROUGH WP-07 WERE INSTALLED BY SHA IN SEPTEMBER 2003.

4. THE LOCATIONS AND ELEVATIONS OF THE MONITORING WELLS AND WELL POINTS WERE SURVEYED BY BRYANT ASSOCIATES, INC. OF BOSTON MASSACHUSETTS BETWEEN APRIL 2001 AND NOVEMBER 2003 AND TRANSMITTED ELECTRONICALLY TO SHA THROUGH NOVEMBER 2003.

5. GROUNDWATER SAMPLES WERE COLLECTED BY SHA IN SEPTEMBER 2001, MAY 2002, AND OCTOBER/NOVEMBER 2003 AND WERE SUBMITTED FOR LABORATORY ANALYSIS.

6. THE WEST OF SOUTH STREET OFF-FACILITY / OFF-SITE GROUNDWATER EXPOSURE AREA INCLUDES ALL OFF-FACILITY LOTS WEST OF SOUTH STREET WHERE GROUNDWATER WAS ANALYZED AND ALL OFF-SITE LOTS WITH CURRENTLY-OCCUPIED BUILDINGS WITHIN 100-FT OF ANY GROUNDWATER MONITORING WELL OR WELL POINT (SEE TEXT FOR DISCUSSION).

7. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.

LEGEND:

WP-04 — WELL POINT LOCATION AND DESIGNATION

SH-07S — MONITORING WELL LOCATION AND DESIGNATION

<<DRAFT>>

WEST OF SOUTH STREET ON-FACILITY

AREA OF CONTAINMENT (AOC)

LOTS SOUTH OF THE AOC

WEST OF SOUTH STREET OFF-FACILITY / OFF-SITE GROUNDWATER EXPOSURE AREA

OLD RAILROAD AND FORMER LOWER MILL POND AREA

EAST OF SOUTH STREET ON-FACILITY

GLEASON COURT LOT 125

GLEASON COURT VACANT LOT

GLEASON COURT LOT 122

GLEASON COURT LOT 124

LEWIS AVENUE

LAMPLIGHTER LANE

RIVERSIDE PLACE

CLARK AVENUE

SOUTH STREET

COMMON STREET

GLEASON COURT

CASCADE TERRACE

NEPONSET RIVER

FORMER MILL BUILDING

BUILDING NO.5

BUILDING NO.4

BUILDING NO.3

BUILDING NO.2

BUILDING NO.1

HOUSE

HOUSE

APARTMENTS

GARAGE

SH-01S SH-02S SH-03S SH-04S SH-05S SH-06S SH-07S SH-08S SH-09S SH-10S SH-11S SH-12S SH-13S SH-14S SH-15S SH-15D SH-16S SH-17S SH-18S SH-19S SH-20S SH-21S SH-22S SH-23S SH-24S SH-24R SH-25S SH-26S SH-27S SH-27D SH-27R SH-28S SH-28D SH-28R

WP-01 WP-02 WP-03 WP-04 WP-05 WP-06 WP-07

GRAPHICAL SCALE
Feet
100 0 100 200 300

Sanborn, Head & Associates, Inc.
Consulting Engineers & Scientists

NO.	DATE	DESCRIPTION	BY

DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

MONITORING WELLS AND WELL POINTS INCLUDED IN BASELINE HUMAN HEALTH RISK ASSESSMENT

PROJECT NUMBER : 2032

FIGURE NUMBER : 6

FILE: S:\CAD\DATA\2000s\2032\Arc\BlineHRA_plans\BlHRA_Figure_2\arc06\Fig6_MCA_BlHRA_WF_SH_WP_061006.mxd
DATE: 6/10/2006
PLOTTED BY: Administrator
PLOT DATE: 06-JUN-06

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NOTES:

1. LEWIS POND (LP) SEDIMENT SAMPLING LOCATIONS (LP-01 THROUGH LP-10) WERE ESTABLISHED BY SHA IN JULY 2001. SAMPLES WERE COLLECTED BY SHA FOR LABORATORY ANALYSES IN JULY 2001 AND DECEMBER 2002.

2. NEPONSET RIVER (NR) SEDIMENT SAMPLING LOCATIONS (NR-1 THROUGH NR-8) WERE ESTABLISHED BY SHA IN JULY 2001. SAMPLES WERE COLLECTED BY SHA FOR LABORATORY ANALYSES IN JULY 2001 AND DECEMBER 2002.

3. TAIL RACE (TR) SEDIMENT SAMPLING LOCATIONS (TR-1 THROUGH TR-5) WERE ESTABLISHED BY SHA IN JULY 2001. SAMPLES WERE COLLECTED BY SHA FOR LABORATORY ANALYSES IN JULY 2001 AND DECEMBER 2002.

4. SURFACE WATER SAMPLING LOCATIONS (SW) WERE ESTABLISHED BY SHA IN FEBRUARY AND MARCH 2001. SAMPLES WERE COLLECTED BY SHA FOR LABORATORY ANALYSES IN APRIL 2001 AND AUGUST 2001.

5. THE SEDIMENT AND SURFACE WATER SAMPLING LOCATIONS WERE SURVEYED BY BRYANT ASSOCIATES, INC (BRYANT) OF BOSTON, MASSACHUSETTS BETWEEN APRIL AND DECEMBER 2001 AND WERE TRANSMITTED ELECTRONICALLY TO SHA THROUGH JANUARY 2002.

6. THE FISH SAMPLING SECTIONS A THROUGH E WERE ESTABLISHED BY SHA AND AQUATEC BIOLOGICAL SCIENCE, INC (AQUATEC) TO GENERALLY IDENTIFY WHERE FISH SAMPLES WERE COLLECTED WITHIN THE NEPONSET RIVER AND LEWIS POND. THE FISH SAMPLING SECTIONS DEPICTED ARE INTENDED ONLY TO REPRESENT GENERAL AREAS AND WERE THEREFORE NOT SURVEYED.

7. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.

<<DRAFT>>

N

NEPONSET RIVER WEST OF SOUTH STREET

NEPONSET RIVER EAST OF SOUTH STREET

LEWIS POND

FORMER MILL TAILRACE

A

B

C

D

E

LP-01
LP-02
LP-03
LP-04
LP-05
LP-06
LP-07
LP-08
LP-09
LP-10
NR-1
NR-2
NR-3
NR-4
NR-5
NR-6
NR-7
NR-8
SW-102
SW-103
SW-105
SW-106
SW-107
SW-108
TR-1
TR-2
TR-3
TR-4
TR-5

LEWIS DRIVE
VALLEY
SPRING
MAIN STREET
LEWIS AVENUE
RIVER
GREENWOOD ROAD
LEWIS POND
LAMPLIGHTER LANE
SOUTH STREET
RIVERSIDE
CLARK
PLACE
AVENUE
COMMON
STREET
GARAGE
FORMER MILL BUILDING
BUILDING NO.5
BUILDING NO.4
BUILDING NO.3
BUILDING NO.2
BUILDING NO.1
HOUSE
GLEASON CT
HOUSE
APARTMENTS
NEPONSET
CASCADE
TERRACE

LEGEND

- A — NEPONSET RIVER FISH SAMPLING SECTION A
- B — NEPONSET RIVER FISH SAMPLING SECTION B
- C — LEWIS POND FISH SAMPLING SECTION C
- D — LEWIS POND FISH SAMPLING SECTION D
- E — LEWIS POND FISH SAMPLING SECTION E
- LP-10 — LEWIS POND SEDIMENT SAMPLING LOCATION AND DESIGNATION
- NR-7 — NEPONSET RIVER SEDIMENT SAMPLING LOCATION AND DESIGNATION
- TR-3 — TAIL RACE SEDIMENT SAMPLING LOCATION AND DESIGNATION
- SW-105 — SURFACE WATER SAMPLING LOCATION AND DESIGNATION

GRAPHICAL SCALE
Feet
150 0 150 300 450

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Consulting Engineers & Scientists

NO.	DATE	DESCRIPTION	BY

DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

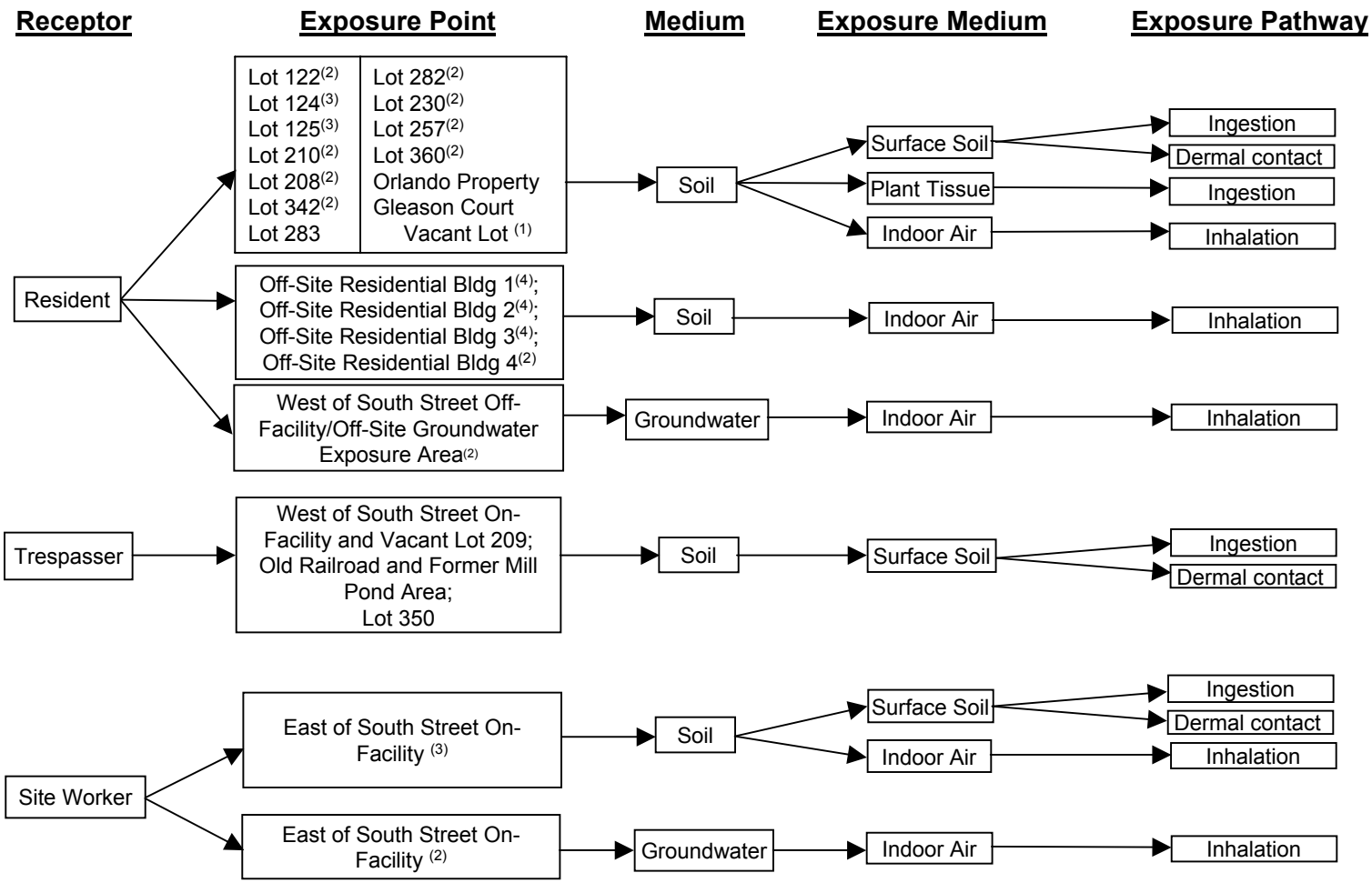
SEDIMENT AND SURFACE WATER SAMPLES AND FISH REACHES INCLUDED IN BASELINE HUMAN HEALTH RISK ASSESSMENT

PROJECT NUMBER :
2032

FIGURE NUMBER :
7

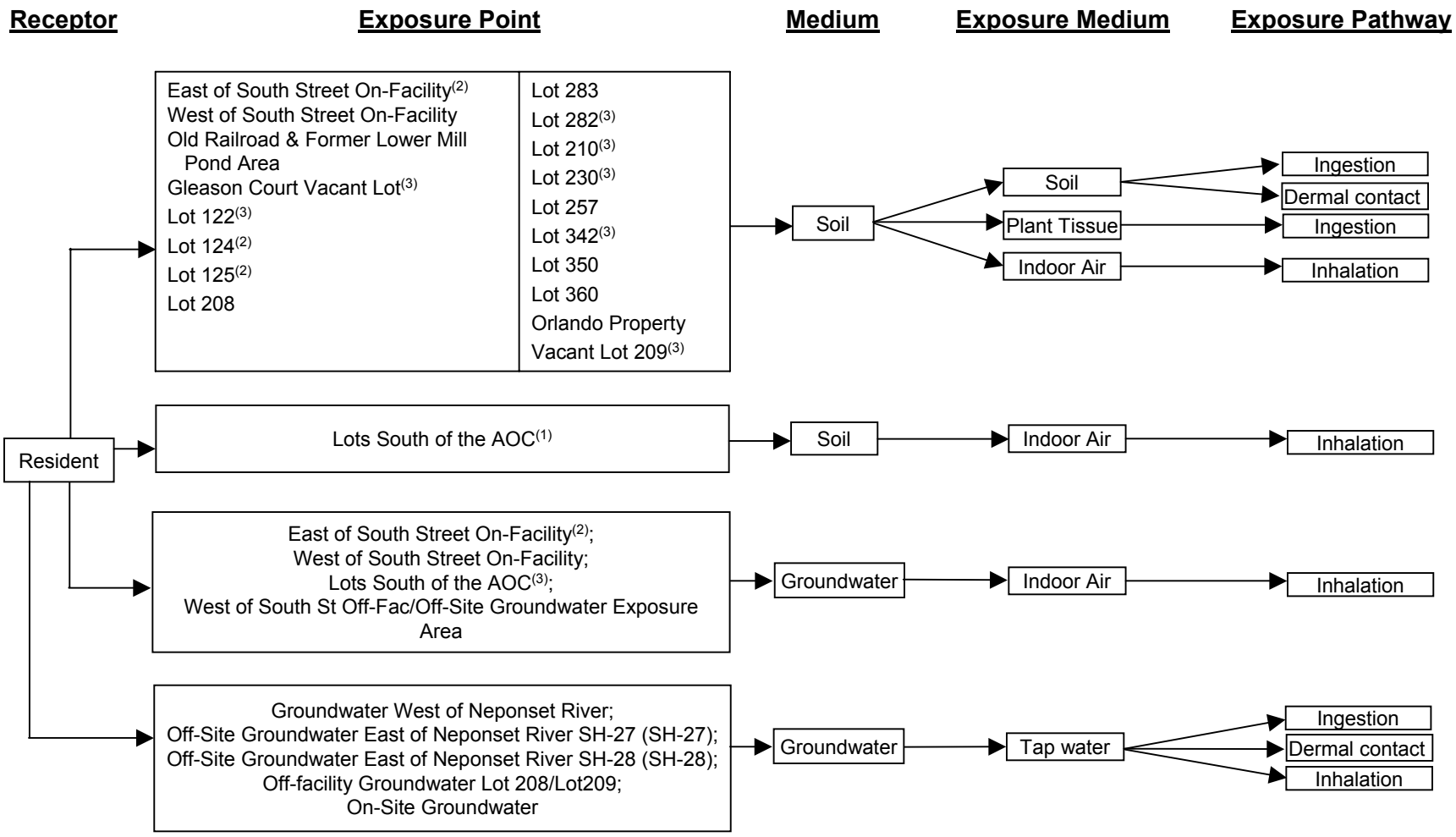
FILE: S:\CONSULT\2032\02\02\Arcfiles\ArcS_plan\BHHRA_Figures_June06\Fig7_NCA_BHHRA_WF_SED_060106.mxd
DATE: 06-07-06
MODIFIED BY: Wayne Fitzgerald

Figure 8
Conceptual Model for Current Human Health Scenarios
Blackburn & Union Privileges Site
Walpole, Massachusetts



Footnotes:
(1) Only direct contact with surface soil (ingestion and dermal) is evaluated since this lot is currently vacant.
(2) Risk from the indoor air pathway is not evaluated for this area and medium because no COPCs were identified after COPC selection.
(3) Risk from the indoor air pathway for this area is currently not evaluated due to insufficient data. The final BHHRA will include an evaluation of risk from these pathways.
(4) Only the indoor air pathway is evaluated. See text Section 1.4 for discussion.

Figure 9
Conceptual Model for the Future Resident Scenarios
Blackburn & Union Privileges Site
Walpole, Massachusetts



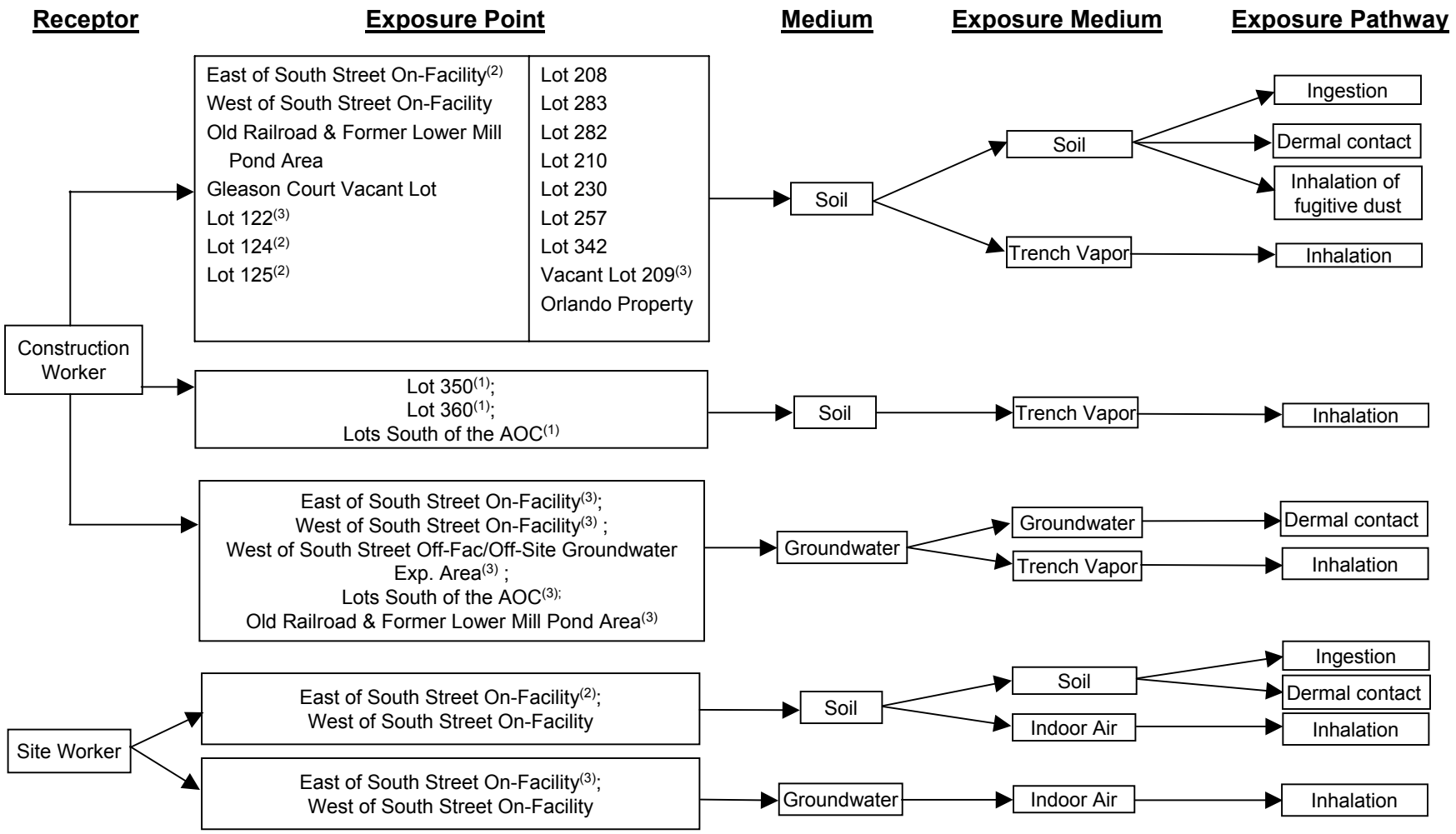
Footnotes:

(1) Only the indoor air pathway is evaluated for these scenarios. See text Section 1.4 for discussion.

(2) Risk from the indoor air pathway for this area is currently not evaluated due to insufficient data. The final BHHRA will include an evaluation of risk from these pathways.

(3) Risk from the indoor air pathway is not evaluated for this area and medium because no COPCs were identified after COPC selection.

Figure 10
Conceptual Model for Future Construction Worker and Site Worker Scenarios
Blackburn & Union Privileges Site
Walpole, Massachusetts



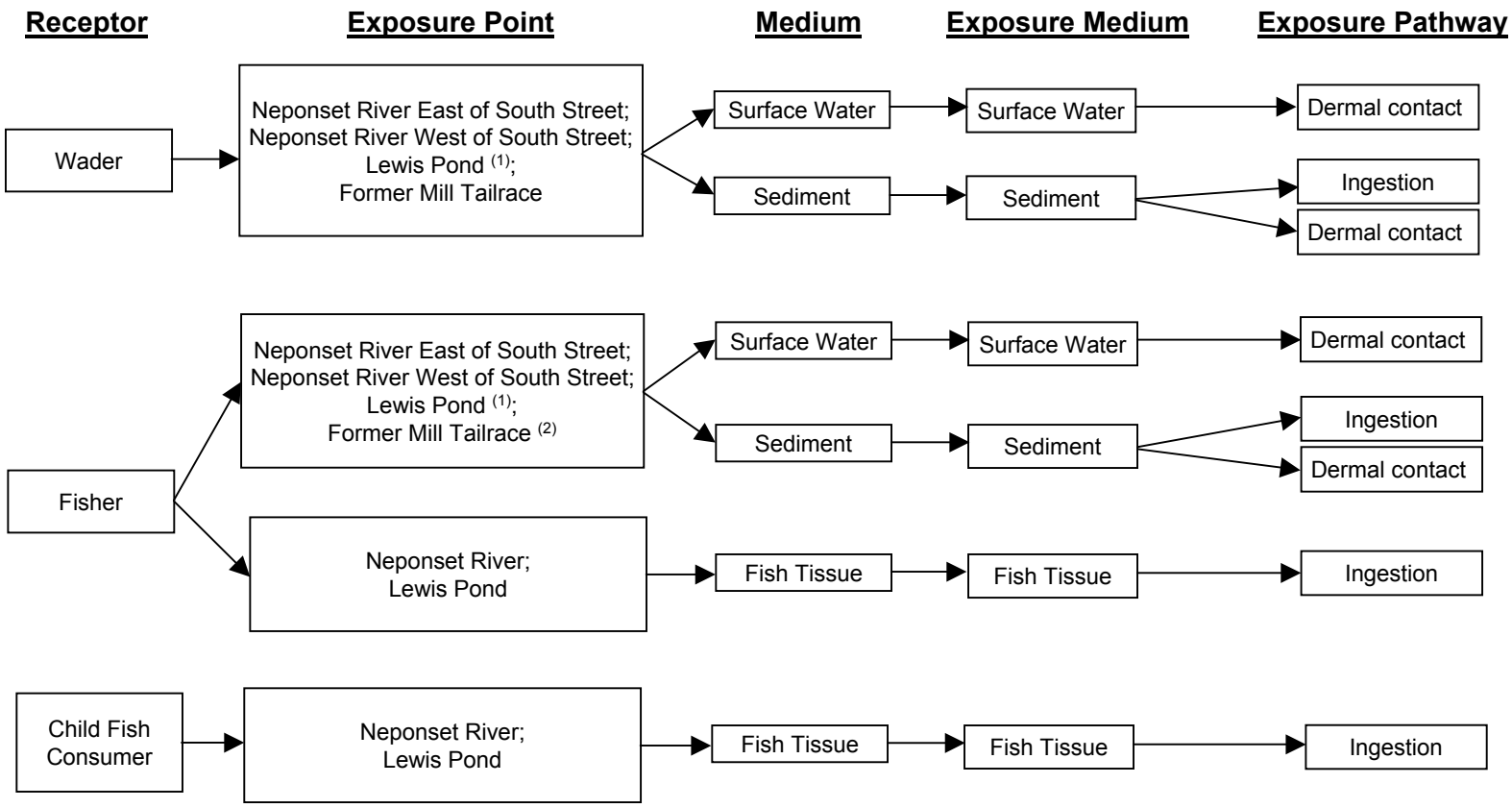
Footnotes:

(1) Only the trench vapor pathway is evaluated for these scenarios. See text for discussion.

(2) Risk from the indoor air and trench vapor pathways for this area are currently not evaluated due to insufficient data. The final BHHRA will include an evaluation of risk from these pathways.

(3) Risk from the indoor air or trench vapor pathway is not evaluated for this area and medium because no COPCs were identified after COPC selection.

Figure 11
Conceptual Model for Current/Future Fisher/Wader Scenarios
Blackburn & Union Privileges Site
Walpole, Massachusetts



Footnotes:
(1) Only the sediment pathway is evaluated. The surface water pathway is evaluated in the uncertainty section of the BHHRA. See text Sections 3.2.4 and 3.2.5 for discussion.
(2) This pathway is unlikely. However, it is evaluated in the uncertainty section of the BHHRA. See text Section 3.2.5 for discussion.

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N

NOTES:

1. THE 100-FOOT BUILDING BUFFERS DEPICTED ON THIS FIGURE SHOULD BE CONSIDERED APPROXIMATE. THE ACCURACY OF THESE BUFFERS IS DEPENDENT UPON THE ACCURACY OF THE BUILDING LOCATIONS.
2. ONLY EXPOSURE AREAS WHICH CONTAIN A SOIL SAMPLE WITHIN 100 FT OF A CURRENTLY OCCUPIED BUILDING ARE DEPICTED ON THIS FIGURE.
3. CURRENTLY OCCUPIED BUILDINGS THAT ARE WITHIN 100 FT OF A SOIL SAMPLE ARE INDICATED WITH A LINED PATTERN.
4. SOIL GAS DATA COLLECTED FROM BENEATH BUILDINGS 1 AND 2 WERE USED TO EVALUATE THE SUBSURFACE VAPOR INTRUSION PATHWAY FOR THESE BUILDINGS.
5. REFER TO FIGURES 2 AND 3 FOR ADDITIONAL NOTES AND LEGEND.
6. REFER TO TABLE 2.6 FOR SAMPLES INCLUDED IN EACH INDOOR AIR EXPOSURE POINT.

LEGEND

- SB-18 — SOIL BORING LOCATION / DESIGNATION
- UST-2 — SOIL BORING LOCATION / DESIGNATION ASSOCIATED WITH AN UNDERGROUND STORAGE TANK
- FP-06 — FLOOD PLAIN SAMPLING LOCATION / DESIGNATION
- SV-01 — SOIL GAS SAMPLING LOCATION AND DESIGNATION
- SAMPLING LOCATIONS WITHIN 100 FT OF A CURRENTLY OCCUPIED BUILDING
- 100 FT BUFFER DISTANCE AROUND CURRENTLY OCCUPIED BUILDINGS

<<02 DRAFT>>

RESIDENTIAL LOT 282
RESIDENTIAL LOT 283
RESIDENTIAL LOT 210
LOTS SOUTH OF THE AOC
OFF-SITE RESIDENTIAL BUILDING 1
OFF-SITE RESIDENTIAL BUILDING 2
OFF-SITE RESIDENTIAL BUILDING 3
OFF-SITE RESIDENTIAL BUILDING 4
EAST OF SOUTH STREET ON-FACILITY BUILDING 1
EAST OF SOUTH STREET ON-FACILITY BUILDING 2
EAST OF SOUTH STREET ON-FACILITY BUILDING 3
EAST OF SOUTH STREET ON-FACILITY BUILDING 4
EAST OF SOUTH STREET ON-FACILITY BUILDING 5
GLEASON COURT LOT 125
GLEASON COURT LOT 122
GLEASON COURT LOT 124
LEWIS AVENUE
COMMON STREET
SOUTH STREET
CLARK AVENUE
RIVERSIDE PLACE
LAMPLIGHTER LANE
CASCADE TERRACE
GLEASON COURT
NEPONSET RIVER
FORMER MILL BUILDING
BUILDING NO.1
BUILDING NO.2
BUILDING NO.3
BUILDING NO.4
BUILDING NO.5
GARAGE
HOUSE
APARTMENTS

GRAPHICAL SCALE
100 0 100 200 300 Feet

SHA
Sanborn, Head & Associates, Inc.
Consulting Engineers & Scientists

NO.	DATE	DESCRIPTION	BY

DRAWN BY: LAA
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

100 FT BUILDING BUFFERS, SOIL BORINGS, AND SOIL GAS SAMPLING LOCATIONS USED TO EVALUATE CURRENTLY OCCUPIED BUILDINGS - ON AND NEAR FACILITY

PROJECT NUMBER: 2032
FIGURE NUMBER: 12

FILE: I:\2032\ACAD\2032GN-HHRA\HHRA_Fig-Maps\2032GN-HHRA_Figure_Maps07\Fig-12_MCA_BrkHA_Buildings_Buffer_Soil_062206.mxd
DATE: 6/22/2006
PLOT DATE: 03-23-07

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N

NOTES:

1. THE 100-FOOT BUILDING BUFFERS DEPICTED ON THIS FIGURE SHOULD BE CONSIDERED APPROXIMATE. THE ACCURACY OF THESE BUFFERS IS DEPENDENT UPON THE ACCURACY OF THE BUILDING LOCATIONS.

2. ONLY EXPOSURE AREAS WHICH CONTAIN A SOIL SAMPLE WITHIN 100 FT OF A CURRENTLY OCCUPIED BUILDING ARE DEPICTED ON THIS FIGURE.

3. CURRENTLY OCCUPIED BUILDINGS THAT ARE WITHIN 100 FT OF A SOIL SAMPLE ARE INDICATED WITH A LINED PATTERN.

4. REFER TO FIGURES 2 AND 3 FOR ADDITIONAL NOTES AND LEGEND.

5. REFER TO TABLE 2.6 FOR SAMPLES INCLUDED IN EACH INDOOR AIR EXPOSURE POINT.

LEGEND

- SB-18 — SOIL BORING LOCATION / DESIGNATION
- FP-06 — FLOOD PLAIN SAMPLING LOCATION / DESIGNATION
- SAMPLING LOCATIONS WITHIN 100 FT OF A CURRENTLY OCCUPIED BUILDING
- 100 FT BUFFER DISTANCE AROUND CURRENTLY OCCUPIED BUILDINGS

<<DRAFT>>

ORLANDO PROPERTY RESIDENTIAL LOT

RESIDENTIAL LOT 282

RESIDENTIAL LOT 283

RESIDENTIAL LOT 210

RIVER

NEPONSET

MAIN STREET

LEWIS ROAD

GREENWOOD AVENUE

LEWIS POND

FP-01 FP-02 FP-03 FP-04 FP-05 FP-06 FP-08 FP-09 FP-10

SB-34 SB-35 SB-36 SB-37 SB-38 SB-39 SB-46 SB-48 SB-67 SB-73 SB-69 SB-70 SB-72 SB-71

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
Feet
100 0 100 200 300

Sanborn, Head & Associates, Inc.
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DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

100 FT BUILDING BUFFERS AND SOIL BORINGS USED TO EVALUATE CURRENTLY OCCUPIED BUILDINGS - WEST OF FACILITY

PROJECT NUMBER : 2032

FIGURE NUMBER : 13

FILE: S:\CDR\ATA\2032\03\Arc\Mxd\Q_Blrsk\BHHRA_Figures_June\BHHRA_Figure_Jun06\Fig13_IACA_BHHRA_Buildings_Buffer_Soil_Fig_060206.mxd
DATE: 6/2/2006 11:47:56 AM
BASE FILE: 06-0206

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N

NOTES:

1. THE 100-FOOT BUILDING BUFFERS DEPICTED ON THIS FIGURE SHOULD BE CONSIDERED APPROXIMATE. THE ACCURACY OF THESE BUFFERS IS DEPENDENT UPON THE ACCURACY OF THE BUILDING LOCATIONS.

2. ONLY EXPOSURE AREAS WHICH CONTAIN A GROUDWATER SAMPLE WITHIN 100 FEET OF A CURRENTLY OCCUPIED BUILDING ARE DEPICTED ON THIS FIGURE.

3. CURRENTLY OCCUPIED BUILDINGS THAT ARE WITHIN 100 FT OF A GROUND WATER SAMPLE ARE INDICATED WITH A LINED PATTERN.

4. SOIL GAS DATA COLLECTED FROM BENEATH BUILDING 1 AND 2 WERE USED TO EVALUATE THE SUBSURFACE VAPOR INTRUSION PATHWAY FOR THESE BUILDINGS.

5. THE WEST OF SOUTH STREET OFF-FACILITY / OFF-SITE GROUNDWATER EXPOSURE AREA INCLUDES ALL OFF-FACILITY LOTS WEST OF SOUTH STREET WHERE GROUNDWATER WAS ANALYZED AND ALL OFF-SITE LOTS WITH CURRENTLY-OCCUPIED BUILDINGS WITHIN 100-FT OF ANY GROUNDWATER MONITORING WELL OR WELL POINT (SEE TEXT FOR DISCUSSION).

6. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.

7. REFER TO TABLE 2.13 FOR SAMPLES INCLUDED IN EACH INDOOR AIR EXPOSURE POINT.

LEGEND

- GROUNDWATER MONITORING WELL
- WELL POINT
- MONITORING WELLS AND WELL POINTS WITHIN 100 FT OF A CURRENTLY OCCUPIED BUILDING
- 100 FT BUFFER DISTANCE AROUND CURRENTLY OCCUPIED BUILDINGS

<<02 DRAFT>>

LEWIS AVENUE
RIVER
NEPONSET
LAMPLIGHTER LANE
RIVERSIDE PLACE
CLARK AVENUE
SOUTH STREET
COMMON STREET
GLEASON COURT
CASCADE
TERRACE

WEST OF SOUTH STREET OFF-FACILITY / OFF-SITE GROUNDWATER EXPOSURE AREA

EAST OF SOUTH STREET ON-FACILITY BUILDING 3

EAST OF SOUTH STREET ON-FACILITY BUILDING 5

EAST OF SOUTH STREET ON-FACILITY BUILDING 4

SH-24S, SH-28S, WP-06, WP-05, WP-07, WP-03, SH-15S, SH-26S, WP-04, SH-04S, SH-25S, SH-14S, SH-05S, SH-16S, SH-13S, SH-12S, SH-03S, SH-06S, SH-02S, SH-11S, SH-17S, SH-01S, SH-07S, SH-27S, SH-10S, SH-09S, SH-08S, WP-02, WP-01, SH-20S, SH-18S, SH-19S, SH-21S, SH-22S, SH-23S

Off-Facility Residential Building 1
Off-Facility Residential Building 2
Off-Facility Residential Building 3
Off-Facility Residential Building 4
GARAGE
FORMER MILL BUILDING
BUILDING NO.5
BUILDING NO.4
BUILDING NO.3
BUILDING NO.2
BUILDING NO.1
HOUSE
HOUSE
APARTMENTS

GRAPHICAL SCALE
Feet
100 0 100 200 300

SHA
Sanborn, Head & Associates, Inc.
Consulting Engineers & Scientists

NO.	DATE	DESCRIPTION	BY

DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

100 FT BUILDING BUFFERS, MONITORING WELLS AND WELL POINT LOCATIONS USED TO EVALUATE CURRENTLY OCCUPIED BUILDINGS

PROJECT NUMBER : 2032

FIGURE NUMBER : 14

FILE: E:\CAD\SHA\A2032000\2032\Arcfiles\BCA_panel8\HHRA_Figures_March07\Fig14_MCA_BHHRA_Bldgs_Buffer_Wells_and_WP_031507.mxd
DRAWN BY: LAS
LAST REVISED BY:
PLOT DATE: 03-23-07

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NOTES:

1. OFF-SITE RESIDENTIAL BUILDINGS 1 THROUGH 3 ARE EVALUATED ONLY FOR THE SOIL TO INDOOR AIR PATHWAY, BECAUSE OF THE 100-FT BUFFER CRITERION (SEE TEXT FOR DISCUSSION).
2. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.
3. SEE FIGURE 8 FOR EXPOSURE PATHWAYS EVALUATED.

<<DRAFT>>

RESIDENTIAL LOT 282
RESIDENTIAL LOT 283
RESIDENTIAL LOT 210
RESIDENTIAL LOT 208
OFF-SITE RESIDENTIAL BUILDING 1
OFF-SITE RESIDENTIAL BUILDING 2
OFF-SITE RESIDENTIAL BUILDING 3
GLEASON COURT LOT 125
GLEASON COURT LOT 124
GLEASON COURT VACANT LOT
GLEASON COURT LOT 122

LEWIS AVENUE
RIVERSIDE PLACE
CLARK AVENUE
COMMON STREET
SOUTH STREET
GLEASON COURT
LAMPLIGHTER LANE
CASCADE TERRACE
RIVER
NEPONSET
FORMER MILL BUILDING
GARAGE
BUILDING NO.5
BUILDING NO.4
BUILDING NO.3
BUILDING NO.2
BUILDING NO.1
HOUSE
HOUSE
APARTMENTS

GRAPHICAL SCALE
Feet
100 0 100 200 300

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Consulting Engineers & Scientists

NO.	DATE	DESCRIPTION	BY

DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: LAS
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

EXPOSURE POINTS FOR CURRENT RESIDENT SCENARIO - NEAR FACILITY

PROJECT NUMBER :
2032

FIGURE NUMBER :
15a

FILE: S:\CAD\ATA\2000s\2032\Arc\files\ArcGIS_plans\BHHRA_Figures_Jun06\Fig15a_ArcGIS_BHHRA_Exposure_Current_Resident_Near_062006.mxd
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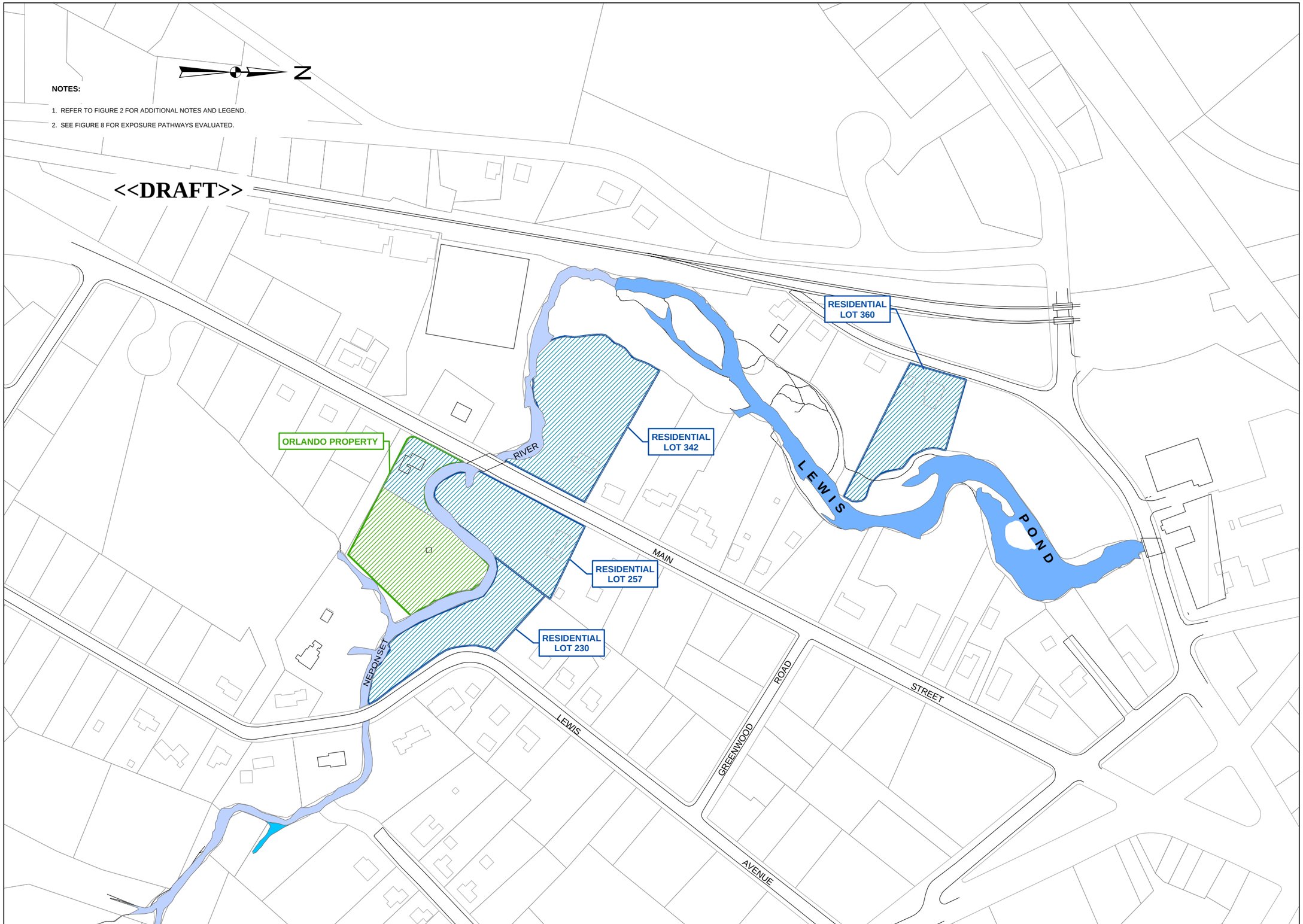
IMAGE FILE:
PLOT DATE: 06-07-06



NOTES:

1. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.
2. SEE FIGURE 8 FOR EXPOSURE PATHWAYS EVALUATED.

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NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE

100 0 100 200 300 Feet

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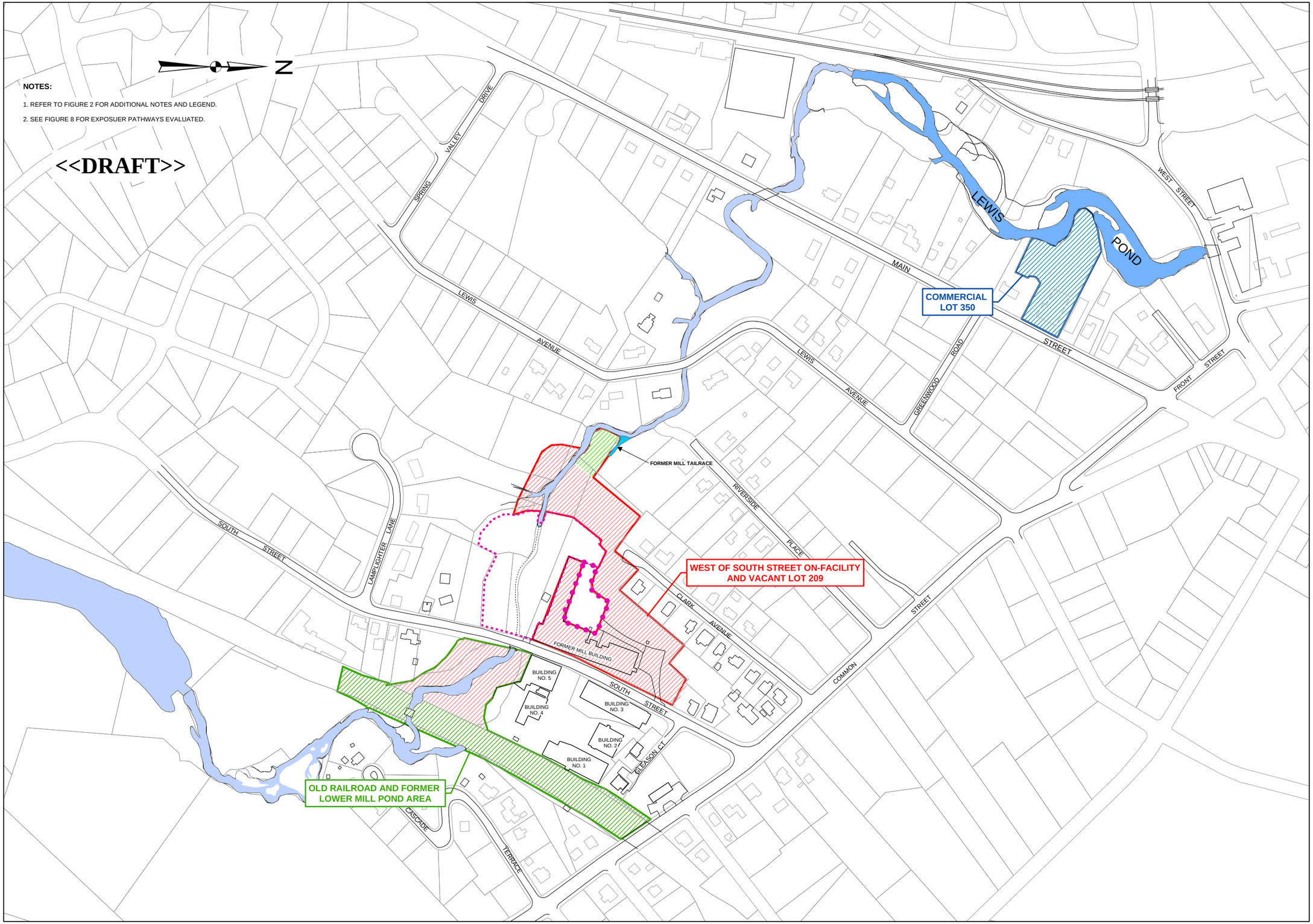
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

EXPOSURE POINTS FOR THE CURRENT RESIDENT SCENARIO - WEST OF FACILITY

PROJECT NUMBER : 2032

FIGURE NUMBER : 15b



NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
150 0 150 300 450 Feet

SHA
Sanborn, Head & Associates, Inc.
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DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

EXPOSURE POINTS FOR THE CURRENT TRESSPASSER SCENARIO

PROJECT NUMBER : 2032

FIGURE NUMBER : 16

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FILE: S:\CONDATA\2000s\2012\Archives\MCA_plans\BHHRA_Figures_June06\Fig16_MCA_BHHRA_Exposure_Current_Tresspasser_060206.mxd
CAD FILE:
IMAGE FILE:
PLOT DATE: 06-02-06

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NOTES:

1. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.
2. SEE FIGURE 8 FOR EXPOSURE PATHWAYS EVALUATED.

LEGEND

ELEVATED SOIL TCE CONCENTRATION

<<02 DRAFT>>

LEWIS AVENUE
RIVER
NEPONSET
LAMPLIGHTER LANE
RIVERSIDE PLACE
GARAGE
FORMER MILL BUILDING
CLARK AVENUE
EAST OF SOUTH STREET ON-FACILITY BUILDING 5 (INDOOR AIR)
RIVER
NEPONSET
SOUTH STREET
COMMON STREET
BUILDING NO.5
BUILDING NO.4
BUILDING NO.3
BUILDING NO.2
BUILDING NO.1
EAST OF SOUTH STREET ON-FACILITY BUILDING 4 (INDOOR AIR)
EAST OF SOUTH STREET ON-FACILITY BUILDING 3 (INDOOR AIR)
SB-09
SB-09A
EAST OF SOUTH STREET ON-FACILITY BUILDING 2 (INDOOR AIR)
EAST OF SOUTH STREET ON-FACILITY (DIRECT CONTACT WITH SOIL)
CASCADE
EAST OF SOUTH STREET ON-FACILITY BUILDING 1 (INDOOR AIR)

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
100 0 100 200 300 Feet

SHA
Sanborn, Head & Associates, Inc.
Consulting Engineers & Scientists

DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

EXPOSURE POINTS FOR THE CURRENT SITE WORKER SCENARIO

PROJECT NUMBER :
2032

FIGURE NUMBER :
17

FILE: S:\DWGS\Blackburn\Walpole\MXD_Jan08\Risk_Figures_March07\Fig17_MCA_Baseline_Exposure_Current_Site_Worker_031507.mxd
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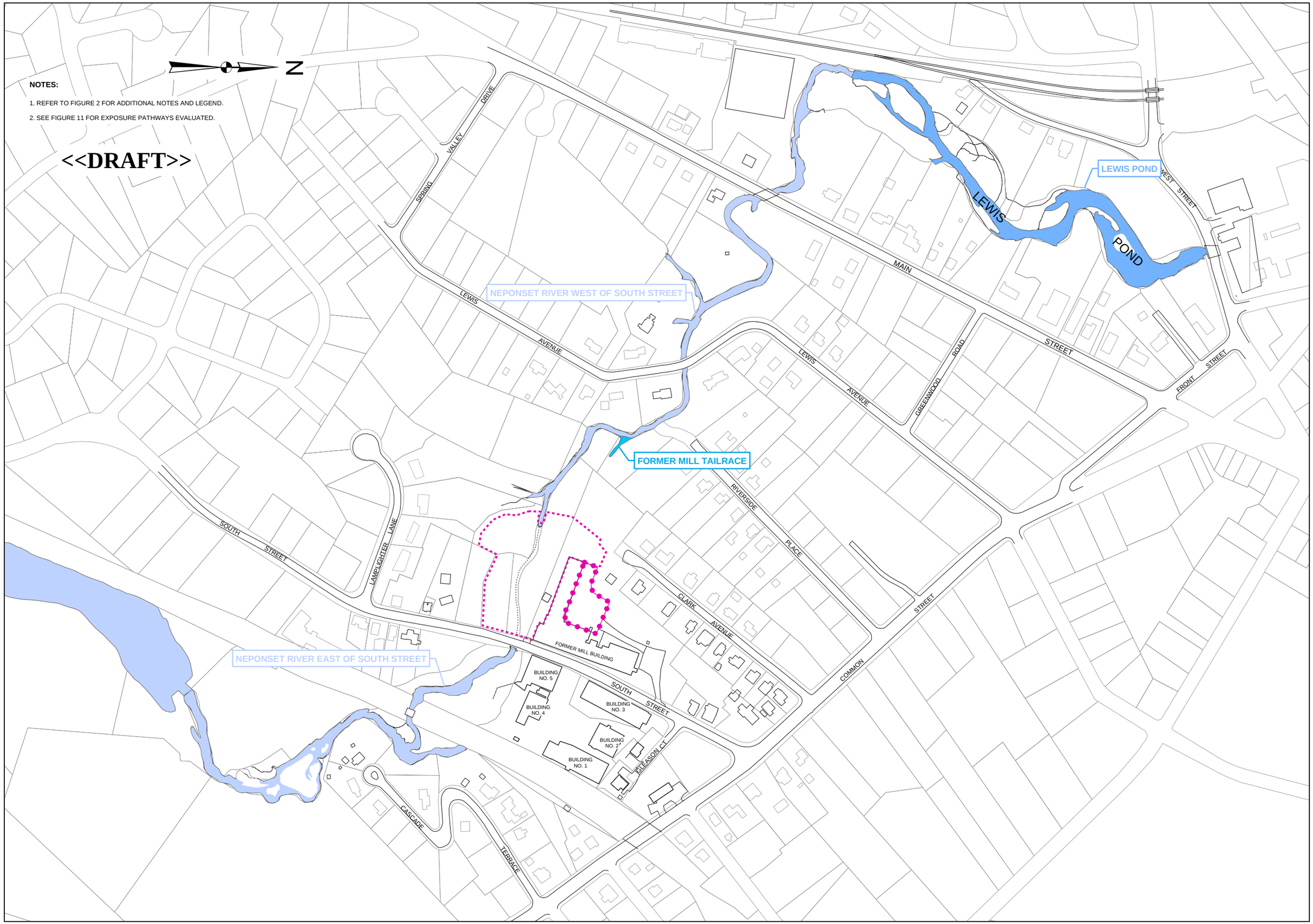
MADE DATE: 03/23/07



NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
150 0 150 300 450 Feet

SHA
Sanborn, Head & Associates, Inc.
Consulting Engineers & Scientists

DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

EXPOSURE POINTS FOR THE CURRENT/ FUTURE WADER SCENARIO

PROJECT NUMBER : 2032

FIGURE NUMBER : 18

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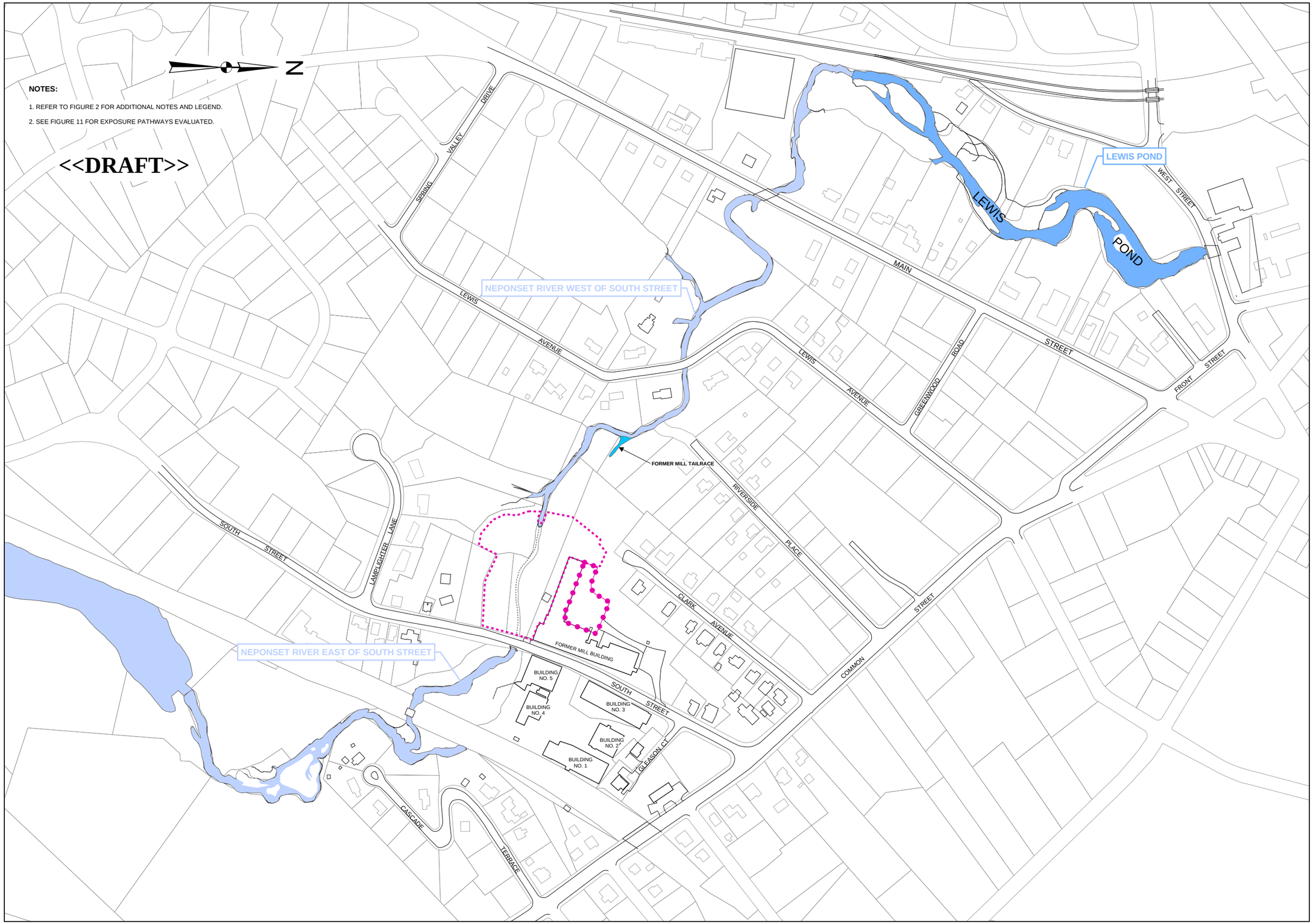
FILE: S:\CONDATA\2000\s2032\Arcfiles\MCA_plans\BHHRA_Figures_June06\Fig18_MCA_BHHRA_Exposure_Current_Future_Wader_060206.mxd
CAD FILE:
IMAGE FILE:
PLOT DATE: 06.02.06



NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
150 0 150 300 450 Feet

SHA
Sanborn, Head & Associates, Inc.
Consulting Engineers & Scientists

DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

EXPOSURE POINTS FOR THE CURRENT/ FUTURE FISHER SCENARIO

PROJECT NUMBER : 2032

FIGURE NUMBER : 19

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FILE: S:\CONDATA\2000\s2032\Arcfiles\MCA_plans\BHHRA_Figures_June06\Fig19_MCA_BHHRA_Exposure_Current_Future_Fisher_060206.mxd
CAD FILE:
IMAGE FILE:
PLOT DATE: 06.02.06

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N

FOOTNOTE:

1. ALL MONITORING WELLS AND WELL POINTS IN THE WEST OF SOUTH STREET OFF-FACILITY/OFF-SITE GROUNDWATER EXPOSURE AREA WERE SCREENED FOR COPCs AS ONE EXPOSURE POINT FOR THE FUTURE RESIDENT AND CONSTRUCTION WORKER. NOTE THAT THE ONLY CHEMICALS THAT EXCEED SCREENING VALUES FOR THE GROUNDWATER TO INDOOR AIR PATHWAY FROM THIS AREA ARE FROM LOTS 208 AND 209 (SEE SECTION 2.2.2.4 AND 3.2.6.2). RISKS FROM THE GROUNDWATER TO INDOOR AIR PATHWAY FROM THIS AREA WILL BE ADDED TO SOIL RISKS FROM LOTS 208 AND 209 FOR THE FUTURE RESIDENT. THERE ARE NO COPCs FOR THE FUTURE CONSTRUCTION WORKER IN THIS AREA FOR THE GROUNDWATER TO TRENCH VAPOR PATHWAY (SEE SECTION 2.2.2.5), AND RISKS FROM THE GROUNDWATER DERMAL PATHWAY FOR THE CONSTRUCTION WORKER FROM THIS AREA WILL BE

NOTES:

1. LOTS SOUTH OF THE AOC ARE CONSIDERED OFF-SITE AND ARE ONLY EVALUATED FOR THE AIR PATHWAY, BECAUSE OF THE 100-FT BUFFER CRITERION. SEE TEXT FOR DISCUSSION.

2. RESIDENTIAL LOTS 208, 210, 282, AND 283, AND VACANT LOT 209 ARE EVALUATED SEPARATELY FOR FUTURE SOIL EXPOSURE. OFF-SITE LOTS ON CLARK AVENUE ARE NOT EVALUATED FOR FUTURE EXPOSURE TO SOIL BECAUSE SOIL WAS NOT EVALUATED IN THIS AREA; THIS AREA IS OUTSIDE OF THE AREA IMPACTED BY SOIL CONTAMINATION.

3. REFER TO FIGURES 2 AND 10 FOR ADDITIONAL NOTES AND LEGEND.

4. REFER TO FIGURES 9 AND 10 FOR EXPOSURE PATHWAYS EVALUATED.

LEGEND

ELEVATED SOIL TCE CONCENTRATION

<<02 DRAFT>>

RESIDENTIAL LOT 282
RESIDENTIAL LOT 283
RESIDENTIAL LOT 210
VACANT LOT 209
WEST OF SOUTH STREET ON-FACILITY
WEST OF SOUTH STREET OFF-FACILITY / OFF-SITE GROUNDWATER EXPOSURE AREA [1]
RESIDENTIAL LOT 208
LOTS SOUTH OF THE AOC
OLD RAILROAD AND FORMER LOWER MILL POND AREA
SB-09 AREA (INHALATION OF AIR)
EAST OF SOUTH STREET ON-FACILITY (DIRECT CONTACT WITH SOIL AND GROUNDWATER)
NON SB-09 AREA (INHALATION OF AIR)
GLEASON COURT LOT 125
GLEASON COURT VACANT LOT
GLEASON COURT LOT 124
GLEASON COURT LOT 122

LEWIS AVENUE
LAMPLIGHTER LANE
RIVERSIDE PLACE
CLARK AVENUE
COMMON STREET
SOUTH STREET
CASCADE TERRACE
RIVER
NEPONSET
GARAGE
FORMER MILL BUILDING
BUILDING NO.5
BUILDING NO.4
BUILDING NO.3
BUILDING NO.2
BUILDING NO.1
SB-09
SB-09A

GRAPHICAL SCALE
100 0 100 200 300 Feet

NO.	DATE	DESCRIPTION	BY

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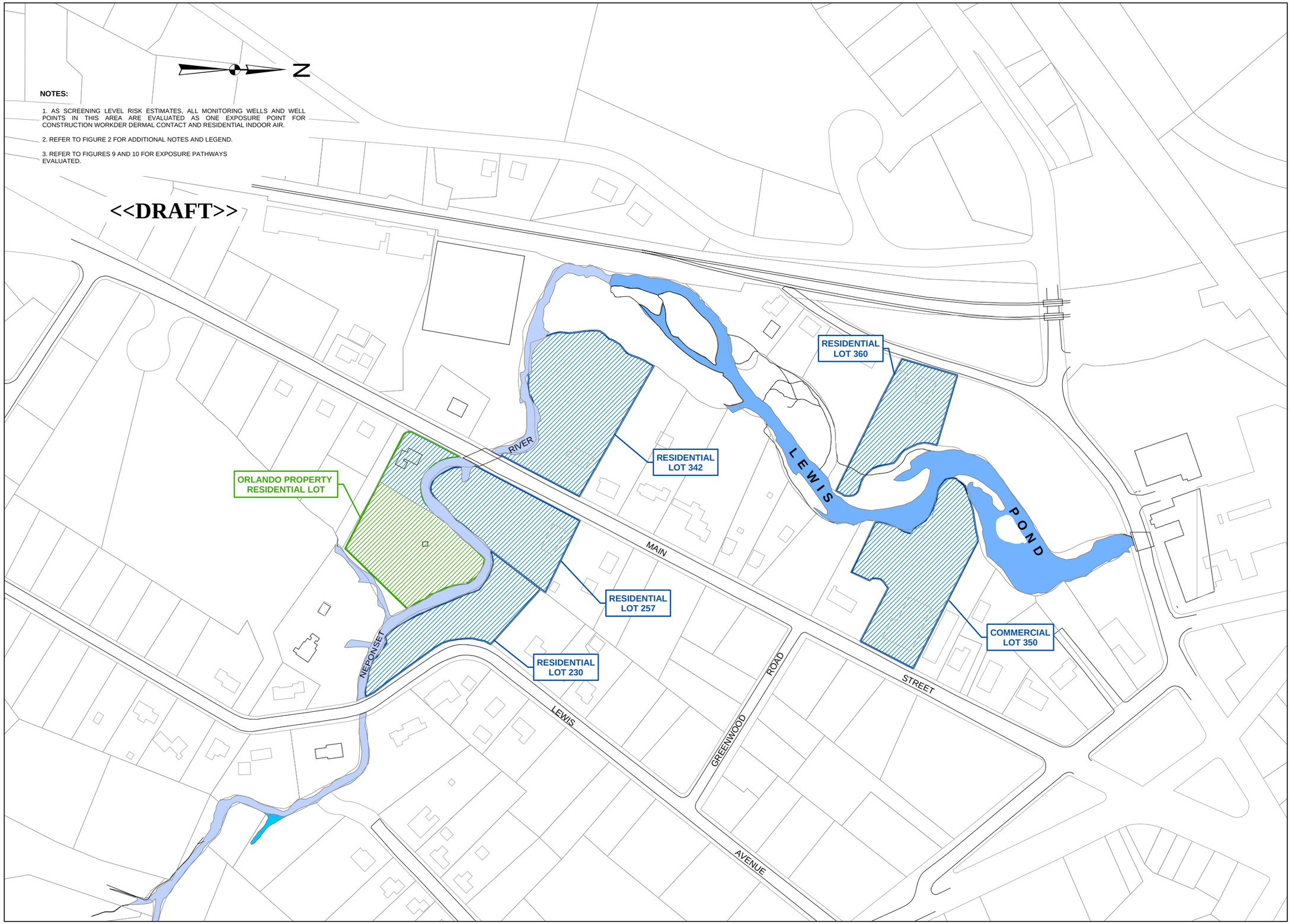
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

EXPOSURE POINTS FOR THE FUTURE RESIDENT & CONSTRUCTION WORKER SCENARIOS - NEAR FACILITY

PROJECT NUMBER: 2032
FIGURE NUMBER: 20a

FILE: E:\CADD\Task2032\GIS\Mxds\MXDs_Jan08\HHRA_Figures_March07\Fig20a_NEAR_RHHRA_Exposure_Future_Resident_Construction_Worker_Near_032107.mxd
DATE: 3/21/2007 3:23:27 PM
USER: KLE



NOTES:

1. AS SCREENING LEVEL RISK ESTIMATES, ALL MONITORING WELLS AND WELL POINTS IN THIS AREA ARE EVALUATED AS ONE EXPOSURE POINT FOR CONSTRUCTION WORKDER DERMAL CONTACT AND RESIDENTIAL INDOOR AIR.
2. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.
3. REFER TO FIGURES 9 AND 10 FOR EXPOSURE PATHWAYS EVALUATED.

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
100 0 100 200 300 Feet

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PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

EXPOSURE POINTS FOR THE FUTURE RESIDENT & CONSTRUCTION WORKER SCENARIOS - WEST OF FACILITY

PROJECT NUMBER : 2032

FIGURE NUMBER : 20b

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FOOTNOTE:

1. WELL POINT WP-03 IS ACTUALLY LOCATED ON-SITE; HOWEVER, FOR PRESENTATION PURPOSES, IT IS IDENTIFIED AS THE 'OFF-SITE GROUNDWATER WEST OF NEPONSET RIVER' EXPOSURE AREA.

NOTES:

1. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.
2. REFER TO FIGURE 9 FOR EXPOSURE PATHWAYS EVALUATED.

LEGEND:

WP-04 — WELL POINT LOCATION AND DESIGNATION

SH-07S — MONITORING WELL LOCATION AND DESIGNATION

<<DRAFT>>

OFF-SITE GROUNDWATER WEST OF NEPONSET RIVER[1]

OFF-SITE GROUNDWATER EAST OF NEPONSET RIVER (SH-28)

OFF-FACILITY GROUNDWATER LOT 208 / LOT 209

OFF-SITE GROUNDWATER EAST OF NEPONSET RIVER (SH-27)

ON-SITE GROUNDWATER

SH-24S, SH-24R, SH-28S, SH-28D, SH-28R, WP-03, SH-27S, SH-27D, SH-27R

LEWIS AVENUE, RIVERSIDE PLACE, CLARK AVENUE, SOUTH STREET, COMMON STREET, GLEASON COURT, LAMPLIGHTER LANE, CASCADE TERRACE

NEPONSET RIVER

FORMER MILL BUILDING, GARAGE, BUILDING NO.5, BUILDING NO.4, BUILDING NO.3, BUILDING NO.2, BUILDING NO.1, HOUSE, HOUSE, APARTMENTS

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE — Feet: 100, 0, 100, 200, 300

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DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

EXPOSURE POINTS FOR THE FUTURE RESIDENT TAP WATER SCENARIOS

PROJECT NUMBER : 2032

FIGURE NUMBER : 21

FILE: E:\CDR\ENV\2032\2032Arc\Mxd\QA_planB\HHRA_Figures_June06\Fig21_MCA_BHHRA_Future_Resident_TapWater_060306.mxd
DRAWN BY: LAS
LAST MODIFIED BY: LAS
IMAGE DATE: 06 02/06

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NOTES:

1. LOTS SOUTH OF THE AOC ARE CONSIDERED OFF-SITE AND ARE ONLY EVALUATED FOR THE AIR PATHWAY, BECAUSE OF THE 100-FT BUFFER CRITERION. SEE TEXT FOR DISCUSSION.

2. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.

3. SEE FIGURE 10 FOR EXPOSURE PATHWAYS EVALUATED.

LEGEND

ELEVATED SOIL TCE CONCENTRATION

<<02 DRAFT>>

WEST OF SOUTH STREET ON-FACILITY

EAST OF SOUTH STREET ON-FACILITY (DIRECT CONTACT WITH SOIL)

NON SB-09 AREA (INDOOR AIR)

SB-09 AREA (INDOOR AIR)

SB-09

SB-09A

BUILDING NO.1

BUILDING NO.2

BUILDING NO.3

BUILDING NO.4

BUILDING NO.5

GARAGE

FORMER MILL BUILDING

LEWIS AVENUE

RIVERSIDE PLACE

CLARK AVENUE

COMMON STREET

SOUTH STREET

LAMPLIGHTER LANE

CASCADE TERRACE

NEPONSET RIVER

NEPONSET RIVER

GRAPHICAL SCALE
100 0 100 200 300 Feet

SHA
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BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

EXPOSURE POINTS FOR THE FUTURE SITE WORKER SCENARIO

PROJECT NUMBER :
2032

FIGURE NUMBER :
22

FILE: E:\OFFICE FILES\Blackburn & Union\Walpole\GIS_Data\MXD\Fig22_MCA_Arcmap_Future_Site_Worker_031507.mxd
XREF: E:\OFFICE FILES\Blackburn & Union\Walpole\GIS_Data\MXD\Boundaries.mxd
IMAGE:
PLOT DATE: 03:23:27

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N

NOTES:

1. WHILE THE ENTIRE LOT 257 HAS BEEN SHADED TO INDICATE PBL>5%, IT IS LIKELY THAT THE SPATIAL DISTRIBUTION OF LEAD IN SOIL IS LIMITED TO THE GENERAL VICINITY OF SAMPLE LOCATION FP-05. REFER TO SECTION 5.3.1 FOR FURTHER DISCUSSION OF THIS MATTER.

2. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.

<<02 DRAFT>>

RESIDENTIAL LOT 342
RESIDENTIAL LOT 360
ORLANDO PROPERTY
FP-05
RESIDENTIAL LOT 257
RESIDENTIAL LOT 282
RESIDENTIAL LOT 230
COMMERCIAL LOT 350
RESIDENTIAL LOT 283
RESIDENTIAL LOT 210
WEST OF SOUTH STREET ON-FACILITY AND VACANT LOT 209
RESIDENTIAL LOT 208
FORMER MILL TAIL RACE
OFF-SITE RESIDENTIAL BUILDING 1
OFF-SITE RESIDENTIAL BUILDING 2
OFF-SITE RESIDENTIAL BUILDING 3
OLD RAILROAD / FORMER LOWER MILL POND
EAST OF SOUTH STREET ON-FACILITY BUILDING 5
EAST OF SOUTH STREET ON-FACILITY
EAST OF SOUTH STREET ON-FACILITY BUILDING 3
EAST OF SOUTH STREET ON-FACILITY BUILDING 4
GLEASON COURT LOT 125
GLEASON COURT VACANT LOT
EAST OF SOUTH STREET ON-FACILITY BUILDING 1
GLEASON COURT LOT 122
EAST OF SOUTH STREET ON-FACILITY BUILDING 2
GLEASON COURT LOT 124

SPRING VALLEY DRIVE
LEWIS AVENUE
MAIN STREET
LEWIS AVENUE
GREENWOOD ROAD
FRONT STREET
WEST STREET
LEWIS POND
SOUTH STREET
LAMPLIGHTER LANE
RIVERSIDE PLACE
CLARK AVENUE
COMMON STREET
FORMER MILL BUILDING
BUILDING NO. 5
BUILDING NO. 4
BUILDING NO. 3
BUILDING NO. 2
BUILDING NO. 1
GLEASON CT
CASCADE

Abbreviations

CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

LEGEND:

ON-SITE LOCATIONS

ON-FACILITY

$10^{-6} < CR \leq 10^{-4}$; HI ≤ 1; PBL < 5%

OFF-FACILITY

$10^{-6} < CR \leq 10^{-4}$; HI ≤ 1; PBL < 5%

pH EXCEEDANCE

OFF-SITE LOCATIONS

$10^{-6} < CR \leq 10^{-4}$; HI ≤ 1; PBL>5%

$10^{-6} < CR \leq 10^{-4}$; HI ≤ 1; PBL < 5%

$CR \leq 10^{-6}$; HI ≤ 1; PBL < 5%

SEE FIGURE 24 FOR AREA RISK ESTIMATES

SEE FIGURE 25 FOR AREA RISK ESTIMATES

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
Feet
450
300
150
0
150

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BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

RME RISK SUMMARY KEY FOR CURRENT SCENARIOS

PROJECT NUMBER: 2032

FIGURE NUMBER: 23

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CAD FILE:
AUTHOR:
PLOT DATE: 03-23-07

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FOOTNOTE:

1. RISK FROM DIRECT CONTACT WITH SOIL IS THE SAME FOR ALL EAST OF SOUTH STREET ON-FACILITY CURRENT EXPOSURE POINTS (BUILDING 1, 2, 3, 4, & 5). RISK FROM INHALATION OF INDOOR AIR IS BELOW THE USEPA RISK RANGE, EXCEPT FOR EAST OF SOUTH STREET ON-FACILITY BUILDING 1, WHERE THE RISK IS 2E-06.

NOTES:

1. CHEMICALS WITH RISKS >10^{-6} ARE SHOWN.
2. REFER TO FIGURES 2 AND 23 FOR ADDITIONAL NOTES AND LEGEND.

<<02 DRAFT>>

Residential Lot 342

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI <1	arsenic arsenic	Soil Plant Tissue

Residential Lot 360

Receptor	Cancer Risk, Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 7E-05 HI = 1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Orlando Property

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI <1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Residential Lot 282

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 3E-05 HI <1	arsenic arsenic	Soil Plant Tissue

Residential Lot 230

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 3E-05 HI <1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Residential Lot 283

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI <1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

West of South Street On-Facility and Vacant Lot 209

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Trespasser	CR = 6E-06 HI <1	benzo(a)pyrene; arsenic	Soil

Residential Lot 210

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI <1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Residential Lot 208

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 1E-05 HI <1	arsenic arsenic	Soil Plant Tissue

Old Railroad / Former Lower Mill Pond

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Trespasser	CR = 3E-05 HI <1	benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenz(ah)anthracene; arsenic	Soil

East of South Street On-Facility (See Footnote 1)

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Site Worker	CR = 6E-05 HI <1	benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenz(ah)anthracene; indeno(1,2,3-cd)pyrene; arsenic	Soil

East of South Street On-Facility - Building 1

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Site Worker	CR = 2E-06 HI <1	TCE	Indoor Air

Gleason Court Lot 125

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI <1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Gleason Court Vacant Lot

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI <1	benzo(a)pyrene; arsenic	Soil

Gleason Court Lot 122

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 6E-05 HI <1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Gleason Court Lot 124

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 6E-06 HI <1	benzo(a)pyrene	Soil

Abbreviations

CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

LEGEND:

ON-SITE LOCATIONS

ON-FACILITY

10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%

OFF-FACILITY

10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%

OFF-SITE LOCATIONS

10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%

GRAPHICAL SCALE
Feet
450
300
150
0
150

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REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

SUMMARY OF RME RISKS WITHIN THE USEPA RISK RANGE, HAZARDS INDICES BELOW OR EQUAL TO 1, AND PBL <5% FOR CURRENT SCENARIOS

PROJECT NUMBER: 2032

FIGURE NUMBER: 24

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CAD FILE:
XREF FILE:
PLOT DATE: 03-23-07

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NOTES:

1. CHEMICALS WITH RISKS >10^{-6} OR >HI OF 1 ARE SHOWN.

2. CHEMICALS AND PATHWAYS WITH RISKS >10^{-4} OR HI>1 ARE SHOWN IN **BOLD** TYPE. PBL >5% IS ALSO SHOWN IN **BOLD** TYPE.

3. WHILE THE ENTIRE LOT 257 HAS BEEN SHADED TO INDICATE PBL>5%, IT IS LIKELY THAT THE SPATIAL DISTRIBUTION OF LEAD IN SOIL IS LIMITED TO THE GENERAL VICINITY OF SAMPLE LOCATION FP-05. REFER TO SECTION 5.3.1 FOR FURTHER DISCUSSION OF THIS MATTER.

4. REFER TO FIGURES 2 AND 23 FOR ADDITIONAL NOTES AND LEGEND.

<<02 DRAFT>>

Residential Lot 257			
Receptor	Cancer Risk, Hazard Index, Blood Lead	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 5E-05	**lead**; benzo(a)pyrene; arsenic	**Soil**
	HI < 1		
	PBL = 13.4%	arsenic	Plant Tissue

Former Mill Tailrace			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Wader	CR = 3E-06	benzo(a)pyrene	sediment
	HI < 1	**elevated pH range = 9.3 - 10 s.u.**	**surface water**

Abbreviations	
CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

LEGEND:

ON-SITE LOCATIONS

OFF-FACILITY

pH EXCEEDANCE

OFF-SITE LOCATIONS

10^{-5}< CR ≤ 10^{-4}; HI ≤ 1; PBL>5%

GRAPHICAL SCALE
Feet
450
300
150
0
150

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PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

SUMMARY OF RME RISKS WITHIN THE USEPA RISK RANGE, HAZARD INDICES BELOW 1, BUT PBL > 5% OR ELEVATED pH, FOR CURRENT SCENARIOS

PROJECT NUMBER :
2032

FIGURE NUMBER :
25

FILE: K:\2032\GIS\ArcGIS\mxd\Risk\Fig_Figures_Risk\mxd\Fig25_MCA_BHHRA_HIHR_HI_Current_051507.mxd
CAD FILE:
MAP EXT:
PLOT DATE: 05-23-07

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FOOTNOTE:

1. IF WE ASSUME ARSENIC IN FISH TISSUE IS 10% INORGANIC, THEN ARSENIC RISK FROM FISH IS < 1E-06. SEE DISCUSSION IN SECTION 6.3.2.3 OF TEXT.

NOTES:

1. CHEMICALS WITH RISKS >10^{-6} ARE SHOWN.
2. REFER TO FIGURES 2 AND 23 FOR ADDITIONAL NOTES AND LEGEND.

<<DRAFT>>

Neponset River West[1]

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Wader	CR = 1E-06 HI < 1	NA	NA
Fisher	CR = 8E-05 HI = 1	benzo(a)pyrene; dibenz(a,h)anthracene; bis(2-ethylhexyl)phthalate; arsenic	fish tissue

Lewis Pond[1]

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Wader	CR = 4E-06 HI < 1	benzo(a)pyrene; arsenic	sediment
Fisher	CR = 4E-05 HI < 1	benzo(a)pyrene; arsenic	sediment
		benzo(a)pyrene; bis(2-ethylhexyl)phthalate; arsenic	fish tissue

Former Mill Tailrace

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Wader	CR = 3E-06 HI < 1	benzo(a)pyrene	sediment
		Elevated pH range = 9.3 - 10 s.u.	**surface water**

Neponset River East[1]

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Wader	CR < 1E-06 HI < 1	NA	NA
Fisher	CR = 8E-05 HI = 1	benzo(a)pyrene; dibenz(a,h)anthracene; bis(2-ethylhexyl)phthalate; arsenic	fish tissue

Abbreviations

CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

VALLEY DRIVE; SPRING; LEWIS AVENUE; LEWIS POND; WEST STREET; STREET; FRONT STREET; GREENWOOD ROAD; LEWIS AVENUE; SOUTH STREET; LAMPLIGHTER LANE; CASCADE TERRACE; FORMER MILL BUILDING; BUILDING NO. 5; BUILDING NO. 4; BUILDING NO. 3; BUILDING NO. 2; BUILDING NO. 1; GLEASON CT; SOUTH STREET; CLARK AVENUE; PLACE; COMMON STREET

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
Feet
150 0 150 300 450

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PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

RME RISK AND HAZARD SUMMARY FOR THE CURRENT/ FUTURE WADER AND FISHER SCENARIOS

PROJECT NUMBER : 2032

FIGURE NUMBER : 26

FILE: E:\2032\DATA\2032cb\2032ecf\ecf\ecf\MCA_plans\ecfHHRA_Figures_June06\Fig26_MCA_[ecf]HHRA_WE_CurrentFuture_Wader_060206.mxd
CAD FILE:
MAP UNITS: Feet
PLOT DATE: 06-02-06

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FOOTNOTE:

1. NOTE THAT THE GROUNDWATER TO INDOOR AIR RISKS FROM THE WEST OF SOUTH STREET OFF-FACILITY/OFF-SITE GROUNDWATER AREA (SHOWN ON FIGURE 20A) ARE BASED ON GROUNDWATER DATA FROM LOTS 208 AND 209 (SEE TEXT SECTIONS 2.2.2.4, 3.2.6.2, 5.3.5.2). THEREFORE, RISKS FROM THE GROUNDWATER TO INDOOR AIR PATHWAY IN THIS AREA ARE ADDED TO SOIL RISKS FROM LOT 208 AND LOT 209. SEE TABLE 35.

NOTE:

1. REFER TO FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.

<<02 DRAFT>>

N

RESIDENTIAL LOT 342
RESIDENTIAL LOT 360
ORLANDO PROPERTY
RESIDENTIAL LOT 257
RESIDENTIAL LOT 282
RESIDENTIAL LOT 230
COMMERCIAL LOT 350
RESIDENTIAL LOT 283
VACANT LOT 209[1]
RESIDENTIAL LOT 210
WEST OF SOUTH STREET ON-FACILITY
RESIDENTIAL LOT 208 [1]
LOTS SOUTH OF THE AOC
OLD RAILROAD / FORMER LOWER MILL POND
GLEASON COURT LOT 125
GLEASON COURT VACANT LOT
GLEASON COURT LOT 122
GLEASON COURT LOT 124
EAST OF SOUTH STREET ON-FACILITY (NON SB-09 AREA)
EAST OF SOUTH STREET ON-FACILITY (SB-09 AREA)

LEWIS POND
MAIN STREET
WEST STREET
LEWIS AVENUE
GREENWOOD ROAD
FRONT STREET
RIVERSIDE PLACE
CLARK AVENUE
COMMON STREET
SOUTH STREET
LAMPLIGHTER LANE
FORMER MILL BUILDING
BUILDING NO. 5
BUILDING NO. 4
BUILDING NO. 3
BUILDING NO. 2
BUILDING NO. 1
GLEASON CT.
CASCADE TERRACE

Abbreviations

CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

LEGEND:

ON-SITE LOCATIONS

ON-FACILITY

- CR> 10^{-4}; AND/OR HI>1; PBL < 5%
- 10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%

OFF-FACILITY

- CR> 10^{-4}; HI>1;PBL < 5%
- 10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%

OFF-SITE LOCATIONS

- 10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL>5%
- 10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%
- CR ≤ 10^{-6}; HI ≤ 1; PBL < 5%

SEE FIGURE 28 FOR AREA RISK ESTIMATES

SEE FIGURE 29 FOR AREA RISK ESTIMATES

GRAPHICAL SCALE
Feet 450 300 150 0 150

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Consulting Engineers & Scientists

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DRAWN BY: LAA
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

RME RISK SUMMARY KEY FOR FUTURE RESIDENT SCENARIOS (NOT INCLUDING TAP WATER)

PROJECT NUMBER: 2032

FIGURE NUMBER: 27

FILE: S:\DGN\2A\2032\Graphics\Arc\Baseline\BA_Figures_Mar\mxd\Fig27_MCA_BHHRA_rme5-risk_Future_Key_092106.mxd
CAD FILE:
AUTHOR:
PLOT DATE: 03-23-07

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N

NOTES:

1. CHEMICALS WITH RISKS >10^{-6} ARE SHOWN.

2. CANCER RISK RANGES REPRESENT RISKS USING THE LOWER END OF THE TCE AND BENZENE CANCER SLOPE FACTOR/INHALATION UNIT RISK RANGE TO THE UPPER END OF THE RANGE. BENZENE CANCER SLOPE FACTOR IS 1.5E-02 TO 5.5E-02 (PER MG/KG); INHALATION UNIT RISK RANGE IS 2.2E-06 TO 7.8E-06 (PER UG/M3). TCE CANCER SLOPE FACTOR RANGE IS 2E-02 TO 4E-01 (PER MG/KG-D); INHALATION UNIT RISK RANGE IS 2E-06 TO 1.1E-04 (PER UG/M3). SEE TABLES 6.1 AND 6.2 IN APPENDIX J.

3. SEE FIGURES 2 AND 23 FOR ADDITIONAL NOTES AND LEGEND.

<<02 DRAFT>>

Residential Lot 342			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI < 1	arsenic arsenic	Soil Plant Tissue

Orlando Property			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI < 1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Residential Lot 282			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 3E-05 HI < 1	arsenic arsenic	Soil Plant Tissue

Residential Lot 283			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI < 1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Vacant Lot 209			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 1E-05 to 2E-05 HI < 1	arsenic arsenic benzene	Soil Plant Tissue Indoor Air from Groundwater

West of South Street On-Facility			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 7E-05 to 8E-05 HI < 1	benz(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenz(ah)anthracene; arsenic arsenic benzene	Soil Plant Tissue Indoor Air from Groundwater

Gleason Court Lot 124			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI < 1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Residential Lot 360			
Receptor	Cancer Risk, Hazard Index, Blood Lead	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 7E-05 HI = 1	benzo(a)pyrene; arsenic	Soil Plant Tissue

Commercial Lot 350			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 3E-05 HI < 1	arsenic arsenic	Soil Plant Tissue

Residential Lot 257			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 5E-05 HI < 1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Residential Lot 230			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 3E-05 HI < 1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Residential Lot 210			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI < 1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Residential Lot 208			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 1E-05 to 2E-05 HI < 1	arsenic arsenic benzene	Soil Plant Tissue Indoor Air from Groundwater

Gleason Court Lot 125			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 4E-05 HI < 1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Gleason Court Vacant Lot			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 7E-05 HI < 1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Gleason Court Lot 122			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 5E-05 HI < 1	benzo(a)pyrene; arsenic arsenic	Soil Plant Tissue

Abbreviations

CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

LEGEND:

ON-SITE LOCATIONS

ON-FACILITY

10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%

OFF-FACILITY

10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%

OFF-SITE LOCATIONS

10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
Feet: 450, 300, 150, 0, 150

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DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

SUMMARY OF RME RISKS WITHIN THE USEPA RISK RANGE, HAZARD INDICES BELOW OR EQUAL TO 1, AND PBL <5% FOR THE FUTURE RESIDENT (NOT INCLUDING TAP WATER)

PROJECT NUMBER : 2032

FIGURE NUMBER : 28

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CAD FILE:
XREF FILE:
PLOT DATE: 09-23-07

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N

NOTES:

1. CHEMICALS WITH RISKS >10^{-6} OR > HI OF 1 ARE SHOWN.

2. CHEMICALS AND PATHWAYS WITH RISKS OF > 10^{-4} OR HI > 1 ARE SHOWN IN **BOLD** TYPE. PBL >5% IS ALSO **BOLD**.

3. CANCER RISK RANGES REPRESENT RISKS USING THE LOWER END OF THE TCE CANCER SLOPE FACTOR/INHALATION UNIT RISK RANGE TO THE UPPER END OF THE RANGE. TCE CANCER SLOPE FACTOR RANGE IS 2E-02 TO 4E-01 (PER MG/KG-D); INHALATION UNIT RISK RANGE IS 2E-06 TO 1.1E-04 (PER UG/M3). SEE TABLES 6.1 AND 6.2 IN APPENDIX J.

4. SEE FIGURES 2 AND 23 FOR ADDITIONAL NOTES AND LEGEND.

<<02 DRAFT>>

Old Railroad and Former Lower Mill Pond			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	**CR = 5E-04 HI = 4 (Target Organ-Specific HI)**	benz(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenz(ah)anthracene; indeno(1,2,3-cd)pyrene; **arsenic**	**Soil**
		arsenic	**Plant Tissue**

East of South Street on-Facility (non-SB-09 area)			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	**CR = 3E-04**	TCE; benz(a) anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenz(ah)anthracene; indeno(1,2,3-cd)pyrene; arsenic	**Soil**
		arsenic	Plant Tissue
		naphthalene/ 2-methylnaphthalene	**Indoor Air from Soil Gas**

East of South Street On-Facility (SB-09 area)			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	**CR = 3E-04 to 8E-04**	TCE; benz(a)anthracene; **benzo(a)pyrene**; benzo(b)fluoranthene; dibenz(ah)anthracene; indeno(1,2,3-cd)pyrene; arsenic	**Soil**
		arsenic	Plant Tissue
		TCE	**Indoor Air from Soil Gas**

Abbreviations

CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

LEGEND:

ON-SITE LOCATIONS

ON-FACILITY

CR> 10^{-4}; AND/OR HI>1; PBL <5%

OFF-FACILITY

CR> 10^{-4}; HI>1; PBL <5%

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
Feet
450
300
150
0
150

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CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

SUMMARY OF RME RISKS AND HAZARDS EXCEEDING THE USEPA RISK RANGE, THE USEPA HAZARD INDEX LIMIT, OR A PBL OF 5% FOR THE FUTURE RESIDENT (NOT INCLUDING TAP WATER)

PROJECT NUMBER :
2032

FIGURE NUMBER :
29

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CAD FILE:
XREF FILE:
PLOT DATE: 03-23-07

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FOOTNOTES:

1. APPLYING THE LOWER END OF THE CANCER SLOPE FACTOR AND INHALATION UNIT RISK RANGE FOR TRICHLOROETHENE (SEE NOTE 3) RESULTS IN A CANCER RISK LESS THAN 10^{-6} FOR TRICHLOROETHENE FROM THE INGESTION, DERMAL CONTACT, AND SHOWER VAPOR PATHWAYS COMBINED.

2. WELL POINT WP-03 IS ACTUALLY LOCATED ON-SITE; HOWEVER, FOR PRESENTATION PURPOSES, IT IS IDENTIFIED IN THE 'OFF-SITE GROUNDWATER WEST OF NEPONSET RIVER' EXPOSURE AREA.

NOTES:

1. CHEMICALS WITH RISKS >10^{-6} OR >HI OF 1 ARE SHOWN.

2. CHEMICALS AND PATHWAYS WITH RISKS >10-4 OR HI>1 ARE SHOWN IN **BOLD** TYPE. PBL>5%, AND ELEVATED pH ARE ALSO SHOWN IN **BOLD**.

3. CANCER RISK RANGES REPRESENT RISKS USING THE LOWER END OF THE TCE AND BENZENE CANCER SLOPE FACTOR / INHALATION UNIT RISK RANGE TO THE UPPER END OF THE RANGE. BENZENE CANCER SLOPE FACTOR RANGE IS 1.5E-02 TO 5.5E-02 (PER MG/KG-D); INHALATION UNIT RISK RANGE IS 2.2E-06 TO 7.8-06 (PER UG/M3). TCE CANCER SLOPE FACTOR RANGE IS 2E-02 TO 4E-01 (PER MG/KG-D); INHALATION UNIT RISK RANGE IS 2E-06 TO 1.1E-04 (PER UG/M3). SEE TABLES 6.1 AND 6.2 IN APPENDIX J.

4. CHEMICALS IN *ITALICS* FOR THE TAP WATER EXPOSURE PATHWAY EXCEED THEIR CORRESPONDING MCL, FEDERAL HEALTH ADVISORY OR SECONDARY DRINKING WATER REGULATION, OR STATE GW-1 STANDARD.

5. SEE FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.

<<DRAFT>>

On-Site Groundwater[1]

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	**CR = 2E-02 HI = 300**	*methylene chloride* ; trichloroethene; benz(a)anthracene; benzo(b)fluoranthene; *dibenz(ah)anthracene* ; indeno(1,2,3-cd)pyrene; bis(2-ethylhexyl)phthalate; carbazole; ***benzene; 2-methylnaphthalene; naphthalene; benzo(a)pyrene; 4-methylphenol; antimony; arsenic; chromium; manganese; nickel, vanadium; zinc***	**Tap Water**
		ethylbenzene; trichloroethene; ***benzene; 2-methylnaphthalene; naphthalene***	**Shower Vapor**
	--	**Elevated pH range = 8.84 - 14.06 s.u.**	**Tap water**

Off-Site Groundwater West of Neponset River[2]

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 HI <1	Arsenic	Tap water

Off-Site Groundwater East of Neponset River (SH-28)[1]

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 2E-05 to 3E-05	trichloroethene; arsenic; ***manganese***	**Tap water**
	HI = 3	trichloroethylene	Shower Vapor

Off-Facility Groundwater Lot 208 / Lot 209

Receptor	Cancer Risk, Hazard Index, Blood Lead	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	**CR = 2E-03 HI = 20 PBL = 8.1%**	*benzene; benzo(a)pyrene; dibenz(ah)anthracene;* ***arsenic; manganese; vanadium; lead***	**Tap water**
		benzene; **naphthalene**	**Shower vapor**
	--	**Elevated pH range = 10.11 - 11.9 s.u.**	**Tap water**

Off-Site Groundwater East of Neponset River (SH-27)

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Resident	CR = 5E-05 to 1E-04	**trichloroethene;** benzo(a)pyrene; arsenic; ***manganese***	**Tap water**
	HI = 2	trichloroethylene	Shower Vapor

Abbreviations	
CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

LEGEND:

ON-SITE LOCATIONS

ON-FACILITY

CR>10^{-4}; HI>1;PBL<5%; pH EXCEEDANCE

OFF-FACILITY

CR>10^{-4}; HI>1; PBL>5%; pH EXCEEDANCE

OFF-SITE LOCATIONS

10^{-6}< CR ≤ 10^{-4}; HI>1; PBL < 5%

10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%

GRAPHICAL SCALE Feet 100 0 100 200 300

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NO.	DATE	DESCRIPTION	BY

DRAWN BY: LAS
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
P/C: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

RME RISK AND HAZARD SUMMARY FOR FUTURE RESIDENT TAP WATER SCENARIOS

PROJECT NUMBER : 2032

FIGURE NUMBER : 30

FILE: S:\CAD\SHA7A2200s\2032\Arc\Risk\HHRA_plate\BHHRA_Figure_June06\Fig30_MCA_BHHRA_HHR_HS_Fture_Resident_TapWater_060206.mxd
DATE PLOTTED: 06-14-06
PLOTTED BY: Richard Wentworth

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FOOTNOTES:

1. IN THE EAST OF SOUTH STREET ON-FACILITY (NON SB-09 AREA) AND WEST OF SOUTH STREET ON FACILITY AREAS, SITE WORKER RISKS ARE [ ] AND CONSTRUCTION WORKER RISKS ARE [ ] .

2. IN THE EAST OF SOUTH STREET ON-FACILITY (SB-09) AREA, CONSTRUCTION WORKER RISKS ARE [ ] AND SITE WORKER RISKS ARE [ ] .

3. NOTE THAT THERE ARE NO COPCs FOR THE GROUNDWATER TO TRENCH VAPOR PATHWAY FOR THESE LOTS (WEST OF SOUTH STREET OFF-FACILITY/OFF-SITE GROUNDWATER AREA SHOWN ON FIGURE 20A). SEE TEXT SECTION 2.2.2.5. RISK FROM DERMAL CONTACT WITH GROUNDWATER FROM THIS AREA FOR THE CONSTRUCTION WORKER IS ADDED TO SOIL RISKS FROM LOTS 208, 209, 210, 282, AND 283. SEE TABLE 38.

4. WHILE THE ENTIRE LOT 257 HAS BEEN SHADED TO INDICATE PBL>5%, IT IS LIKELY THAT THE SPATIAL DISTRIBUTION OF LEAD IN SOIL IS LIMITED TO THE GENERAL VICINITY OF SAMPLE LOCATION FP-05. REFER TO SECTION 5.3.3.3 FOR FURTHER DISCUSSION OF THIS MATTER.

NOTE:

1. SEE FIGURE 2 FOR ADDITIONAL NOTES AND LEGEND.

<<02 DRAFT>>

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RESIDENTIAL LOT 342
RESIDENTIAL LOT 360
ORLANDO PROPERTY
RESIDENTIAL LOT 257[4]
RESIDENTIAL LOT 282[3]
RESIDENTIAL LOT 230
RESIDENTIAL LOT 283[3]
COMMERCIAL LOT 350
LOT 209[3]
WEST OF SOUTH STREET ON-FACILITY[1]
RESIDENTIAL LOT 210[3]
BOLD
LOT 208[3]
LOTS SOUTH OF THE AOC
OLD RAILROAD / FORMER LOWER MILL POND
GLEASON COURT LOT 125
GLEASON COURT VACANT LOT
GLEASON COURT LOT 122
GLEASON COURT LOT 124
EAST OF SOUTH STREET ON-FACILITY (NON SB-09 Area) [1]
EAST OF SOUTH STREET ON-FACILITY (SB-09 Area) [2]

SPRING VALLEY DRIVE
LEWIS AVENUE
MAIN STREET
LEWIS POND
WEST STREET
LEWIS AVENUE
GREENWOOD ROAD
FRONT STREET
RIVERSIDE PLACE
SOUTH STREET
LAMPLIGHTER LANE
CLARK AVENUE
COMMON STREET
FORMER MILL BUILDING
BUILDING NO. 5
BUILDING NO. 4
BUILDING NO. 3
BUILDING NO. 2
BUILDING NO. 1
GLEASON CT.
CASCADE TERRACE

Abbreviations

CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

LEGEND:

ON-SITE LOCATIONS

ON-FACILITY

- CR > 10^{-4}; HI > 1; OR pH EXCEEDANCE; PBL< 5%
- 10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%

OFF-FACILITY

- CR ≤ 10^{-6}; HI ≤ 1; PBL<5%; pH EXCEEDANCE
- 10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%
- CR ≤ 10^{-6}; HI ≤ 1; PBL < 5%

OFF-SITE LOCATIONS

- CR ≤ 10^{-6}; HI ≤ 1; PBL>5%
- 10^{-6}< CR ≤ 10^{-4}; HI ≤ 1; PBL < 5%
- CR ≤ 10^{-6}; HI ≤ 1; PBL < 5%

SEE FIGURE 32 FOR AREA RISK ESTIMATES

SEE FIGURE 33 FOR AREA RISK ESTIMATES

NO.	DATE	DESCRIPTION	BY

GRAPHICAL SCALE
Feet: 150, 0, 150, 300, 450

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DRAWN BY: LAA
DESIGNED BY: BAG
CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

RME RISK SUMMARY KEY FOR FUTURE SITE WORKER AND CONSTRUCTION WORKER SCENARIOS

PROJECT NUMBER: 2032

FIGURE NUMBER: 31

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CAD FILE:
GIS FILE:
PLOT DATE: 03-23-07

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FOOTNOTE:

1. APPLYING THE LOWER END OF THE INHALATION UNIT RISK RANGE FOR BENZENE (SEE TABLE 6.2 IN APPENDIX J) RESULTS IN A CANCER RISK LESS THAN 10^{-6} FOR THE GROUNDWATER TO INDOOR AIR PATHWAY.

NOTES:

1. CHEMICALS WITH RISKS $>10^{-6}$ ARE SHOWN.

2. CANCER RISK RANGES REPRESENT RISKS USING THE LOWER END OF THE TCE CANCER SLOPE FACTOR/INHALATION UNIT RISK RANGE TO THE UPPER END OF THE RANGE. TCE CANCER SLOPE FACTOR RANGE IS 2E-02 TO 4E-01 (PER MG/KG-D); INHALATION UNIT RISK RANGE IS 2E-06 TO 1.1E-04 (PER UG/M3). SEE TABLES 6.1 AND 6.2 IN APPENDIX J.

3. REFER TO FIGURES 2 AND 31 FOR ADDITIONAL NOTES AND LEGENDS.

<<02 DRAFT>>

West of South Street On-Facility (See Footnote 1)			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Site Worker	CR = 2E-05 HI < 1	benzo(a)pyrene; arsenic	Soil
		benzene	Indoor Air from Groundwater

Residential Lot 283			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Construction Worker	CR = 2E-06 HI <1	chloroform	Trench Air from Soil

Old Railroad and Former Lower Mill Pond			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Construction Worker	CR = 1E-05 HI <1 (Target Organ-Specific HI)	benzo(a)pyrene; arsenic	Soil

East of South Street On-Facility (non SB-09 area)			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Site Worker	CR = 1E-04 HI <1	benz(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenz(ah)anthracene; indeno(1,2,3-cd)pyrene	Soil

East of South Street On-Facility (SB-09 area)			
Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Construction Worker	CR = 1E-05 to 4E-05 HI <1	benzo(a)pyrene	Soil
		TCE	Trench Air from Soil Gas

Abbreviations

CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

LEGEND:

ON-SITE LOCATIONS

ON-FACILITY

$10^{-6} < CR \leq 10^{-4}$; $HI \leq 1$; $PBL < 5\%$

OFF-FACILITY

$10^{-6} < CR \leq 10^{-4}$; $HI \leq 1$; $PBL < 5\%$

OFF-SITE LOCATIONS

$10^{-6} < CR \leq 10^{-4}$; $HI \leq 1$; $PBL < 5\%$

GRAPHICAL SCALE
Feet
450
300
150
0
150

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NO.	DATE	DESCRIPTION	BY

DRAWN BY: LAA
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CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: MAR 07

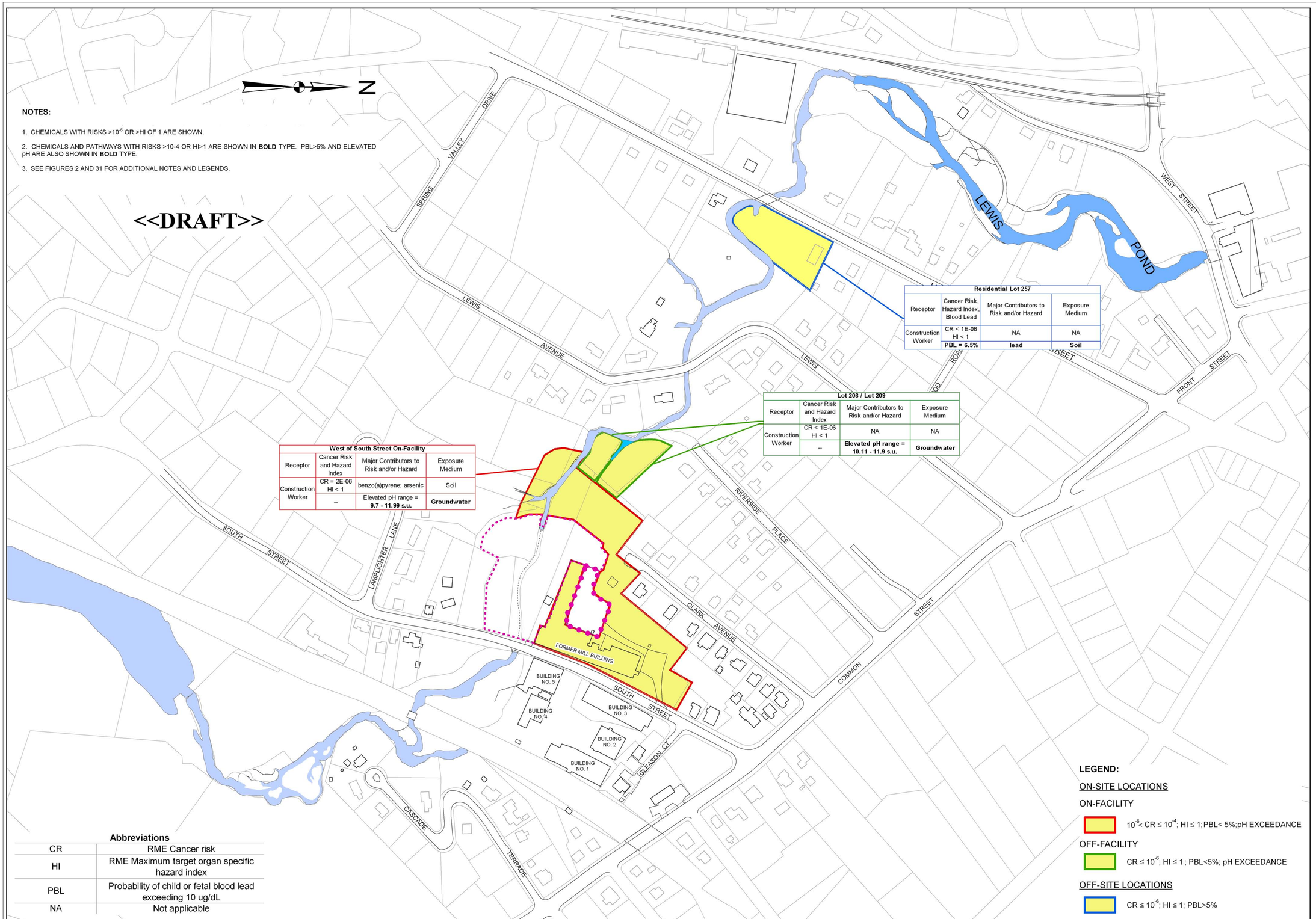
BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

SUMMARY OF RME RISKS WITHIN THE USEPA RISK RANGE, HAZARD INDICES BELOW 1, AND PBL < 5% FOR THE FUTURE SITE WORKER AND CONSTRUCTION WORKER

PROJECT NUMBER :
2032

FIGURE NUMBER :
32

FILE: S:\CON\DATA\2000\00100\Arc\Risk\BCA_plans\BHRA_Figure_Mxds\BCA_Figure_risk_vs_Future_Worker060606.mxd
CAD FILE:
GIS FILE:
PLOT DATE: 6/12/07



NOTES:

1. CHEMICALS WITH RISKS >10^{-6} OR >HI OF 1 ARE SHOWN.
2. CHEMICALS AND PATHWAYS WITH RISKS >10-4 OR HI>1 ARE SHOWN IN **BOLD** TYPE. PBL>5% AND ELEVATED pH ARE ALSO SHOWN IN **BOLD** TYPE.
3. SEE FIGURES 2 AND 31 FOR ADDITIONAL NOTES AND LEGENDS.

<<DRAFT>>

Residential Lot 257

Receptor	Cancer Risk, Hazard Index, Blood Lead	Major Contributors to Risk and/or Hazard	Exposure Medium
Construction Worker	CR < 1E-06 HI < 1	NA	NA
	PBL = 6.5%	**lead**	**Soil**

Lot 208 / Lot 209

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Construction Worker	CR < 1E-06 HI < 1	NA	NA
	--	**Elevated pH range = 10.11 - 11.9 s.u.**	**Groundwater**

West of South Street On-Facility

Receptor	Cancer Risk and Hazard Index	Major Contributors to Risk and/or Hazard	Exposure Medium
Construction Worker	CR = 2E-06 HI < 1	benzo(a)pyrene; arsenic	Soil
	--	Elevated pH range = **9.7 - 11.99 s.u.**	**Groundwater**

Abbreviations

CR	RME Cancer risk
HI	RME Maximum target organ specific hazard index
PBL	Probability of child or fetal blood lead exceeding 10 ug/dL
NA	Not applicable

LEGEND:

ON-SITE LOCATIONS

ON-FACILITY

10^{-6}< CR ≤ 10^{-4}; HI ≤ 1;PBL< 5%;pH EXCEEDANCE

OFF-FACILITY

CR ≤ 10^{-6}; HI ≤ 1 ; PBL<5%; pH EXCEEDANCE

OFF-SITE LOCATIONS

CR ≤ 10^{-6}; HI ≤ 1; PBL>5%

GRAPHICAL SCALE

150 0 150 300 450 Feet

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CHECKED BY: BAG
REVIEWED BY: CAC
PROJECT MGR: BAG
PIC: CLH
DATE: JUN 06

BASELINE HUMAN HEALTH RISK ASSESSMENT
BLACKBURN & UNION PRIVILEGES SUPERFUND SITE
WALPOLE, MASSACHUSETTS

SUMMARY OF RME RISKS WITHIN OR BELOW THE USEPA RISK RANGE AND HAZARD INDICES BELOW 1, PBL>5% OR ELEVATED pH FOR THE FUTURE CONSTRUCTION WORKER

PROJECT NUMBER : 2032

FIGURE NUMBER : 33

NO.	DATE	DESCRIPTION	BY

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CAD FILE:
IMAGE FILE:
PLOT DATE: 06-14-06

APPENDIX A
RAGS Table 0 and TARA Worksheet

Table 0

Site Risk Assessment Identification Page

Blackburn & Union Privileges Superfund Site Baseline Human Health Risk Assessment

Walpole, Massachusetts

Site Name/OU:	Blackburn & Union Privileges Superfund Site, Walpole, Massachusetts
Region:	Region 1
EPA ID Number:	MAD982191363
State:	MA
Status:	BHHRA Deliverable III - Draft Version 03f
Federal Facility (Y/N):	N
EPA Project Manager:	David Lederer
EPA Risk Assessor:	Chau Vu
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Probabilistic Risk Assessment (Y/N):	N

TECHNICAL APPROACH TO RISK ASSESSMENT (TARA)
SCHEDULE WORKSHEET

Blackburn & Union Privileges Superfund Site
Walpole, Massachusetts

Activity - *RAGS Part D Reference*	Comments
PROJECT SCOPING	
Preliminary site conceptual model	November 2000
Site visit	December 2001
Scoping meeting	October 12, 1999 thru February 8, 2000
PRGs and ARARs (initial discussion)	November 22, 1999
Identification of deliverables	October 7, 1999
Planning Table 1 (preliminary version)	February 9, 2004
Probabilistic Analysis (preliminary consideration)	NA
RI/FS Workplan (consideration of risk assessment objectives)	November 2000
Baseline Risk Assessment Workplan (consideration of risk assessment objectives)	November 2000
Probabilistic Analysis (additional consideration and Workplan as appropriate)	NA
REMEDIAL INVESTIGATION	
Planning Table 0 – *Appendix A*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
TARA Schedule Worksheet – *Appendix A*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Planning Table 1 – *Main Report Table 1*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Data Usability Worksheet – *Appendix B*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Planning Table 2 – *Appendix C*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Planning Table 3 –*Appendix F*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Supporting information on modeled intake methodology and parameters for Planning Table 4 – *Appendices D and E*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Supporting information on chemical-specific parameters for Planning Table 4 -	June 20, 2006; revised May 31, 2007;

TECHNICAL APPROACH TO RISK ASSESSMENT (TARA)
SCHEDULE WORKSHEET

Blackburn & Union Privileges Superfund Site
Walpole, Massachusetts

Activity - *RAGS Part D Reference*	Comments
Appendices D and E	revised July 27, 2007
REMEDIAL INVESTIGATION (continued)	
Dermal Worksheet – *Appendix H*	June 20, 2006
Planning Table 4 – *Appendix G*	June 20, 2006
Planning Table 5 – *Appendix J*	June 20, 2006
Planning Table 6 – *Appendix J*	June 20, 2006
Planning Table 7 – *Appendix K*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Planning Table 8	NA
Planning Table 9 – *Appendix L*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Planning Table 10 – *Appendix M*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Lead Worksheets – *Appendix I*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Assessment of Confidence and Uncertainty – *Section 6.0 of Text and Appendix N*	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Summary of Probabilistic Analysis	NA
Draft Baseline Risk Assessment	June 20, 2006; revised May 31, 2007; revised July 27, 2007
Final Baseline Risk Assessment	TBD
Draft ROD Risk Worksheets	TBD
FEASIBILITY STUDY	
Remedial Action Objectives	TBD
Remediation Goals	TBD
Risks and hazards associated with PRGs	TBD

TECHNICAL APPROACH TO RISK ASSESSMENT (TARA)
SCHEDULE WORKSHEET

Blackburn & Union Privileges Superfund Site
Walpole, Massachusetts

Activity - *RAGS Part D Reference*	Comments
Risk considerations of remedial technologies and alternatives	TBD
AFTER THE FEASIBILITY STUDY	
Risk evaluation for the Proposed Plan	TBD
Documentation of risks in the Record of Decision	TBD
Revise ROD Risk Worksheets	TBD
Risk evaluation during remedial design and remedial action	TBD
Risk evaluation associated with explanations of significant differences	TBD
Risk evaluations during five-year review	TBD
Public meeting participation	TBD

NA = not applicable
TBD = to be determined

APPENDIX B
Data Usability Worksheets

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
Field Sampling	
Discuss sampling problems and field conditions that affect data useability.	There were no apparent sampling problems reported from the field collection program that could affect data usability. See the following reports for further details on Data Usability evaluations for the Blackburn & Union Privileges Superfund Site, Walpole, MA: 1) *Draft Phase 1B Remedial Investigation Data Usability Report*, April 2004; 2) *Phase 1A Data Usability Report,* March 2002; and 3) Section 3 entitled "Summary of Field and Laboratory Quality Assurance/Quality Control Results and Implications for Site Data" included in the site *Remedial Investigation (RI) Report* (to be issued subsequently).
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	Sediment samples were collected from the 0-6 inch depth interval, which is the depth considered accessible to humans. Surface water samples were collected in shallow water accessible to humans, by lowering decontaminated bottles to the desired depth and allowing them to fill. Though both dissolved and total metals were analyzed in surface water for the RI, only the total metals results were used in the human health risk assessment. Fish of sufficient size and relevant species for human consumption were caught in waterbodies that support resident fish populations. Concentrations measured in individual fish fillets will be used in the human health risk assessment based on the assumption that recreational anglers are more likely to eat the fillet than other parts of fish they catch. Soil samples were collected between 0 and 1 foot and 0 to 10 feet. The top foot of soil is considered accessible for current exposure by humans. Soil in the 0-10 foot soil interval is used to evaluate future exposure to humans resulting from vertical mixing of soils during possible redevelopment.

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
	Groundwater samples were collected using low flow sampling techniques, where possible, consistent with EPA Region I protocols. Samples for use in the human health risk assessment are unfiltered.
Assess the effect of field QC results on data useability.	All non-rejected data were considered acceptable for use in human health risk assessment based on field QC, following data validation and usability assessment. Validation actions for low-level blank contamination from field equipment blanks (EB and B) and actions to qualify data as estimated (J) based on field duplicate (FD) imprecision have been taken for some samples/analytes. In all cases, the qualified data were evaluated and determined to be usable for risk assessment. See comments on Precision and handling of FD results, below. Also, see the *Phase 1B RI Data Usability Report* (including the appendices of individual *NEH Data Usability Reports* generated for each laboratory sample delivery group (SDG) for each media and each parameter type).
Summarize the effect of field sampling issues on the risk assessment, if applicable.	Five internal on-site Field Audits (Technical Systems Audits for sampling and on-site analyses) were performed during the Phase 1B RI. Field audits were successful in that sampling and field analysis protocols were consistent with the project requirements and SOPs. Minor issues that did not affect usability of the data (such as the need to initial each page of the field logs), were corrected in "real-time" during the audit and documented in the Field Audits reports. No significant field issues were observed. See Appendix C of the *Phase 1B RI Data Usability Report* for copies of the Field Audit checklists.
Analytical Techniques	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. All definitive analyses were generated by EPA methods. See the site Work Plan inclusive of the *Quality Assurance Project Plan*, November 2000; the *Phase 1-B1 Work Plan*, 2003; the *Phase 1B-2 Work Plan*, 2003; and the *Addendum to the Phase 1B-2 Work Plan*, October 2003.
Were detection limits adequate?	Overall, yes. For WAD Cyanide in groundwater, the

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
	reporting limit (RL) was greater than screening toxicity value. We attempted to improve this reporting limit in sampling rounds after 2001, but it was not possible using the best available technology. The reporting limit for antimony was also greater than its screening toxicity value, but NEH worked with the laboratory to obtain a better detection limit in later sampling rounds. Dilutions required to bring some compounds within the linear range of the instrument and/or blank actions taken during data validation caused elevated RLs for some results at levels greater than the Project Action Limits (PALs), which were based, in part, on risk-based criteria. All such data are considered usable because the approach of using ½ of the RL in the estimate of exposure point concentration will result in adequate detection limits for risk evaluation.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	No significant effects. Some data were reported below the method RL (below the lowest-level in calibration curve). These data were qualified as J or UJ and flagged as such in the project database. For non-detected results reported with an estimated low-level RL (qualified UJ), we will use the full sample-specific RL reported in the project database, instead of taking ½ of the RL, when calculating exposure point concentrations as a conservative approach for using these estimated non-detected results.
Data Quality Objectives	
Precision – How were duplicates handled?	Field Duplicate (FD), Laboratory Matrix Duplicate (MD), and Matrix Spike Duplicate (MSD) samples were used to evaluate precision. MD, MSD, and FD results were evaluated during the data validation procedure. If precision criteria as defined in the site QAPP (November 2000) and *Phase 1B RI Work Plans* were not met, the associated data were estimated (qualified J or UJ). Following the validation, the MD and MSD data were removed from the project database, and the original results of the duplicate pairs will be used in quantitative risk assessment. Results qualified due to MD or MSD imprecision will be used with the understanding that they

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
	may be imprecise with indeterminate bias. FD data will be handled in the risk assessment as follows. Sediment, Soil, and Groundwater If the precision requirement is not met, we will use the higher concentration measured in the field duplicate pair to represent the concentration at that sampling location for detected results. If the precision requirement is met for the FD samples, chemical concentrations will be averaged prior to calculation of exposure point concentrations. If a chemical was detected in neither the sample nor its duplicate, the lower RL will be used to represent the chemical concentration at that sample location. Surface Water Due to the nature of FD samples for surface water, the samples will be treated independently (i.e., not averaged). Therefore, if the precision requirement is not met for a majority of the analytes/compounds in the FD pair, we will treat the sample and it's FD as two separate samples in our exposure point concentration calculation. This was the case for one surface water field duplicate pair, SW-106 & OW-301, sampled in April 2001. If the precision requirement is met for the FD samples for a majority of the analytes/compounds, we will use the higher concentration in the FD pair to represent the concentration at that sampling location. If a chemical was detected in only one of the two samples, the detected concentration will be used as the concentration for that sample location. If a chemical was detected in neither the sample nor its duplicate, the lower RL will be used to represent the chemical concentration at that sample location. Fish Fillet Consistent with the Phase 1B-2 Work Plan, FD samples were not collected for fish tissue. Precision was evaluated using matrix duplicates (for metals) and matrix spike duplicates (for SVOCs). Duplicate precision was

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
	acceptable for all fish fillet data. See the *Phase 1B RI Data Usability Report*, Section 3.1.5, for further details on FD evaluation for all media.
Accuracy – How were split samples handled?	Split samples were collected by Metcalf &Eddy (M&E), under contract to EPA, for groundwater, soil, surface water, and sediment during the Phase 1A and 1B RIs. Soil M&E's three soil reports, "Split Sampling Report for Soil Sampling, Blackburn & Union Privileges Superfund Site, Walpole, Massachusetts," August 2001, November 2001, and March 2002, all conclude that the overall comparability for the split sample soils was acceptable for the definitive parameters of VOCs, SVOCs, metals, and weak acid dissociable (WAD) cyanide. Groundwater The three M&E reports, "Split-Sampling Report for Groundwater Sampling,"of April 2002, May 2002, and November 2002, indicate overall comparability of results for all definitive parameters of VOCs, SVOCs, metals, and WAD cyanide. This is notable, as several of these samples had high pH (> 9 s.u.). Sediment The M&E report, "Split Sampling Report for Surface Water and Sediment Sampling Performed in 2001", July 2002, and the report, "Split-Sampling Report for Sediment, Blackburn & Union Privileges Superfund Site, Walpole, Massachusetts," September 2003, concluded that the overall comparability for the split sample sediments was acceptable for definitive parameters of VOCs, SVOCs, metals, asbestos, and WAD cyanide. Surface Water The M&E report, "Split Sampling Report for Surface Water and Sediment Sampling Performed in 2001", July 2002 concluded that comparable for VOCs, dissolved trace level mercury, and WAD cyanide were acceptable. However, non-comparability of results was documented

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
	by M&E for SVOCs, metals, and asbestos based on one surface water sample being non-comparable (SW-106/04-04-01). The Phase 1A Data Usability Report includes a discussion about the potential heterogeneity in surface water samples during the high velocity flow April 2001 sampling event in the Neponset River. This potential heterogeneity was also observed in the FD results for the same sample (see Precision Section, above). A previously discussed, risk assessors will treat FD samples as individual results as the approach to handle the potential heterogeneity in surface water samples.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	All QC results that might affect representativeness for all media tested, including results of trip blanks, equipment rinseate blanks, chain-of-custody interpretation, and FD results, were evaluated during data validation. Appropriate actions were taken to qualify data based on the field QC. These qualified data were determined to be usable for risk, with the following specific observations for representativeness of sediments. Several sediment samples analyzed for VOCs, WAD cyanide, TOC and grain size in the Phase 1B RI contained percent solids less than 30%. The low solids content may affect the representativeness of the qualified (J and UJ) results reported for these samples. Additionally, evidence of sample heterogeneity was observed in the evaluation of metals results generated during 2001 and 2002 at three sediment locations in Lewis Pond (see Section 3.1.5.3 of the *Phase 1B RI Data Usability Report* for details). The influence of sediment heterogeneity on the human health risk estimates will be discussed in the uncertainty section of the Baseline Human Health Risk Assessment.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	Completeness is calculated as the amount of valid data obtained *vs*. the amount of data planned for collection. The site DQO for completeness is 90% overall completeness for all data. Overall, the completeness criterion of 90% usable data was achieved in both the Phase 1A RI and Phase 1B

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
	RI, indicating that the combined data set is sufficient in quality and quantity to determine the contaminants of potential concern (COPCs) and calculate exposure point concentrations in the Baseline Human Health Risk Assessment. In the few cases where the data were rejected as unusable (e.g., WAD cyanide in groundwater samples from Phase 1A and benzoic acid in sediments and fish tissue from Phase 1B), the percent analytical completeness for the specific analyte decreased. In some cases, the analytical completeness on a compound-by-compound basis fell below 90%. Based on the evaluation of the statistical analysis presented in the ISC, combined with a lack of a historical source for these parameters from Site use, the lack of elevated detections of these compounds in other media, and the achievement of $\geq$ 90% analytical completeness for several of these compounds in subsequent sampling rounds, it was concluded that the rejected compound/analyte results do not represent COPCs in these media for the Site. Further details will be presented in Section 3 of the RI report for the Site.
Comparability - Indicate any problems associated with data comparability.	Data generated in support of risk assessment were considered comparable based on adherence to the QAPP defined criteria for field and analytical methods and quality control. Additionally, M&E split sample results for soils, groundwaters, sediments, and surface waters (with one exception for surface water, see split sample discussion, above) gave a quantitative demonstration of the comparability of these data generated during the Phase 1A RI and Phase 1B RI.
Were the DQOs specified in the QAPP satisfied?	Analytical DQOs were defined in the QAPP for precision, accuracy, representativeness, completeness, and comparability (see Table 3-1, QAPP, 2000 and Phase 1B Work Plans). DQOs were met for representativeness (overall), comparability, and completeness (see discussions above). Though overall, precision and accuracy DQOs were met, individual chemicals in some samples did not achieve QAPP-specified acceptance criteria for one or more QC indicators of precision and

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
	accuracy. In such cases, data were qualified (e.g., U, J, UJ, EB, JEB, TB, JTB, B, JB, and R) during data validation, if applicable. These qualified data were determined to be usable for risk assessment in all cases except for results qualified "R" (see further discussion of "R" data below). Consistent with EPA guidance (USEPA, April 1992), data that are qualified can be used in human health risk assessment with the documentation of the potential bias (as indicated in the project database and the individual Data Usability Reports included as appendices to the Phase 1A RI Data Usability Report and the Phase 1B Data Usability Report).
Summarize the effect of DQO issues on the risk assessment, if applicable.	There was minimal effect of DQO issues. The few percent of the data that were rejected (qualified "R") during data validation (see Completeness comments, above), will not be used in risk assessment but will not create a data gap for the risk evaluation. Overall completeness goals of 90% were met for all five media (soil, sediment, groundwater, surface water, and fish fillet) and qualified data of known bias were considered usable – therefore, DQO issues do not significantly impact the risk assessment. Effects, if any, of potential bias in the qualified results, will be evaluated in the uncertainty section of the Baseline Human Health Risk Assessment.
Data Validation and Interpretation	
What are the data validation requirements?	The validation requirements were defined in the *Quality Assurance Project Plan* for the Phase 1A and Phase 1B Work Plans, subsequent addenda, and technical memoranda. In summary, the requirements included the EPA Region I Tier I-, II- and III-type data validation, with modifications. At a minimum, each media and each definitive parameter underwent a full Tier III-type data validation review of one sample delivery group (SDG). Subsequent SDGs for definitive parameters (to be used in quantitative risk assessment), underwent a Tier II-type validation. Non-definitive parameters (e.g., TOC) underwent a Tier I-type (enhanced to review method QC) review. Validations of all data were performed by the

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
	third-party validator, New Environmental Horizons, Inc. (NEH).
What method or guidance was used to validate the data?	EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, EPA Region I, December 1996 (inclusive of organic validation guidance) and Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses, EPA Region I, February 1989 were followed for all data validations, with modifications as documented in the Phase 1A QAPP and the Phase 1B Work Plans (including comments below).
Data Validation and Interpretation (continued)	
Was the data validation method consistent with guidance? Discuss any discrepancies.	Yes. The data validation methods were consistent with the guidance and the Phase IA QAPP and Phase 1B Work Plans. Professional technical judgment, as allowed in the EPA guidance, was used in cases where the guidance did not cover a specific QC issue or in cases where the validator had specific technical reasons to deviate from guidance. Reference the individual Data Usability Reports for each SDG generated for each medium and parameter for details (included as appendices in the *Phase 1A RI Data Usability Report* and the *Phase 1B RI Data Usability Report*). Two specific instances of professional judgment affected the qualification of data. 1) Inorganic results for soil and sediment were qualified "B", with (in general) a high bias, if the analyte was detected in any non-matrix-matched blank. Though the QAPP modifications indicated that action would be taken to qualify associated results "B" only for non-matrix-matched field rinseate blanks, professional judgment was used to also qualify data for non-matrix-matched laboratory blanks. The validator used this approach because it is a conservative approach for risk assessment in that it maintains a detected result (qualified "B") in the project

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
	database, rather than negating this result. 2) The validator chose to accept, as estimated (qualified "UJ"), non-detected results for VOC in sediments in samples that contained < 30% solids. EPA guidance suggests the rejection of these results. Professional judgment was used to accept these as estimated non-detected results because the samples were collected to be careful not to entrain excess water and because the nature of the Site sample locations in the depositional areas with low percent solids were such that re-sampling would not generate a sample with higher percent solids.
Were all data qualifiers defined? Discuss those which were not.	Yes. Reference the individual Data Usability Reports for each SDG in Appendix B of the *Phase 1A Remedial Investigation Data Usability Report* and *Phase 1B Remedial Investigation Data Usability Report*.
Which qualifiers represent useable data?	U, UJ, EB, JEB, TB, JTB, B, JB represent useable data. Any data qualified as such is used in this assessment.
Which qualifiers represent unusable data?	"R" qualifiers represent rejected data that will not be used in the Baseline Human Health Risk Assessment.
How are tentatively identified compounds handled?	Tentatively identified compounds were not reported for this Site.
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	Unusable data qualified with an "R" will not be used in the risk assessment. All other data, both qualified and unqualified, will be used in the risk assessment. As previously stated above in the "Completeness" section, the overall goal of 90% valid/usable results was achieved for each media and each definitive parameter type; therefore, a sufficient data set was generated for Human Health Risk Assessment. The rejected results do not represent a data gap for the risk assessment. The risk assessor will evaluate any potential effects of the bias identified in qualified results (included in the project database and in the individual Data Usability Reports for all SDGs), during the uncertainty evaluation performed as part of the Baseline Human Health Risk Assessment.

Data Useability Worksheet – Phase 1A and 1B Soil, Groundwater, Sediment, Surface Water, Fish Fillets	
Activity	**Comment**
Additional notes	None.

Data Usability Worksheet–Human Health Risk: Phase 1B-4 Soil Vapor & Soil	
Activity	**Comment**
Field Sampling	
Discuss sampling problems and field conditions that affect data useability.	There were no sampling problems reported from the field collection programs, Phase 1B-4 Remedial Investigation (RI) for soil vapor and soil that affected usability of the data for human health risk assessment. One minor field sampling deviation is discussed in Field QC evaluation, below. Field sampling collection procedures are described in the Phase 1B-4 RI Work Plan for the Blackburn & Union Privileges Superfund Site, Walpole MA (SHA, July 2006).
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	Phase 1B-4 Sampling: Soil vapor implants were installed in the vicinity of SB-09 and 10 subsurface soil vapor samples + 1 field duplicate (FD) were collected into Summa canisters and transported to the off-site laboratory in support of quantitative risk assessment. On-site screening-level analyses of soil vapor VOCs were also performed; however, these data were not used in quantitative risk calculations. Soil vapor samples were analyzed for VOCs (project-specific list of 40 VOCs by EPA Method TO-15 plus naphthalene and 2-methylnaphthalene by MADEP APH method) to evaluate the vapor inhalation pathway, as identified in the Baseline Human Health Risk Assessment (BHHRA). Two sub-surface soil samples and one FD were collected at SB-09 between 2-3.5 and 6-7.5 foot depths, during the Phase 1B-4 RI. These soils were analyzed for the project-specific list of 40 VOCs plus 2-methylnaphthalene and naphthalene.
Assess the effect of field QC results on data usability.	All non-rejected data were considered acceptable for use in the BHHRA based on field QC, following data validation and usability assessment. Field QC included field equipment rinseate blanks (EB), trip blanks (TB), an ambient air sample for soil vapor, and field duplicate (FD) samples for all media. Field QC samples were

Data Usability Worksheet–Human Health Risk: Phase 1B-4 Soil Vapor & Soil	
Activity	**Comment**
	collected at the proper frequencies (1 EB and 1 FD per 20 field samples and 1 TB per cooler containing VOC samples), with the exception of VOC in soil during Phase 1B-4. During sample collection, SHA contacted NEH to indicate that the EB was possibly contaminated during collection by an outside source. Therefore, an EB was not associated with this sampling effort, which is non-compliant with QAPP protocols. Professional judgment was used to consider the VOC soil data valid without the field EB information as a conservative estimate of risk (*i.e.*, field contamination could not be assessed; therefore, a potential high bias is possible). Field EB and TB results showed no introduction of contamination during sample collection. A low level of acetone (1.39 $\mu g/m^3$) and methylene chloride (12.5 $\mu g/m^3$) was detected in the ambient air sample associated with the soil vapor collection. Validation actions to qualify data as estimated (J) based on FD imprecision have been taken for some analytes. In all cases, the qualified data were evaluated and determined to be usable for risk assessment. See comments on Precision and handling of FD results, below. Also, see the individual NEH *Data Usability Reports* generated by NEH (third-party QAO) for each laboratory sample delivery group (SDG) for each media and each parameter type.
	An internal on-site Field Audit (Technical Systems Audit for sampling) was not performed by SHA during the Phase 1B-4 soil vapor sampling or soil sampling. However, senior level staff from SHA were present during soil vapor and soil sampling activities during the Phase 1B-4 RI. No significant sample collection problems or deviations from the standard operating procedures for soil vapor or sediment sampling were observed by SHA's senior staff during the Phase 1B-4 RI.
Analytical Techniques	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. All definitive analyses were generated by USEPA or MassDEP methods. See the Phase 1B-4 Work Plan

Data Usability Worksheet–Human Health Risk: Phase 1B-4 Soil Vapor & Soil	
Activity	**Comment**
	(SHA, 2006) and prior QA documents including the *Quality Assurance Project Plan*, November 2000; the *Phase 1-B1 Work Plan*, 2003; the *Phase 1B-2 Work Plan*, 2003; and the *Addendum to the Phase 1B-2 Work Plan*, October 2003.
Were detection limits adequate?	Overall, yes. Soil Vapor A majority of the non-detected VOC results in soil vapor met PALs. However, seven VOCs (bromodichloromethane, carbon tetrachloride, chloroform, dibromochloromethane, 1,2-dichloroethane, 1,1,2,2-tetrachloroethane, and 1,1,2-trichloroethane) in all samples were reported as non-detected with detection limits exceeding the human health target soil gas concentrations (*USEPA Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils*, USEPA Region I, September 1999). These exceedances were due to method limitations, even though the best available USEPA and MassDEP analytical methods (GC/MS) were used for analysis. In addition, several VOCs exceeded PALs due to analytical dilutions required to bring some compounds within the linear range of the analysis. Soil A majority of the non-detected VOC results in soil met PALs used in the RI (97% of the non-detected results met PALs). Only non-detected results for chloroform and vinyl chloride in sample SB-09A/S-2/09-07-06 exceeded the PAL. Data users should note that the current PALs may differ from the PALs listed in prior Site documents (QAPP, 2000 and Phase 1B-5 Work Plan, 2006). All non-detected data for flood plain sediment, soil vapor, and soil are considered usable because of the limitations of "best available technology", necessary dilutions or methods used for analysis, and because the approach of using ½ of the RL in the estimate of exposure point concentrations resulted in most of the compounds achieving adequate detection limits for the BHHRA (see the Uncertainty section of the BHHRA for

Data Usability Worksheet–Human Health Risk: Phase 1B-4 Soil Vapor & Soil	
Activity	**Comment**
	further details).
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	Due to analytical method limitations of the EPA TO-15 method, the laboratory could not analyze two compounds in soil vapor samples that were successfully analyzed in the soils: 2-chloroethylvinyl ether and bromochloromethane (see Worksheet #9b, *Phase 1B-4 Work Plan*, SHA 2006, for further details). As these two compounds were non-detected in the associated soil results at SB-09, it is not expected that they would have been detected in the soil vapor; therefore, this issue does not represent a data gap for risk analysis. The laboratory reported soil vapor results for 26 compounds that were not requested in the project-specific list of 40 VOCs in the *Phase 1B-4 Work Plan*. These "extra" compounds were as follows: 1,1,2-trichloro-1,2,2-trifluoroethane; 1,2,4-trichlorobenzene; 1,2,4-trimethylbenzene; 1,2-dibromoethane; 1,2-dichloro-1,1,2,2-tetrafluoroethane; 1,2-dichlorobenzene; 1,3,5-trimethylbenzene; 1,3-butadiene; 1,3-dichlorobenzene; 1,4-dichlorobenzene; 1,4-dioxane; 2,2,4-trimethylpentane; 3-chloropropene; 4-ethyltoluene, benzyl chloride; cyclohexane; dichlorodifluoromethane; ethyl acetate; ethyl alcohol; heptane; hexachlorobutadiene; iso-propyl alcohol; n-hexane; propylene; tetrahydrofuran; and vinyl bromide. The results for these compounds were non-detected or detected at levels below the calibration range (as estimated values). These "extra" soil vapor results were evaluated for their potential contribution to risk, as described in the BHHRA.
Data Quality Objectives	
Precision – How were duplicates handled?	Field Duplicate (FD), Laboratory Matrix Duplicate (MD), and Matrix Spike Duplicate (MSD) samples were used to evaluate precision. MD, MSD, and FD results were evaluated during the data validation procedure. If precision criteria as defined in the site QAPP (November 2000) and *Phase 1B-4* and *Phase 1B-5 Work Plans* (2006) were not met, the associated data were estimated (qualified J or UJ).

Data Usability Worksheet–Human Health Risk: Phase 1B-4 Soil Vapor & Soil	
Activity	**Comment**
	Following the validation, the MD and MSD data were removed from the project database, and the original results of the duplicate pairs were used in quantitative risk assessment. Results qualified due to MD or MSD imprecision were used with the understanding that they may be imprecise with indeterminate bias. FD data were handled in the BHHRA as follows. Soil Vapor & Soil: If the precision requirement was not met, the higher concentration measured in the FD pair was used to represent the concentration at that sampling location for detected results. If the precision requirement was met for the FD samples, chemical concentrations were averaged prior to calculation of exposure point concentrations. If a chemical was detected in neither the sample nor its duplicate, the lower RL was used to represent the chemical concentration at that sample location. The quantitative measures of FD precision, relative percent difference (RPD) between the FD results are discussed further below in the Representativeness section.
Accuracy – How were split samples handled?	Split samples were not collected by USEPA for Phase 1B-4 RI activities. Previous split sample results for soil can be found in Split Sampling Reports included in Appendices to the *Phase1A and 1B Data Usability Report*. These previous split sample results showed overall comparability was acceptable between USEPA-contractor results and SHA results for soil. No split sample results were collected by USEPA for soil vapor.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	All QC results that might affect representativeness for all media tested, including results of trip blanks, equipment rinseate blanks, chain-of-custody interpretation, and FD results, were evaluated during data validation. Appropriate actions were taken to qualify data based on the field QC. These qualified data were determined to be usable for risk, with the following specific observations. All detected VOC results in soil vapor met FD precision with the one exception of acetone. Evidence of sample heterogeneity was observed in the soil sample SB-09A/S-

Data Usability Worksheet–Human Health Risk: Phase 1B-4 Soil Vapor & Soil	
Activity	**Comment**
	2/09-07-06 for 2-methylnaphthalene and naphthalene.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	Completeness is calculated as the amount of valid data obtained *vs*. the amount of data planned for collection. The site DQO for completeness is 90% overall completeness for all data. For the soil vapor and soil data collected during the Phase 1B-4 RI activities, 100% completeness was achieved (no data were rejected). This completeness statistic indicates that the data set is sufficient in quality and quantity to determine the contaminants of potential concern (COPCs) and calculate exposure point concentrations in the BHHRA.
Comparability - Indicate any problems associated with data comparability.	Overall, the data generated in support of risk assessment were considered comparable based on adherence to the QAPP defined criteria for field and analytical methods and quality control, using the same sampling and analytical protocols and the same analytical laboratory as for prior RI rounds. Additionally, previous USEPA split sample results for soils gave a quantitative demonstration of the comparability of the data generated during the RI (reference Phase 1A & 1B RI *Data Usability Report*, 2004). One exception is for VOC data in the single soil sample SB-09A/S-2/09-07-06. The 40 VOC results reported from the methanol-preserved (medium-level) soil aliquot include moisture correction (accounting for moisture contribution of the sample to the overall extract volume analyzed) and dry-weight calculations, compliant with the most current USEPA method (SW-846 Method 8000C). Previous medium-level (methanol-preserved) VOC soil data for this Site were not moisture-corrected, based on older versions of the USEPA method. Therefore, the VOC soil data for this one sample is not directly comparable to previous medium-level VOC soil data in the project database. This issue does not affect low-level (water-preserved) VOC soil sample results. Data users are directed to details included in the *Data Usability Report* for *Phase 1B-4 SDG BU114* for further details.
Were the DQOs specified in the QAPP satisfied?	Analytical DQOs were defined in the QAPP for precision, accuracy, representativeness, completeness, and comparability (see Table 3-1, QAPP, 2000 and Phase

Data Usability Worksheet–Human Health Risk: Phase 1B-4 Soil Vapor & Soil	
Activity	**Comment**
	1B-4 Work Plan, 2006). DQOs were met for representativeness (overall), comparability, and completeness (see discussions above). Though overall, precision and accuracy DQOs were met, individual chemicals in some samples did not achieve QAPP-specified acceptance criteria for one or more QC indicators of precision and accuracy. In such cases, data were qualified (*e.g.*, U, J, UJ, EB, JEB, TB, JTB, B, JB, and R) during data validation, if applicable. These qualified data were determined to be usable for risk assessment in all cases except for results qualified "R" (see further discussion of "R" data below). Consistent with USEPA guidance (USEPA, April 1992), data that are qualified can be used in human health risk assessment with the documentation of the potential bias (as indicated in the project database and the individual Data Usability Reports.
Summarize the effect of DQO issues on the risk assessment, if applicable.	There was minimal effect of DQO issues. No data were rejected (qualified "R") during data validation; therefore, 100% completeness was achieved for these media: soil vapor and soil. All the results that were qualified (J or UJ) in were of indeterminate bias (meaning the bias is unknown). Overall, no significant trends of low or high bias for specific compounds were observed in the validated results for these media. Qualified data of known bias were considered usable – therefore, DQO issues do not significantly impact the risk assessment. No data gaps were identified.
Data Validation and Interpretation	
What are the data validation requirements?	The validation requirements were defined in the Phase 1B-4 Work Plan (SHA, 2006), as well as prior documents for Phase 1A and Phase 1B Work Plans, QAPP (2000), and technical memoranda. In summary, the requirements included the USEPA Region I Tier I-, II- and III-type data validation, with modifications. At a minimum, each media and each definitive parameter underwent a full Tier III-type data validation review of one sample delivery group (SDG). Subsequent SDGs for definitive parameters (to be used in quantitative risk assessment), underwent a Tier II-type validation. Non-definitive parameters (e.g., TOC)

Data Usability Worksheet–Human Health Risk: Phase 1B-4 Soil Vapor & Soil	
Activity	**Comment**
	underwent a Tier I-type review (enhanced to review method QC). Validations of all data were performed by the third-party validator, New Environmental Horizons, Inc. (NEH).
What method or guidance was used to validate the data?	*EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses*, USEPA Region I, December 1996 (inclusive of organic validation guidance) and *Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses*, USEPA Region I, February 1989 were followed for all data validations, with modifications as documented in the 2000 QAPP and the Phase 1B-4 Work Plan, including comments below.
Data Validation and Interpretation (continued)	
Was the data validation method consistent with guidance? Discuss any discrepancies.	Yes. The data validation methods were consistent with the guidance, the 2000 QAPP, and the Phase 1B-4 Work Plan (SHA, 2006). Professional technical judgment, as allowed in the USEPA guidance, was used in cases where the guidance did not cover a specific QC issue. Reference the individual Data Usability Reports for each SDG generated for each medium and parameter for details. No significant instances of professional judgment that affected qualification of data or deviated from validation guidance were noted for these data.
Were all data qualifiers defined? Discuss those which were not.	Yes. Refer to the individual Data Usability Reports for each SDG.
Which qualifiers represent useable data?	U, UJ, and J represent usable data generated during the Phase 1B-4 RI activities for soil vapor and soil. Any data qualified as such were used in the BHHRA.
Which qualifiers represent unusable data?	"R" qualifiers represent rejected data that were not used in the BHHRA; note that no data were qualified "R" for Phase 1B-4 activities for these media.
How are tentatively identified compounds handled?	Tentatively identified compounds were not reported for this Site.

Data Usability Worksheet–Human Health Risk: Phase 1B-4 Soil Vapor & Soil	
Activity	**Comment**
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	All data generated for soil vapor and soil during the Phase 1B-4 RI activities, including both unqualified and qualified (U, UJ, and J) results, were used in the risk assessment. As previously stated above in the "Completeness" section, 100% completeness of valid/usable results was achieved for each media and each definitive parameter type; therefore, a sufficient data set was generated for Human Health Risk Assessment. No data gaps were identified for the risk assessment. No trends in bias of qualified data were identified that would affect the risk assessment.
Additional notes	Minor QAPP deviations: 1) A Laboratory Fortified Blank (LFB), as designated in the original QAPP (2000), was not requested for the Phase 1B-4 analyses. As compared to previous investigations, the lowest-level initial calibration standards for definitive parameters (VOCs, SVOCs including PAHs, and metals) were at very low concentrations and the laboratory analyzed full target analyte Laboratory Control samples (LCS) as a measure of accuracy of the method. Therefore, the laboratory was not required to perform the LFB analysis. 2) A low-level standard was not analyzed with the metals, as required by the original QAPP (2000). However, the laboratory included a low-level standard in the calibration curve that was equivalent to the reporting limit (RL) for each metal. This protocol is considered technically acceptable in support of sensitivity requirements for the BHHRA.

Data Usability Worksheet–Human Health Risk: Phase 1B-5 Floodplain Sediment, Surface Water, and Groundwater	
Activity	**Comment**
Field Sampling	
Discuss sampling problems and field conditions that affect data useability.	There were no sampling problems reported from the field collection programs, Phase 1B-5 Remedial Investigation (RI) for flood plain sediment, groundwater, and surface water that affected usability of the data for human health risk assessment. Field sampling collection procedures are described in the Phase 1B-5 RI Work Plan for the Blackburn & Union Privileges Superfund Site, Walpole MA (SHA, September 2006).
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	<u>Phase 1B-5 Sampling</u>: Flood plain samples were listed as "sediment" in the project database, though this medium may be considered soil as the percent solids ranged from 67.6% to 89.9%. These samples were analyzed for metals (arsenic and lead) and SVOCs (project-specific list of 17 PAHs). Twelve floodplain samples plus one FD were collected from the 0-1 ft and 1-3 ft depth intervals. Both depth intervals are considered appropriate for human health risk receptors as identified in the BHHRA. Surface water samples were collected in shallow water by lowering decontaminated bottles to the desired depth and allowing them to fill. SVOCs (project specific list including 17 PAHs plus two additional compounds), VOCs (full project target list of 40 VOCs), and both dissolved and total metals (full project target list of 23 metals) were analyzed in surface water for Phase 1B-5 to support the ecological risk assessment. Groundwater samples were collected using low flow sampling techniques, consistent with EPA Region I protocols. Samples for use in the BHHRA were unfiltered and represent "total" analyte results.
Assess the effect of field QC results on data usability.	All non-rejected data were considered acceptable for use in the BHHRA based on field QC, following data

Data Usability Worksheet–Human Health Risk: Phase 1B-5 Floodplain Sediment, Surface Water, and Groundwater	
Activity	**Comment**
	validation and usability assessment. Field QC included field equipment rinseate blanks (EB), trip blanks (TB) for VOCs only, an ambient air sample for soil vapor, and field duplicate (FD) samples for all media. As dedicated sample collection bottles were used for surface water collection, field EBs were not required for this medium. Field QC samples were collected at the proper frequencies (1 EB and 1 FD per 20 field samples and 1 TB per cooler containing VOC samples). Field EB and TB results showed no introduction of contamination during sample collection for sediment, groundwater, or surface water that would require qualification of data. Validation actions to qualify data as estimated (J) based on FD imprecision have been taken for some analytes. In all cases, the qualified data were evaluated and determined to be usable for risk assessment. See comments on Precision and handling of FD results, below. Also, see the individual NEH *Data Usability Reports* generated by NEH (third-party QAO) for each laboratory sample delivery group (SDG) for each media and each parameter type.
	Internal on-site Field Audits (Technical Systems Audit for sampling) were performed by SHA during the Phase 1B-5 sampling activities for groundwater sampling and sediment sampling. The field audits were successful in that sampling protocols were consistent with the project requirements and SOPs. No significant field issues were noted in the groundwater or sediment field sampling audit checklists. A field audit was not performed for surface water sample collection; however, senior level staff from SHA performed this sampling. No significant sample collection problems or deviations from the standard operating procedures for surface water sampling were noted by SHA's senior staff during the surface water sampling. .
Analytical Techniques	

Data Usability Worksheet–Human Health Risk: Phase 1B-5 Floodplain Sediment, Surface Water, and Groundwater

Activity	Comment
Were the analytical methods appropriate for quantitative risk assessment?	Yes. All definitive analyses were generated by USEPA methods. See the Phase 1B-5 Work Plan (SHA, 2006) and prior QA documents including the *Quality Assurance Project Plan*, November 2000; the *Phase 1-B1 Work Plan*, 2003; the *Phase 1B-2 Work Plan*, 2003; and the *Addendum to the Phase 1B-2 Work Plan*, October 2003.
Were detection limits adequate?	Overall, yes. Flood Plain Sediments All non-detected results for metals and PAHs in sediments were reported at detection limits below the Project Action Limits (PALs) and below human health risk based criteria (100% of results met PALs. Surface Water All non-detected results for metals and SVOC/PAHs were reported at detection limits below the PALs, with one exception for dibenz(a,h)anthracene due to method limitations. 12 out of 40 VOC compounds did not meet PALs, also due to method limitations. Non-detected VOC results for bromodichloromethane, carbon tetrachloride, chloroform, dibromochloromethane, 1,2-dichloroethane, 1,2-dichloropropane, cis-1,2-dichloropropene, trans-1,3-dichloropropene, 1,1,2,2-tetrachloroethane, tetrachloroethene, trichloroethene, and vinyl chloride exceeded PALs based on human health risk-based criteria (EPA Region IX Tap Water PRGs). All non-detected data for surface water are considered usable because of the limitations of "best available technology" (EPA GC/MS methods) and because the approach of using ½ of the RL in the estimate of exposure point concentrations resulted in most of the compounds achieving adequate detection limits for the BHHRA (see the Uncertainty section of the BHHRA for further details). Groundwater A majority of the non-detected results for metals (96%) met PALs. Exceptions were for a few metals results in high pH (>9 s.u.) groundwater locations SH-01D and SH-01R, due to the complexity of the matrix requiring dilutions during analysis, which elevated the sample-

Data Usability Worksheet–Human Health Risk: Phase 1B-5 Floodplain Sediment, Surface Water, and Groundwater

Activity	Comment
	specific detection limits. All non-detected results for SVOCs/PAHs met PALs with the exceptions of benzo(a)pyrene and dibenz(a,h)anthracene, due to method limitations. Many VOCs did not meet PALs due to method limitations in achieving the very low-level EPA Region IX Tap Water PRGs and due to necessary dilutions needed to reduce matrix effects of the groundwater samples at certain locations (pH > 9). 11 VOCs were non-detected in all groundwater samples at elevated detection limits that exceeded PALs. These include: bromodichloromethane, bromoform, carbon tetrachloride, dibromochloromethane, 1,2-dichloroethane, 1,2-dichloropropane, cis-1,3-dichloropropene, trans-1,3-dichloropropene, 1,1,2,2-tetrachloroethane, tetrachloroethene, and vinyl chloride. A majority of the non-detected results that did not meet PALs in groundwater were from samples with complex matrices exhibiting high pH values (>9 s.u.), high specific conductance, and visual observation of color and foaming. These attributes suggest that the cause of the elevated detection limits was due to the complicated nature of Site groundwater in certain locations (in particular, groundwater with pH greater than 9 s.u.) and/or a limitation of currently available analytical methods to successfully quantitate these compounds in the complex medium. Consequently, similar matrix effects and/or analytical difficulty would be anticipated in repeat analyses of these samples. Therefore, all non-detected data for groundwater are considered usable because of the limitations of "best available technology" (EPA GC/MS methods) and necessary dilutions due to the complex groundwater matrix.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	No significant effects other than some sensitivity issues due to limitations of "best available technology" of EPA methods used (see above for details). Some data were reported below the method RL (below the lowest-level in calibration curve). These data were qualified as "J" and have an indeterminate bias.

Data Usability Worksheet–Human Health Risk: Phase 1B-5 Floodplain Sediment, Surface Water, and Groundwater	
Activity	**Comment**
Data Quality Objectives	
Precision – How were duplicates handled?	Field Duplicate (FD), Laboratory Matrix Duplicate (MD), and Matrix Spike Duplicate (MSD) samples were used to evaluate precision. MD, MSD, and FD results were evaluated during the data validation procedure. If precision criteria as defined in the site QAPP (November 2000) and the Phase 1B-5 Work Plan (2006) were not met, the associated data were estimated (qualified J or UJ). Following the validation, the MD and MSD data were removed from the project database, and the original results of the duplicate pairs were used in quantitative risk assessment. Results qualified due to MD or MSD imprecision were used with the understanding that they may be imprecise with indeterminate bias. FD data were handled in the BHHRA as follows. Sediment, Groundwater, and Surface Water: If the precision requirement was not met, the higher concentration measured in the FD pair was used to represent the concentration at that sampling location for detected results. If the precision requirement was met for the FD samples, chemical concentrations were averaged prior to calculation of exposure point concentrations. If a chemical was detected in neither the sample nor its duplicate, the lower RL was used to represent the chemical concentration at that sample location. The quantitative measures of FD precision, relative percent difference (RPD) between the FD results are described in the individual data usability reports prepared by NEH for each SDG and arediscussed further below in the Representativeness section.
Accuracy – How were split samples handled?	Split samples were not collected by EPA for Phase 1B-5 RI activities. Previous split sample results for these media can be found in Split Sampling Reports included in Appendices to the *Phase1A and 1B Data Usability Report*. These previous split sample results showed overall comparability was acceptable between EPA-

Data Usability Worksheet–Human Health Risk: Phase 1B-5 Floodplain Sediment, Surface Water, and Groundwater

Activity	Comment
	contractor results and SHA results.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	All QC results that might affect representativeness for all media tested, including results of trip blanks, equipment rinseate blanks, chain-of-custody interpretation, and FD results, were evaluated during data validation. Appropriate actions were taken to qualify data based on the field QC. These qualified data were determined to be usable for risk, with the following specific observations. Metals results in sediment showed acceptable precision and representativeness in the FD samples. However, evidence of sample heterogeneity was observed in the flood plain sediment FD at location FP-09/0-1/10-13-06 for several PAHs. SVOC/PAH, VOC (2 detected results), and metals results in groundwater showed acceptable precision and representativeness in the FD samples. Metals in surface water showed acceptable FD results with one exception for copper in the dissolved metals surface water sample. All VOC results in surface water were not detected. Evidence of sample heterogeneity for several PAHs was observed in the surface water location SW-105B/09-29-06.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	Completeness is calculated as the amount of valid data obtained *vs*. the amount of data planned for collection. The site DQO for completeness is 90% overall completeness for all data. For the floodplain sediment data collected, 100% completeness was achieved for PAHs and metals. Surface water data achieved 100% completeness for SVOC/PAHs and metals and 99.4% completeness for VOCs (one result rejected for 2-chloroethylvinyl ether in sample SW-108/09-29-06). Groundwater data achieved 100% completeness for SVOC/PAHs and metals and 99.9% completeness for VOCs (two results rejected for 2-chloroethylvinyl ether in samples SH-24S/09-28-06 and SH-13S/09-28-06). All results for non-definitive parameters (e.g., TOC, natural attenuation parameters, etc.) achieved 100% completeness.

Data Usability Worksheet–Human Health Risk: Phase 1B-5 Floodplain Sediment, Surface Water, and Groundwater

Activity	Comment
	The three results for 2-chloroethylvinyl ether were rejected as unusable for risk characterization due to severe matrix effects (less than 10% recovery of the matrix spike/matrix spike duplicate QC samples). The rejected results do not represent a data gap because this compound is not a COPC based on screening results for the BHHRA. These completeness statistics indicate that the combined Phase 1B-5 data set is sufficient in quality and quantity to determine the contaminants of potential concern (COPCs) and calculate exposure point concentrations in the BHHRA.
Comparability - Indicate any problems associated with data comparability.	Overall, the data generated in support of risk assessment were considered comparable based on adherence to the QAPP defined criteria for field and analytical methods and quality control, using the same sampling and analytical protocols and the same analytical laboratory as for prior RI rounds. Additionally, previous USEPA split sample results for these media gave a quantitative demonstration of the comparability of the data generated during the RI (refer to the Phase 1A & 1B RI *Data Usability Report*, 2004).
Were the DQOs specified in the QAPP satisfied?	Analytical DQOs were defined in the QAPP for precision, accuracy, representativeness, completeness, and comparability (see Table 3-1, QAPP, 2000 and Phase 1B-5 Work Plan, 2006). DQOs were met for representativeness (overall), comparability, and completeness (see discussions above). Though overall, precision and accuracy DQOs were met, individual chemicals in some samples did not achieve QAPP-specified acceptance criteria for one or more QC indicators of precision and accuracy. In such cases, data were qualified (*e.g.*, U, J, UJ, EB, JEB, TB, JTB, B, JB, and R) during data validation, if applicable. These qualified data were determined to be usable for risk assessment in all cases except for results qualified "R" (see further discussion of "R" data below). Consistent with USEPA guidance (USEPA, April 1992), data that

Data Usability Worksheet–Human Health Risk: Phase 1B-5 Floodplain Sediment, Surface Water, and Groundwater	
Activity	**Comment**
	are qualified can be used in human health risk assessment with the documentation of the potential bias (as indicated in the project database and the individual Data Usability Reports attached to this Appendix).
Summarize the effect of DQO issues on the risk assessment, if applicable.	There was minimal effect of DQO issues. Only three results for the VOC 2-chloroethylvinyl ether were rejected (qualified "R") during data validation; therefore, for the entire Phase 1B-5 data set, 100% completeness was achieved for all media for SVOC/PAHs, metals, and non-definitive parameters and 99% completeness achieved for VOCs. A majority of the results that were qualified (J or UJ) in all three media were of indeterminate bias (meaning the bias is unknown). Several PAHs in sediment were qualified as biased low, primarily in one sample (FP-09C/0-1'/10-13-06) due to holding time exceedances. Several metals and individual SVOCs and VOCs were qualified as biased low in groundwater and surface water, but at rates that would not impact usability for risk assessment (<5% qualified as biased low). Overall, no significant trends of low or high bias for specific compounds were observed in the validated results for these media. Qualified data of known bias were considered usable – therefore, DQO issues do not significantly impact the risk assessment. No data gaps were identified.
Data Validation and Interpretation	
What are the data validation requirements?	The validation requirements were defined in the Phase 1B-5 Work Plan (SHA, 2006), as well as prior documents for Phase 1A and Phase 1B Work Plans, QAPP (2000), and technical memoranda. In summary, the requirements included the USEPA Region I Tier I-, II- and III-type data validation, with modifications. At a minimum, each media

Data Usability Worksheet–Human Health Risk: Phase 1B-5 Floodplain Sediment, Surface Water, and Groundwater

Activity	Comment
	and each definitive parameter underwent a full Tier III-type data validation review of one sample delivery group (SDG). Subsequent SDGs for definitive parameters (to be used in quantitative risk assessment), underwent a Tier II-type validation. Non-definitive parameters (e.g., TOC) underwent a Tier I-type review (enhanced to review method QC). Validations of all data were performed by the third-party validator, New Environmental Horizons, Inc. (NEH).
What method or guidance was used to validate the data?	*EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses*, USEPA Region I, December 1996 (inclusive of organic validation guidance) and *Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses*, USEPA Region I, February 1989 were followed for all data validations, with modifications as documented in the 2000 QAPP and the Phase 1B-5 Work Plan (2006), including comments below.
Was the data validation method consistent with guidance? Discuss any discrepancies.	Yes. The data validation methods were consistent with the guidance, the 2000 QAPP, and the Phase 1B-5 Work Plan (SHA, 2006). Professional technical judgment, as allowed in the USEPA guidance, was used in cases where the guidance did not cover a specific QC issue. Reference the individual Data Usability Reports for each SDG generated for each medium and parameter for details. No significant instances of professional judgment that affected qualification of data or deviated from validation guidance were noted for these data.
Were all data qualifiers defined? Discuss those which were not.	Yes. Reference the individual Data Usability Reports for each SDG.
Which qualifiers represent useable data?	U, UJ, and J represent usable data generated during the Phase 1B-5 RI activities for flood plain sediment, groundwater, and surface water. Any data qualified as such were used in the BHHRA.
Which qualifiers represent unusable data?	"R" qualifiers represent rejected data that were not used in the BHHRA.

Data Usability Worksheet–Human Health Risk: Phase 1B-5 Floodplain Sediment, Surface Water, and Groundwater

Activity	Comment
How are tentatively identified compounds handled?	Tentatively identified compounds were not reported for this Site.
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	All data generated for sediment, groundwater, and surface water during the Phase 1B-5 RI, including both unqualified and qualified (U, UJ, and J) results, were used in the risk assessment. As previously stated above in the "Completeness" section, 100% completeness of valid/usable results was achieved for each media for SVOC/PAHs and metals and 99% completeness achieved for VOCs; therefore, a sufficient data set was generated for Human Health Risk Assessment. No data gaps were identified for the risk assessment. No trends in bias of qualified data were identified that would affect the risk assessment.
Additional notes	Minor QAPP deviations: 1) A Laboratory Fortified Blank (LFB), as designated in the original QAPP (2000), was not requested for Phase 1B-5 RI analyses. As compared to previous investigations, the lowest-level initial calibration standards for definitive parameters (VOCs, SVOCs including PAHs, and metals) were at very low concentrations and the laboratory analyzed full target analyte Laboratory Control samples (LCS) as a measure of accuracy of the method. Therefore, the laboratory was not required to perform the LFB analysis. 2) A low-level standard was not analyzed with the metals, as required by the original QAPP (2000). However, the laboratory included a low-level standard in the calibration curve that was equivalent to the reporting limit (RL) for each metal. This protocol is considered technically acceptable in support of sensitivity requirements for the BHHRA.

APPENDIX C
RAGS Table 2 Series (Occurrence, Distribution, and Selection of Chemicals of Potential Concern)

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Lot 283 (Resident)	83-32-9	Acenaphthene	.036	.036	mg/kg	FP-01 / 10-10-01, OW-404 / 10-10-01	2/2		0.036	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.23	.25	mg/kg	OW-404 / 10-10-01	2/2		0.25	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	4370	5320	mg/kg	OW-404 / 10-10-01	2/2		5320	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.15	.18	mg/kg	OW-404 / 10-10-01	2/2		0.18	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/2	.8-.84	0.84	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	4.9	4.9	mg/kg	FP-01 / 10-10-01, OW-404 / 10-10-01	2/2		4.9	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	37.9 (J)	70.7 (J)	mg/kg	OW-404 / 10-10-01	2/2		70.7	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.73	.83	mg/kg	OW-404 / 10-10-01	2/2		0.83	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.66	.78	mg/kg	OW-404 / 10-10-01	2/2		0.78	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.57	.67	mg/kg	OW-404 / 10-10-01	2/2		0.67	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.21	.23 (J)	mg/kg	OW-404 / 10-10-01	2/2		0.23	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.58	.62	mg/kg	OW-404 / 10-10-01	2/2		0.62	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.13 (J)	.15 (J)	mg/kg	FP-01 / 10-10-01	2/2		0.15	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/2	.22	0.22	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/2	.32-.33	0.33	NA	15	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/2	.038	0.038	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/2	.22	0.22	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.09 (J)	.09 (J)	mg/kg	OW-404 / 10-10-01	1/2	.22	0.09	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/2	.22	0.22	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.33	.4	mg/kg	OW-404 / 10-10-01	2/2		0.4	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1460 (J)	3950 (J)	mg/kg	OW-404 / 10-10-01	2/2		3950	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.037 (J)	.037 (J)	mg/kg	OW-404 / 10-10-01	1/2	.22	0.037	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	.0012 (J)	.0012 (J)	mg/kg	OW-404 / 10-10-01	1/2	.0018	0.0012	NA	0.22	C	200	MCP Method 2 S-1	No	BSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	10.9	12.7	mg/kg	OW-404 / 10-10-01	2/2		12.7	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.88	1	mg/kg	OW-404 / 10-10-01	2/2		1	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4.1	4.5	mg/kg	OW-404 / 10-10-01	2/2		4.5	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	51.6	75	mg/kg	OW-404 / 10-10-01	2/2		75	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.054	.064	mg/kg	OW-404 / 10-10-01	2/2		0.064	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.22	0.22	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/2	.22	0.22	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.22	0.22	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/2	.22	0.22	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/2	.22	0.22	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/2	.22	0.22	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/2	.22	0.22	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/2	.22	0.22	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	1.2	1.4	mg/kg	OW-404 / 10-10-01	2/2		1.4	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.052	.058	mg/kg	FP-01 / 10-10-01	2/2		0.058	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/2	.03	0.03	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/2	.22	0.22	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.22	0.22	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/2	.22	0.22	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.22	.25	mg/kg	OW-404 / 10-10-01	2/2		0.25	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	19300 (J)	46300 (J)	mg/kg	OW-404 / 10-10-01	2/2		46300	NA	NA		NA	NA	NO	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/2	.22	0.22	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	256 (J)	360 (J)	mg/kg	OW-404 / 10-10-01	2/2		360	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	1810	2130	mg/kg	OW-404 / 10-10-01	2/2		2130	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	657	965	mg/kg	OW-404 / 10-10-01	2/2		965	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.21	.23	mg/kg	OW-404 / 10-10-01	2/2		0.23	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/2	.0044-.011	0.011	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.032	.037	mg/kg	OW-404 / 10-10-01	2/2		0.037	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.075	.08	mg/kg	OW-404 / 10-10-01	2/2		0.08	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	7.2	8.4	mg/kg	OW-404 / 10-10-01	2/2		8.4	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/2	.22	0.22	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/2	.22	0.22	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/2	.038	0.038	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/2	.22	0.22	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/2	.22	0.22	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.7	.77	mg/kg	OW-404 / 10-10-01	2/2		0.77	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/2	.22	0.22	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	228 (J)	692 (J)	mg/kg	OW-404 / 10-10-01	2/2		692	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	1.5	1.7	mg/kg	OW-404 / 10-10-01	2/2		1.7	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.17 (J)	.24	mg/kg	OW-404 / 10-10-01	2/2		0.24	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/2	.48-.5	0.5	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	68.6	239	mg/kg	OW-404 / 10-10-01	2/2		239	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.066 (J)	.077 (J)	mg/kg	OW-404 / 10-10-01	2/2		0.077	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/2	.22	0.22	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/2	.22	0.22	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	27.6 (J)	41.1 (J)	mg/kg	OW-404 / 10-10-01	2/2		41.1	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	70	96.1	mg/kg	OW-404 / 10-10-01	2/2		96.1	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Lot 282 (Resident)	83-32-9	Acenaphthene	.011	.011	mg/kg	FP-02 / 10-10-01	1/1		0.011	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.05	.05	mg/kg	FP-02 / 10-10-01	1/1		0.05	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.011	0.011	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	6820	6820	mg/kg	FP-02 / 10-10-01	1/1		6820	NA	NA		NA	NA	No	NSV, NTX

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	120-12-7	Anthracene	.047	.047	mg/kg	FP-02 / 10-10-01	1/1		0.047	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/1	.79	0.79	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	8.9	8.9	mg/kg	FP-02 / 10-10-01	1/1		8.9	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	49.5	49.5	mg/kg	FP-02 / 10-10-01	1/1		49.5	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.17	.17	mg/kg	FP-02 / 10-10-01	1/1		0.17	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.17	.17	mg/kg	FP-02 / 10-10-01	1/1		0.17	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.2	.2	mg/kg	FP-02 / 10-10-01	1/1		0.2	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.11	.11	mg/kg	FP-02 / 10-10-01	1/1		0.11	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.14	.14	mg/kg	FP-02 / 10-10-01	1/1		0.14	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.26	.26	mg/kg	FP-02 / 10-10-01	1/1		0.26	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.22	0.22	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.37	.37	mg/kg	FP-02 / 10-10-01	1/1		0.37	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.038	0.038	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.22	0.22	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.092 (J)	.092 (J)	mg/kg	FP-02 / 10-10-01	1/1		0.092	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0054	0.0054	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0054	0.0054	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.22	0.22	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.36	.36	mg/kg	FP-02 / 10-10-01	1/1		0.36	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1860	1860	mg/kg	FP-02 / 10-10-01	1/1		1860	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/1	.22	0.22	NA	24	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0054	0.0054	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0054	0.0054	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	18.4	18.4	mg/kg	FP-02 / 10-10-01	1/1		18.4	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.24	.24	mg/kg	FP-02 / 10-10-01	1/1		0.24	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.3	3.3	mg/kg	FP-02 / 10-10-01	1/1		3.3	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	39.1	39.1	mg/kg	FP-02 / 10-10-01	1/1		39.1	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.23	0.23	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.025	.025	mg/kg	FP-02 / 10-10-01	1/1		0.025	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.22	0.22	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.22	0.22	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.22	0.22	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.22	0.22	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.22	0.22	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.22	0.22	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.22	0.22	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.22	0.22	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.32	.32	mg/kg	FP-02 / 10-10-01	1/1		0.32	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.018	.018	mg/kg	FP-02 / 10-10-01	1/1		0.018	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.031	0.031	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.22	0.22	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.22	0.22	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.22	0.22	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.096	.096	mg/kg	FP-02 / 10-10-01	1/1		0.096	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	12800	12800	mg/kg	FP-02 / 10-10-01	1/1		12800	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.22	0.22	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	152 (J)	152 (J)	mg/kg	FP-02 / 10-10-01	1/1		152	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	7780	7780	mg/kg	FP-02 / 10-10-01	1/1		7780	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	391	391	mg/kg	FP-02 / 10-10-01	1/1		391	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.21	.21	mg/kg	FP-02 / 10-10-01	1/1		0.21	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.011	0.011	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.015	.015	mg/kg	FP-02 / 10-10-01	1/1		0.015	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0021	0.0021	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.026	.026	mg/kg	FP-02 / 10-10-01	1/1		0.026	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	30.8	30.8	mg/kg	FP-02 / 10-10-01	1/1		30.8	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.22	0.22	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.22	0.22	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.038	0.038	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.22	0.22	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.22	0.22	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.22	.22	mg/kg	FP-02 / 10-10-01	1/1		0.22	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.22	0.22	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	213	213	mg/kg	FP-02 / 10-10-01	1/1		213	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.35	.35	mg/kg	FP-02 / 10-10-01	1/1		0.35	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.15 (J)	.15 (J)	mg/kg	FP-02 / 10-10-01	1/1		0.15	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.48	0.48	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	51.3	51.3	mg/kg	FP-02 / 10-10-01	1/1		51.3	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.07 (J)	.07 (J)	mg/kg	FP-02 / 10-10-01	1/1		0.07	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.22	0.22	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.22	0.22	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	36.5 (J)	36.5 (J)	mg/kg	FP-02 / 10-10-01	1/1		36.5	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0054	0.0054	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	98.7	98.7	mg/kg	FP-02 / 10-10-01	1/1		98.7	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Lot 210 (Resident)	83-32-9	Acenaphthene	.022	.022	mg/kg	FP-03 / 10-10-01	1/1		0.022	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.16	.16	mg/kg	FP-03 / 10-10-01	1/1		0.16	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0052	0.0052	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	7100	7100	mg/kg	FP-03 / 10-10-01	1/1		7100	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.14	.14	mg/kg	FP-03 / 10-10-01	1/1		0.14	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/1	.88	0.88	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	3.6	3.6	mg/kg	FP-03 / 10-10-01	1/1		3.6	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [5]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-39-3	Barium	34.6	34.6	mg/kg	FP-03 / 10-10-01	1/1		34.6	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.53	.53	mg/kg	FP-03 / 10-10-01	1/1		0.53	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.61	.61	mg/kg	FP-03 / 10-10-01	1/1		0.61	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.8	.8	mg/kg	FP-03 / 10-10-01	1/1		0.8	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.21	.21	mg/kg	FP-03 / 10-10-01	1/1		0.21	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.53	.53	mg/kg	FP-03 / 10-10-01	1/1		0.53	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.83	.83	mg/kg	FP-03 / 10-10-01	1/1		0.83	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.23	0.23	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/1	.34	0.34	NA	15	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.04	0.04	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.23	0.23	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.072 (J)	.072 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.072	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0052	0.0052	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.23	0.23	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.24	.24	mg/kg	FP-03 / 10-10-01	1/1		0.24	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1220	1220	mg/kg	FP-03 / 10-10-01	1/1		1220	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.085 (J)	.085 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.085	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0052	0.0052	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	12	12	mg/kg	FP-03 / 10-10-01	1/1		12	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.79	.79	mg/kg	FP-03 / 10-10-01	1/1		0.79	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.4	3.4	mg/kg	FP-03 / 10-10-01	1/1		3.4	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	117	117	mg/kg	FP-03 / 10-10-01	1/1		117	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.27	0.27	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.054	.054	mg/kg	FP-03 / 10-10-01	1/1		0.054	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	.04 (J)	.04 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.04	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.23	0.23	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.23	0.23	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.23	0.23	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.23	0.23	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.23	0.23	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.23	0.23	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.23	0.23	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	1.3	1.3	mg/kg	FP-03 / 10-10-01	1/1		1.3	NA	230	NC	1000	MCP Method 2 S-1	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [5]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	86-73-7	Fluorene	.098	.098	mg/kg	FP-03 / 10-10-01	1/1		0.098	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.032	0.032	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.23	0.23	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.23	0.23	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.23	0.23	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.22	.22	mg/kg	FP-03 / 10-10-01	1/1		0.22	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	46800	46800	mg/kg	FP-03 / 10-10-01	1/1		46800	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.23	0.23	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	52.2 (J)	52.2 (J)	mg/kg	FP-03 / 10-10-01	1/1		52.2	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1440	1440	mg/kg	FP-03 / 10-10-01	1/1		1440	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	347	347	mg/kg	FP-03 / 10-10-01	1/1		347	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.11	.11	mg/kg	FP-03 / 10-10-01	1/1		0.11	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.035	.035	mg/kg	FP-03 / 10-10-01	1/1		0.035	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0021	0.0021	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.056	.056	mg/kg	FP-03 / 10-10-01	1/1		0.056	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	165	165	mg/kg	FP-03 / 10-10-01	1/1		165	NA	160	NC	300	MCP Method 2 S-1	Yes	ASL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.23	0.23	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.23	0.23	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	.049 (J)	.049 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.049	NA	NA		NA	NA	No	NTX
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.04	0.04	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.23	0.23	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.23	0.23	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.79	.79	mg/kg	FP-03 / 10-10-01	1/1		0.79	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.23	0.23	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	340	340	mg/kg	FP-03 / 10-10-01	1/1		340	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	1.2	1.2	mg/kg	FP-03 / 10-10-01	1/1		1.2	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	ND	ND	mg/kg		0/1	.11	0.11	NA	39	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.53	0.53	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	45.7	45.7	mg/kg	FP-03 / 10-10-01	1/1		45.7	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.071 (J)	.071 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.071	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.23	0.23	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.23	0.23	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	33.6 (J)	33.6 (J)	mg/kg	FP-03 / 10-10-01	1/1		33.6	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0052	0.0052	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	50.3	50.3	mg/kg	FP-03 / 10-10-01	1/1		50.3	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Lot 230 (Resident)	83-32-9	Acenaphthene	.017	.017	mg/kg	FP-04 / 10-10-01	1/1		0.017	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.087	.087	mg/kg	FP-04 / 10-10-01	1/1		0.087	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0081	0.0081	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	10200 (J)	10200 (J)	mg/kg	FP-04 / 10-10-01	1/1		10200	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.086	.086	mg/kg	FP-04 / 10-10-01	1/1		0.086	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/1	.88	0.88	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	6.8 (J)	6.8 (J)	mg/kg	FP-04 / 10-10-01	1/1		6.8	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	24.3	24.3	mg/kg	FP-04 / 10-10-01	1/1		24.3	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.37	.37	mg/kg	FP-04 / 10-10-01	1/1		0.37	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	50-32-8	Benzo(a)pyrene	.42	.42	mg/kg	FP-04 / 10-10-01	1/1		0.42	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.43	.43	mg/kg	FP-04 / 10-10-01	1/1		0.43	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.13	.13	mg/kg	FP-04 / 10-10-01	1/1		0.13	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.4	.4	mg/kg	FP-04 / 10-10-01	1/1		0.4	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.05 (J)	.05 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.05	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.19	0.19	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/1	.34	0.34	NA	15	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.034	0.034	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.19	0.19	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.051 (J)	.051 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.051	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0081	0.0081	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0081	0.0081	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.26	.26	mg/kg	FP-04 / 10-10-01	1/1		0.26	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	454	454	mg/kg	FP-04 / 10-10-01	1/1		454	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.066 (J)	.066 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.066	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0032	0.0032	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0081	0.0081	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0081	0.0081	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	18.5	18.5	mg/kg	FP-04 / 10-10-01	1/1		18.5	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.57	.57	mg/kg	FP-04 / 10-10-01	1/1		0.57	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.2	3.2	mg/kg	FP-04 / 10-10-01	1/1		3.2	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	14.1	14.1	mg/kg	FP-04 / 10-10-01	1/1		14.1	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.37	0.37	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.041	.041	mg/kg	FP-04 / 10-10-01	1/1		0.041	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.19	0.19	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	.04 (J)	.04 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.04	NA	110	NC	100	MCP Method 2 S-1	No	BSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.19	0.19	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.19	0.19	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.19	0.19	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.89	.89	mg/kg	FP-04 / 10-10-01	1/1		0.89	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.034	.034	mg/kg	FP-04 / 10-10-01	1/1		0.034	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.027	0.027	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.19	0.19	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.19	0.19	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.19	0.19	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.17	.17	mg/kg	FP-04 / 10-10-01	1/1		0.17	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	9070	9070	mg/kg	FP-04 / 10-10-01	1/1		9070	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.19	0.19	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	90.5 (J)	90.5 (J)	mg/kg	FP-04 / 10-10-01	1/1		90.5	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1240	1240	mg/kg	FP-04 / 10-10-01	1/1		1240	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	143	143	mg/kg	FP-04 / 10-10-01	1/1		143	NA	180	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.35	.35	mg/kg	FP-04 / 10-10-01	1/1		0.35	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.017	0.017	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.024	.024	mg/kg	FP-04 / 10-10-01	1/1		0.024	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0032	0.0032	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.042	.042	mg/kg	FP-04 / 10-10-01	1/1		0.042	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	5.1	5.1	mg/kg	FP-04 / 10-10-01	1/1		5.1	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.19	0.19	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.19	0.19	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.034	0.034	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.19	0.19	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.19	0.19	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.55	.55	mg/kg	FP-04 / 10-10-01	1/1		0.55	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.19	0.19	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	114	114	mg/kg	FP-04 / 10-10-01	1/1		114	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.81	.81	mg/kg	FP-04 / 10-10-01	1/1		0.81	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.59	.59	mg/kg	FP-04 / 10-10-01	1/1		0.59	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.53	0.53	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	75.8	75.8	mg/kg	FP-04 / 10-10-01	1/1		75.8	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.098 (J)	.098 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.098	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.19	0.19	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.19	0.19	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	28.3 (J)	28.3 (J)	mg/kg	FP-04 / 10-10-01	1/1		28.3	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0081	0.0081	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	47.9	47.9	mg/kg	FP-04 / 10-10-01	1/1		47.9	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Lot 257 (Resident)	83-32-9	Acenaphthene	.037	.057	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		0.057	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.2	.22	mg/kg	FP-05 / 0-1 / 08-05-03, FP-05 / 10-10-01	3/3		0.22	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.008	0.008	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	5480 (J)	6800	mg/kg	OW-410 / 08-05-03	3/3		6800	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.17	.21	mg/kg	FP-05 / 10-10-01	3/3		0.21	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	1 (J)	1.1 (J)	mg/kg	FP-05 / 0-1 / 08-05-03	2/3	.94	1.1	NA	3.1	NC	10	MCP Method 2 S-1	No	BSL
	7440-38-2	Arsenic	3.6	10.5 (J)	mg/kg	FP-05 / 10-10-01	3/3		10.5	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	113	120	mg/kg	FP-05 / 0-1 / 08-05-03, OW-410 / 08-05-03	3/3		120	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.7	.79	mg/kg	FP-05 / 10-10-01	3/3		0.79	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.66	.82	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		0.82	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.81	1.1	mg/kg	OW-410 / 08-05-03	3/3		1.1	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.16 (J)	.55	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		0.55	NA	230	NC	100	MCP Method 2 S-1	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	207-08-9	Benzo(k)fluoranthene	.47	.64	mg/kg	FP-05 / 10-10-01	3/3		0.64	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.14 (J)	.14 (J)	mg/kg	FP-05 / 10-10-01	1/1		0.14	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.2	0.2	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.37	.42	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		0.42	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.035	0.035	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.2	0.2	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.21	.53 (EB)	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		0.53	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.008	0.008	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.008	0.008	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	.037 (J)	.037 (J)	mg/kg	FP-05 / 10-10-01	1/1		0.037	NA	1200	NC	NA	NA	No	BSL
	7440-43-9	Cadmium	1.1	1.5	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		1.5	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1280	1280	mg/kg	FP-05 / 10-10-01	1/1		1280	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.057 (J)	.057 (J)	mg/kg	FP-05 / 10-10-01	1/3	.22	0.057	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0032	0.0032	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.008	0.008	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.008	0.008	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	18	26	mg/kg	FP-05 / 10-10-01	3/3		26	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	.76	1.1	mg/kg	FP-05 / 10-10-01	3/3		1.1	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4.3	5.5	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		5.5	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	45	56.5	mg/kg	FP-05 / 10-10-01	3/3		56.5	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.42	0.42	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.058	.15	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		0.15	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.2	0.2	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.2	0.2	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	1.5	1.7	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		1.7	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.06	.078	mg/kg	FP-05 / 10-10-01	3/3		0.078	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.028	0.028	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.2	0.2	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.2	0.2	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.2 (J)	.73	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		0.73	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	10300	13000	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		13000	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.2	0.2	NA	510	C	NA	NA	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [5]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [6]
	7439-92-1	Lead	470	657 (J)	mg/kg	FP-05 / 10-10-01	3/3		657	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	2430	2430	mg/kg	FP-05 / 10-10-01	1/1		2430	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	275	430 (J)	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		430	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.3	.58	mg/kg	FP-05 / 10-10-01	3/3		0.58	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.008	0.008	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.049	.088	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		0.088	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0032	0.0032	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.072	.1	mg/kg	FP-05 / 10-10-01	3/3		0.1	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	12	14.1	mg/kg	FP-05 / 10-10-01	3/3		14.1	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.2	0.2	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.2	0.2	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.035	0.035	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.2	0.2	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.2	0.2	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.83	1	mg/kg	FP-05 / 0-1 / 08-05-03, FP-05 / 10-10-01	3/3		1	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.2	0.2	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	166	166	mg/kg	FP-05 / 10-10-01	1/1		166	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	1.4	1.6	mg/kg	FP-05 / 0-1 / 08-05-03	3/3		1.6	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.66	.83	mg/kg	FP-05 / 10-10-01	3/3		0.83	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/3	.45-.57	0.57	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	137	137	mg/kg	FP-05 / 10-10-01	1/1		137	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.1 (J)	.1 (J)	mg/kg	FP-05 / 10-10-01	1/3	.46-.47	0.1	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.2	0.2	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	22	35.9 (J)	mg/kg	FP-05 / 10-10-01	3/3		35.9	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.008	0.008	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	190	290	mg/kg	FP-05 / 10-10-01	3/3		290	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Lot 342 (Resident)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/1	.01	0.01	NA	370	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	208-96-8	Acenaphthylene	.028	.028	mg/kg	FP-08 / 10-10-01	1/1		0.028	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0094	0.0094	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	10400 (J)	10400 (J)	mg/kg	FP-08 / 10-10-01	1/1		10400	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.024	.024	mg/kg	FP-08 / 10-10-01	1/1		0.024	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/1	.85	0.85	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	5.7 (J)	5.7 (J)	mg/kg	FP-08 / 10-10-01	1/1		5.7	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	24.1	24.1	mg/kg	FP-08 / 10-10-01	1/1		24.1	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.1	.1	mg/kg	FP-08 / 10-10-01	1/1		0.1	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.1	.1	mg/kg	FP-08 / 10-10-01	1/1		0.1	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.15	.15	mg/kg	FP-08 / 10-10-01	1/1		0.15	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.04	.04	mg/kg	FP-08 / 10-10-01	1/1		0.04	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.12	.12	mg/kg	FP-08 / 10-10-01	1/1		0.12	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.1 (J)	.1 (J)	mg/kg	FP-08 / 10-10-01	1/1		0.1	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.2	0.2	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/1	.37	0.37	NA	15	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.035	0.035	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.2	0.2	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	117-81-7	bis(2-Ethylhexyl)phthalate	.046 (J)	.046 (J)	mg/kg	FP-08 / 10-10-01	1/1		0.046	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0037	0.0037	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0094	0.0094	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0094	0.0094	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.15	.15	mg/kg	FP-08 / 10-10-01	1/1		0.15	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	682	682	mg/kg	FP-08 / 10-10-01	1/1		682	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/1	.2	0.2	NA	24	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0037	0.0037	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0094	0.0094	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0094	0.0094	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	25.3	25.3	mg/kg	FP-08 / 10-10-01	1/1		25.3	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	.18	.18	mg/kg	FP-08 / 10-10-01	1/1		0.18	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2	2	mg/kg	FP-08 / 10-10-01	1/1		2	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	16	16	mg/kg	FP-08 / 10-10-01	1/1		16	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.47	0.47	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.013	.013	mg/kg	FP-08 / 10-10-01	1/1		0.013	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.2	0.2	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.2	0.2	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.2	0.2	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.24	.24	mg/kg	FP-08 / 10-10-01	1/1		0.24	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.013	.013	mg/kg	FP-08 / 10-10-01	1/1		0.013	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.028	0.028	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.2	0.2	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.2	0.2	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.2	0.2	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.05	.05	mg/kg	FP-08 / 10-10-01	1/1		0.05	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	10200	10200	mg/kg	FP-08 / 10-10-01	1/1		10200	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.2	0.2	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	77.2 (J)	77.2 (J)	mg/kg	FP-08 / 10-10-01	1/1		77.2	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	798	798	mg/kg	FP-08 / 10-10-01	1/1		798	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	98.4	98.4	mg/kg	FP-08 / 10-10-01	1/1		98.4	NA	180	NC	NA	NA	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7439-97-6	Mercury	.13	.13	mg/kg	FP-08 / 10-10-01	1/1		0.13	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.01	0.01	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.03	.03	mg/kg	FP-08 / 10-10-01	1/1		0.03	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0037	0.0037	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.05	.05	mg/kg	FP-08 / 10-10-01	1/1		0.05	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	4.8	4.8	mg/kg	FP-08 / 10-10-01	1/1		4.8	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.2	0.2	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.2	0.2	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.035	0.035	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.2	0.2	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.2	0.2	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.19	.19	mg/kg	FP-08 / 10-10-01	1/1		0.19	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.2	0.2	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	152	152	mg/kg	FP-08 / 10-10-01	1/1		152	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.19	.19	mg/kg	FP-08 / 10-10-01	1/1		0.19	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	1.1	1.1	mg/kg	FP-08 / 10-10-01	1/1		1.1	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.51	0.51	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	63	63	mg/kg	FP-08 / 10-10-01	1/1		63	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.12	.12	mg/kg	FP-08 / 10-10-01	1/1		0.12	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.2	0.2	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	39.2 (J)	39.2 (J)	mg/kg	FP-08 / 10-10-01	1/1		39.2	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0094	0.0094	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	20.4	20.4	mg/kg	FP-08 / 10-10-01	1/1		20.4	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Lot 360 (Resident)	83-32-9	Acenaphthene	.0019 (J)	.032	mg/kg	FP-09 / 10-10-01	9/9		0.032	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.0034 (J)	.12	mg/kg	FP-09 / 10-10-01	9/9		0.12	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	.073 (J)	.073 (J)	mg/kg	FP-09 / 10-10-01	1/1		0.073	NA	1400	NC	500	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	6680 (J)	8200	mg/kg	FP-09 / 0-1 / 08-05-03	2/2		8200	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0058 (J)	.17	mg/kg	FP-09 / 0-1 / 08-05-03	9/9		0.17	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	2.4 (J)	6.7 (J)	mg/kg	FP-09 / 10-10-01	2/2		6.7	NA	3.1	NC	10	MCP Method 2 S-1	Yes	ASL
	7440-38-2	Arsenic	1.4	28.3 (J)	mg/kg	FP-09 / 10-10-01	9/9		28.3	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	84	156	mg/kg	FP-09 / 10-10-01	2/2		156	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.036 (J)	.7 (J)	mg/kg	FP-09E / 0-1' / 10-13-06	9/9		0.7	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.037 (J)	.62	mg/kg	FP-09 / 0-1 / 08-05-03	9/9		0.62	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.058 (J)	.86	mg/kg	FP-09 / 0-1 / 08-05-03	9/9		0.86	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.028 (J)	.39	mg/kg	FP-09 / 0-1 / 08-05-03	9/9		0.39	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.027 (J)	.64	mg/kg	FP-09 / 10-10-01	9/9		0.64	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.19 (J)	.19 (J)	mg/kg	FP-09 / 10-10-01	1/1		0.19	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.27	0.27	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.42	.51	mg/kg	FP-09 / 0-1 / 08-05-03	2/2		0.51	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.27	0.27	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.047	0.047	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.27	0.27	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.12 (J)	.44 (EB)	mg/kg	FP-09 / 0-1 / 08-05-03	2/2		0.44	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.004	0.004	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.004	0.004	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.004	0.004	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.01	0.01	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.01	0.01	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.27	0.27	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	2.2	2.8	mg/kg	FP-09 / 10-10-01	2/2		2.8	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1460	1460	mg/kg	FP-09 / 10-10-01	1/1		1460	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.096 (J)	.096 (J)	mg/kg	FP-09 / 10-10-01	1/2	.21	0.096	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.004	0.004	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.01	0.01	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.004	0.004	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.004	0.004	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.01	0.01	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.004	0.004	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.004	0.004	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.27	0.27	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.27	0.27	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	38	96.8	mg/kg	FP-09 / 10-10-01	2/2		96.8	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	.049 (J)	.82	mg/kg	FP-09 / 10-10-01	9/9		0.82	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2.8	6	mg/kg	FP-09 / 10-10-01	2/2		6	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	76	163	mg/kg	FP-09 / 10-10-01	2/2		163	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.44	0.44	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.0099 (J)	.13	mg/kg	FP-09E / 0-1' / 10-13-06	9/9		0.13	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.099 (J)	.099 (J)	mg/kg	FP-09 / 10-10-01	1/1		0.099	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.004	0.004	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.27	0.27	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.27	0.27	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.27	0.27	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.004	0.004	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.004	0.004	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.004	0.004	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.004	0.004	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.27	0.27	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.27	0.27	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.27	0.27	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.27	0.27	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.27	0.27	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.27	0.27	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.004	0.004	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.069 (J)	1.3 (J)	mg/kg	FP-09 / 0-1 / 08-05-03 & FP-09E / 0-1' / 10-13-06	9/9		1.3	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.0023 (J)	.1	mg/kg	FP-09 / 10-10-01	9/9		0.1	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.037	0.037	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.27	0.27	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.27	0.27	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.27	0.27	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.004	0.004	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.026 (J)	.57	mg/kg	FP-09 / 0-1 / 08-05-03	9/9		0.57	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	8800	35700	mg/kg	FP-09 / 10-10-01	2/2		35700	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.27	0.27	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	21	730 (J)	mg/kg	FP-09 / 10-10-01	9/9		730	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	2720	2720	mg/kg	FP-09 / 10-10-01	1/1		2720	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	53 (J)	109	mg/kg	FP-09 / 10-10-01	2/2		109	NA	180	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.33	1.4	mg/kg	FP-09 / 10-10-01	2/2		1.4	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.004	0.004	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.013	0.013	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	91-57-6	Methylnaphthalene (2-)	0.0094 (J)	1.1	mg/kg	FP-09 / 10-10-01	9/9		1.1	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.27	0.27	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	.093 (J)	.093 (J)	mg/kg	FP-09 / 10-10-01	1/1		0.093	NA	31	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.004	0.004	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0065 (J)	1.1	mg/kg	FP-09 / 10-10-01	9/9		1.1	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	16	26.7	mg/kg	FP-09 / 10-10-01	2/2		26.7	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.27	0.27	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.27	0.27	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.27	0.27	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.27	0.27	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.047	0.047	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.27	0.27	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.27	0.27	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.043 (J)	.84	mg/kg	FP-09 / 0-1 / 08-05-03	9/9		0.84	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.27	0.27	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	225	225	mg/kg	FP-09 / 10-10-01	1/1		225	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.069 (J)	.99 (J)	mg/kg	FP-09E / 0-1' / 10-13-06	9/9		0.99	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	1.5	1.6	mg/kg	FP-09 / 0-1 / 08-05-03	2/2		1.6	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	.43	.43	mg/kg	FP-09 / 0-1 / 08-05-03	1/2	.54	0.43	NA	39	NC	100	MCP Method 2 S-1	No	BSL
	7440-23-5	Sodium [7]	249	249	mg/kg	FP-09 / 10-10-01	1/1		249	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.004	0.004	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.15	.15	mg/kg	FP-09 / 10-10-01	1/2	.35	0.15	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.004	0.004	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.004	0.004	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.004	0.004	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.27	0.27	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.27	0.27	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	46	48.6 (J)	mg/kg	FP-09 / 10-10-01	2/2		48.6	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.01	0.01	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.004	0.004	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.004	0.004	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.004	0.004	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	150	460	mg/kg	FP-09 / 10-10-01	2/2		460	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Lot 350 (Trespasser)	83-32-9	Acenaphthene	.014	.014	mg/kg	FP-10 / 10-10-01	1/1		0.014	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.034	.034	mg/kg	FP-10 / 10-10-01	1/1		0.034	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0069	0.0069	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	7870 (J)	7870 (J)	mg/kg	FP-10 / 10-10-01	1/1		7870	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.038	.038	mg/kg	FP-10 / 10-10-01	1/1		0.038	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	4 (J)	4 (J)	mg/kg	FP-10 / 10-10-01	1/1		4	NA	3.1	NC	10	MCP Method 2 S-1	Yes	ASL
	7440-38-2	Arsenic	7.6 (J)	7.6 (J)	mg/kg	FP-10 / 10-10-01	1/1		7.6	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	61.3	61.3	mg/kg	FP-10 / 10-10-01	1/1		61.3	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.15	.15	mg/kg	FP-10 / 10-10-01	1/1		0.15	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.15	.15	mg/kg	FP-10 / 10-10-01	1/1		0.15	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.2	.2	mg/kg	FP-10 / 10-10-01	1/1		0.2	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.058	.058	mg/kg	FP-10 / 10-10-01	1/1		0.058	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.19	.19	mg/kg	FP-10 / 10-10-01	1/1		0.19	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.1 (J)	.1 (J)	mg/kg	FP-10 / 10-10-01	1/1		0.1	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.19	0.19	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.38	.38	mg/kg	FP-10 / 10-10-01	1/1		0.38	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.034	0.034	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.19	0.19	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.13 (J)	.13 (J)	mg/kg	FP-10 / 10-10-01	1/1		0.13	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0028	0.0028	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0026	0.0026	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0069	0.0069	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0069	0.0069	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.19	.19	mg/kg	FP-10 / 10-10-01	1/1		0.19	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	729	729	mg/kg	FP-10 / 10-10-01	1/1		729	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/1	.19	0.19	NA	24	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0028	0.0028	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0069	0.0069	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0029	0.0029	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0028	0.0028	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0069	0.0069	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0028	0.0028	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	20.9	20.9	mg/kg	FP-10 / 10-10-01	1/1		20.9	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.25	.25	mg/kg	FP-10 / 10-10-01	1/1		0.25	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.3	3.3	mg/kg	FP-10 / 10-10-01	1/1		3.3	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	19.1	19.1	mg/kg	FP-10 / 10-10-01	1/1		19.1	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.34	0.34	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.018	.018	mg/kg	FP-10 / 10-10-01	1/1		0.018	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.19	0.19	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0029	0.0029	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.19	0.19	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.19	0.19	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.19	0.19	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.36	.36	mg/kg	FP-10 / 10-10-01	1/1		0.36	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.019	.019	mg/kg	FP-10 / 10-10-01	1/1		0.019	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.027	0.027	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.19	0.19	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.19	0.19	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.19	0.19	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.071	.071	mg/kg	FP-10 / 10-10-01	1/1		0.071	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	12100	12100	mg/kg	FP-10 / 10-10-01	1/1		12100	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.19	0.19	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	130 (J)	130 (J)	mg/kg	FP-10 / 10-10-01	1/1		130	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1230	1230	mg/kg	FP-10 / 10-10-01	1/1		1230	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	97	97	mg/kg	FP-10 / 10-10-01	1/1		97	NA	180	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.2	.2	mg/kg	FP-10 / 10-10-01	1/1		0.2	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0069	0.0069	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.034	.034	mg/kg	FP-10 / 10-10-01	1/1		0.034	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	31	NC	NA	NA	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0028	0.0028	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.065	.065	mg/kg	FP-10 / 10-10-01	1/1		0.065	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	6.3	6.3	mg/kg	FP-10 / 10-10-01	1/1		6.3	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.19	0.19	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.19	0.19	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.034	0.034	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.19	0.19	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.19	0.19	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.27	.27	mg/kg	FP-10 / 10-10-01	1/1		0.27	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.19	0.19	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	164	164	mg/kg	FP-10 / 10-10-01	1/1		164	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.29	.29	mg/kg	FP-10 / 10-10-01	1/1		0.29	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	1	1	mg/kg	FP-10 / 10-10-01	1/1		1	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.56	0.56	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	124	124	mg/kg	FP-10 / 10-10-01	1/1		124	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0027	0.0027	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0026	0.0026	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.003	0.003	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.13	.13	mg/kg	FP-10 / 10-10-01	1/1		0.13	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0028	0.0028	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.19	0.19	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.19	0.19	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	45.4 (J)	45.4 (J)	mg/kg	FP-10 / 10-10-01	1/1		45.4	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0069	0.0069	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0027	0.0027	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	29.1	29.1	mg/kg	FP-10 / 10-10-01	1/1		29.1	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Gleason Court Vacant Lot (Nearby Resident)	83-32-9	Acenaphthene	.019	.034	mg/kg	SS-64 / 03-23-01	2/2		0.034	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.053	.1	mg/kg	SS-65 / 03-26-01	2/2		0.1	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	9950	10800	mg/kg	SS-65 / 03-26-01	2/2		10800	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.086	.19	mg/kg	SS-64 / 03-23-01	2/2		0.19	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/2	.31-.33	0.33	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	4.2	19.3	mg/kg	SS-65 / 03-26-01	2/2		19.3	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	61.1	74.3	mg/kg	SS-65 / 03-26-01	2/2		74.3	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.27	.32	mg/kg	SS-64 / 03-23-01	2/2		0.32	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	50-32-8	Benzo(a)pyrene	.26	.29	mg/kg	SS-65 / 03-26-01	2/2		0.29	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.31	.37	mg/kg	SS-65 / 03-26-01	2/2		0.37	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.061	.086	mg/kg	SS-65 / 03-26-01	2/2		0.086	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.17	.26	mg/kg	SS-65 / 03-26-01	2/2		0.26	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.3 (J)	.77 (J)	mg/kg	SS-64 / 03-23-01	2/2		0.77	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.38	.4	mg/kg	SS-65 / 03-26-01	2/2		0.4	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/2	.11-.12	0.12	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	35	C	200	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.18 (J)	.35 (J)	mg/kg	SS-65 / 03-26-01	2/2		0.35	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1180	2290	mg/kg	SS-64 / 03-23-01	2/2		2290	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.067 (J)	.067 (J)	mg/kg	SS-64 / 03-23-01	1/2	.24	0.067	NA	24	C	NA	NA	No	BSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	11.1	13.6	mg/kg	SS-65 / 03-26-01	2/2		13.6	NA	22	NC	200	MCP Method 2 S-1	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	218-01-9	Chrysene	.29	.36	mg/kg	SS-65 / 03-26-01	2/2		0.36	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.7 (J)	3.8 (J)	mg/kg	SS-64 / 03-23-01	2/2		3.8	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	21.5	30.7	mg/kg	SS-65 / 03-26-01	2/2		30.7	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.48	.48	mg/kg	SS-64 / 03-23-01	1/2	.52	0.48	NA	1.1	NC	100	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.021	.027	mg/kg	SS-65 / 03-26-01	2/2		0.027	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	15	NC	NA	NA	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/2	.071-.076	0.076	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/2	.6-.65	0.65	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/2	.6-.65	0.65	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	240	NC	NA	NA	No	ND, DLBSL
	206-44-0	Fluoranthene	.72	.84	mg/kg	SS-64 / 03-23-01	2/2		0.84	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.028	.063	mg/kg	SS-64 / 03-23-01	2/2		0.063	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	.078	.1	mg/kg	SS-65 / 03-26-01	2/2		0.1	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	11800 (J)	11900 (J)	mg/kg	SS-64 / 03-23-01	2/2		11900	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	236	278	mg/kg	SS-65 / 03-26-01	2/2		278	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1540	1830	mg/kg	SS-64 / 03-23-01	2/2		1830	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	183 (J)	232 (J)	mg/kg	SS-65 / 03-26-01	2/2		232	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.1	.31	mg/kg	SS-65 / 03-26-01	2/2		0.31	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	91-57-6	Methylnaphthalene (2-)	.009	.019	mg/kg	SS-65 / 03-26-01	2/2		0.019	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	31	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	.017	.035	mg/kg	SS-65 / 03-26-01	2/2		0.035	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	8.2	8.9	mg/kg	SS-65 / 03-26-01	2/2		8.9	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/2	.091-.098	0.098	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.47	.68	mg/kg	SS-64 / 03-23-01	2/2		0.68	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	206	252	mg/kg	SS-64 / 03-23-01	2/2		252	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.62	.63	mg/kg	SS-64 / 03-23-01	2/2		0.63	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.54 (J)	1 (J)	mg/kg	SS-65 / 03-26-01	2/2		1	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/2	.43	0.43	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	43.4 (JB)	52.4 (JB)	mg/kg	SS-64 / 03-23-01	2/2		52.4	NA	NA		NA	NA	No	NUT
	7440-28-0	Thallium	.073 (JB)	.11 (B)	mg/kg	SS-65 / 03-26-01	2/2		0.11	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/2	.24-.26	0.26	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	26.9	29	mg/kg	SS-65 / 03-26-01	2/2		29	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	7440-66-6	Zinc	93.2 (J)	109 (J)	mg/kg	SS-65 / 03-26-01	2/2		109	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Gleason Court Lot 122 (Resident)	83-32-9	Acenaphthene	.011	.011	mg/kg	SS-63 / 04-02-01	1/3	.23	0.011	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.046 (J)	.058 (J)	mg/kg	OW-105-1 / 04-17-01	3/3		0.058	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/2	.0056-.0073	0.0073	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	9420 (J)	12200	mg/kg	SS-63 / 04-02-01	3/3		12200	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.058 (J)	.072 (J)	mg/kg	OW-105-1 / 04-17-01	3/3		0.072	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/3	.33-.62	0.62	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	4 (J)	14.3	mg/kg	SS-63 / 04-02-01	3/3		14.3	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-39-3	Barium	35.7	67.3	mg/kg	SS-63 / 04-02-01	3/3		67.3	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.26	.3	mg/kg	OW-105-1 / 04-17-01	3/3		0.3	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.24	.4	mg/kg	OW-105-1 / 04-17-01	3/3		0.4	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.25	.57	mg/kg	OW-105-1 / 04-17-01	3/3		0.57	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.13	.23 (J)	mg/kg	SS-62 / 04-17-01	3/3		0.23	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.2	.38	mg/kg	OW-105-1 / 04-17-01	3/3		0.38	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.13 (J)	.64 (J)	mg/kg	OW-105-1 / 04-17-01	3/3		0.64	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.36	.4	mg/kg	OW-105-1 / 04-17-01, SS-63 / 04-02-01	3/3		0.4	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/3	.041-.042	0.042	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.04 (JEB)	.071 (J)	mg/kg	SS-63 / 04-02-01	3/3		0.071	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/2	.0022-.0052	0.0052	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.15	.66	mg/kg	SS-63 / 04-02-01	3/3		0.66	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1100	1760 (J)	mg/kg	SS-63 / 04-02-01	3/3		1760	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.053 (J)	.074 (J)	mg/kg	OW-105-1 / 04-17-01	3/3		0.074	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	13.2	15	mg/kg	SS-63 / 04-02-01	3/3		15	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.33	.47	mg/kg	OW-105-1 / 04-17-01	3/3		0.47	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4	5.2	mg/kg	OW-105-1 / 04-17-01, SS-62 / 04-17-01	3/3		5.2	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	17.4	32.6	mg/kg	SS-63 / 04-02-01	3/3		32.6	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.35	0.35	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.027	.055 (J)	mg/kg	OW-105-1 / 04-17-01, SS-62 / 04-17-01	3/3		0.055	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/3	.041-.042	0.042	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/3	.58-.6	0.6	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/3	1.2	1.2	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.61	.82	mg/kg	OW-105-1 / 04-17-01	3/3		0.82	NA	230	NC	1000	MCP Method 2 S-1	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [5]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [6]
	86-73-7	Fluorene	.015	.015	mg/kg	SS-63 / 04-02-01	1/3	.23	0.015	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.14	.26	mg/kg	SS-62 / 04-17-01	3/3		0.26	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	11900	15700	mg/kg	SS-62 / 04-17-01	3/3		15700	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	82.5	205	mg/kg	SS-63 / 04-02-01	3/3		205	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	2040 (J)	2480	mg/kg	SS-63 / 04-02-01	3/3		2480	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	162 (J)	203	mg/kg	SS-63 / 04-02-01	3/3		203	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.061	.2	mg/kg	SS-63 / 04-02-01	3/3		0.2	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/2	.0097-.014	0.014	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.014	.014	mg/kg	SS-63 / 04-02-01	1/3	.23	0.014	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.022	.022	mg/kg	SS-63 / 04-02-01	1/3	.23	0.022	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	9.7	11.3	mg/kg	SS-63 / 04-02-01	3/3		11.3	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/3	.041-.042	0.042	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.35	.44	mg/kg	SS-63 / 04-02-01	3/3		0.44	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	184	254	mg/kg	SS-63 / 04-02-01	3/3		254	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.57	.67	mg/kg	OW-105-1 / 04-17-01	3/3		0.67	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.25	.46 (J)	mg/kg	SS-63 / 04-02-01	3/3		0.46	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/3	.39-.47	0.47	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	53.4	87.7	mg/kg	OW-105-1 / 04-17-01	3/3		87.7	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.061 (J)	.093	mg/kg	SS-63 / 04-02-01	3/3		0.093	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0027	.0027	mg/kg	OW-105-1 / 04-17-01	1/2	.0021	0.0027	NA	39	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/3	.23-.24	0.24	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	30.7	36.7	mg/kg	SS-63 / 04-02-01	3/3		36.7	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/2	.0021-.0022	0.0022	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	42.6	192	mg/kg	SS-63 / 04-02-01	3/3		192	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Gleason Court Lot 124 (Resident)	83-32-9	Acenaphthene	.013	.071 (J)	mg/kg	SS-60 / 04-25-01	2/2		0.071	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.032	.093 (J)	mg/kg	SS-60 / 04-25-01	2/2		0.093	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [8]	7.66 (J)	11.5 (J)	mg/kg	SS-61 / 04-25-01	2/2		11.5	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.04	.2 (J)	mg/kg	SS-60 / 04-25-01	2/2		0.2	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/2	00087-.00093	0.00093	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	.0033	.0036	mg/kg	SS-60 / 04-25-01	2/2		0.0036	NA	0.39	C	30	MCP Method 2 S-1	No	BSL
	7440-39-3	Barium	.0576	.0723	mg/kg	SS-61 / 04-25-01	2/2		0.0723	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.16	.6	mg/kg	SS-60 / 04-25-01	2/2		0.6	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	50-32-8	Benzo(a)pyrene	.16	.64	mg/kg	SS-60 / 04-25-01	2/2		0.64	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.17	.87	mg/kg	SS-60 / 04-25-01	2/2		0.87	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.094	.23	mg/kg	SS-60 / 04-25-01	2/2		0.23	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.14	.4	mg/kg	SS-60 / 04-25-01	2/2		0.4	NA	6.2	C	7	MCP Method 2 S-1	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	65-85-0	Benzoic acid	.25 (J)	.29 (J)	mg/kg	SS-61 / 04-25-01	2/2		0.29	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.00032	.00039	mg/kg	SS-61 / 04-25-01	2/2		0.00039	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/2	.039-.042	0.042	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.12 (JEB)	.46 (EB)	mg/kg	SS-60 / 04-25-01	2/2		0.46	NA	35	C	200	MCP Method 2 S-1	No	BSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.00038	.00043	mg/kg	SS-61 / 04-25-01	2/2		0.00043	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	.988	2.24	mg/kg	SS-61 / 04-25-01	2/2		2.24	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.14 (J)	.14 (J)	mg/kg	SS-60 / 04-25-01	1/2	.24	0.14	NA	24	C	NA	NA	No	BSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	14.5	14.5	mg/kg	SS-60 / 04-25-01, SS-61 / 04-25-01	2/2		14.5	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.2	.74	mg/kg	SS-60 / 04-25-01	2/2		0.74	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4 (J)	4.1 (J)	mg/kg	SS-60 / 04-25-01	2/2		4.1	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	25.1 (J)	31.9 (J)	mg/kg	SS-61 / 04-25-01	2/2		31.9	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/2	.53-.54	0.54	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.017	.075 (J)	mg/kg	SS-60 / 04-25-01	2/2		0.075	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	15	NC	NA	NA	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/2	.039-.042	0.042	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/2	.55-.59	0.59	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/2	1.1-1.2	1.2	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	240	NC	NA	NA	No	ND, DLBSL
	206-44-0	Fluoranthene	.37	1.5	mg/kg	SS-60 / 04-25-01	2/2		1.5	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.017	.077 (J)	mg/kg	SS-60 / 04-25-01	2/2		0.077	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	.1	.29	mg/kg	SS-60 / 04-25-01	2/2		0.29	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	10700	12800	mg/kg	SS-61 / 04-25-01	2/2		12800	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	128	232	mg/kg	SS-60 / 04-25-01	2/2		232	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1930	2120 (J)	mg/kg	SS-60 / 04-25-01	2/2		2120	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	162	167	mg/kg	SS-61 / 04-25-01	2/2		167	NA	180	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.097	.23	mg/kg	SS-60 / 04-25-01	2/2		0.23	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	91-57-6	Methylnaphthalene (2-)	.0094	.0094	mg/kg	SS-61 / 04-25-01	1/2	.22	0.0094	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	31	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	.021	.071 (J)	mg/kg	SS-60 / 04-25-01	2/2		0.071	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	9.5	15.3	mg/kg	SS-61 / 04-25-01	2/2		15.3	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/2	.039-.042	0.042	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.25	1	mg/kg	SS-60 / 04-25-01	2/2		1	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-09-7	Potassium [7]	206	238	mg/kg	SS-60 / 04-25-01	2/2		238	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.33	1.3	mg/kg	SS-60 / 04-25-01	2/2		1.3	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.28	.29	mg/kg	SS-60 / 04-25-01	2/2		0.29	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/2	.45-.51	0.51	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	58.4	127	mg/kg	SS-60 / 04-25-01	2/2		127	NA	NA		NA	NA	No	NUT
	7440-28-0	Thallium	.07 (J)	.072 (J)	mg/kg	SS-61 / 04-25-01	2/2		0.072	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	23.2	32	mg/kg	SS-61 / 04-25-01	2/2		32	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	7440-66-6	Zinc	97.9	116	mg/kg	SS-61 / 04-25-01	2/2		116	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Gleason Court Lot 125 (Resident)	83-32-9	Acenaphthene	.1 (J)	.1 (J)	mg/kg	SS-59 / 04-26-01	1/2	.0056	0.1	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.59	.59	mg/kg	SS-59 / 04-26-01	1/2	.0056	0.59	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0044	0.0044	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	6650 (J)	7510	mg/kg	SS-58 / 04-26-01	2/2		7510	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.5	.5	mg/kg	SS-59 / 04-26-01	1/2	.0056	0.5	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/2	.77-.83	0.83	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	1.7	2	mg/kg	SS-58 / 04-26-01	2/2		2	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	21.2	37	mg/kg	SS-58 / 04-26-01	2/2		37	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.015	1.2	mg/kg	SS-59 / 04-26-01	2/2		1.2	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.016	1.4	mg/kg	SS-59 / 04-26-01	2/2		1.4	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.016	1.7	mg/kg	SS-59 / 04-26-01	2/2		1.7	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.012	.35 (J)	mg/kg	SS-59 / 04-26-01	2/2		0.35	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.013	.94	mg/kg	SS-59 / 04-26-01	2/2		0.94	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.15 (J)	.15 (J)	mg/kg	SS-58 / 04-26-01	1/2	.42	0.15	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.4	.4	mg/kg	SS-58 / 04-26-01	1/2	.28	0.4	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/2	.039-.073	0.073	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	35	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0018	0.0018	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.13	.15	mg/kg	SS-58 / 04-26-01	2/2		0.15	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1500	2400	mg/kg	SS-58 / 04-26-01	2/2		2400	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.096 (J)	.096 (J)	mg/kg	SS-59 / 04-26-01	1/2	.22	0.096	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0018	0.0018	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	6.9	13.6	mg/kg	SS-58 / 04-26-01	2/2		13.6	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.021	1.4	mg/kg	SS-59 / 04-26-01	2/2		1.4	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4.4 (J)	7.3	mg/kg	SS-58 / 04-26-01	2/2		7.3	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	14.4 (J)	19.1	mg/kg	SS-58 / 04-26-01	2/2		19.1	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/2	.51-.54	0.54	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.12 (J)	.12 (J)	mg/kg	SS-59 / 04-26-01	1/2	.0056	0.12	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/2	.039-.073	0.073	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/2	.56-1	1	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/2	1.1-2.1	2.1	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.034	2.3	mg/kg	SS-59 / 04-26-01	2/2		2.3	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.12 (J)	.12 (J)	mg/kg	SS-59 / 04-26-01	1/2	.0056	0.12	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.01	.41 (J)	mg/kg	SS-59 / 04-26-01	2/2		0.41	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	10800	12600	mg/kg	SS-58 / 04-26-01	2/2		12600	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	16.4	17	mg/kg	SS-58 / 04-26-01	2/2		17	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	2480 (J)	3200	mg/kg	SS-58 / 04-26-01	2/2		3200	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	251	252	mg/kg	SS-58 / 04-26-01	2/2		252	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	ND	ND	mg/kg		0/2	.026-.028	0.028	NA	2.3	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.017	0.017	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg		0/2	.0056-.42	0.42	NA	5.6	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0018	0.0018	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	ND	ND	mg/kg		0/2	.0056-.42	0.42	NA	5.6	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-02-0	Nickel	8.2	11.7	mg/kg	SS-58 / 04-26-01	2/2		11.7	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/2	.039-.073	0.073	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.031	1.3	mg/kg	SS-59 / 04-26-01	2/2		1.3	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	412	526	mg/kg	SS-58 / 04-26-01	2/2		526	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.04	2.6	mg/kg	SS-59 / 04-26-01	2/2		2.6	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.13 (J)	.14 (J)	mg/kg	SS-59 / 04-26-01	2/2		0.14	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/2	.42-.48	0.48	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	70.2	82.6	mg/kg	SS-59 / 04-26-01	2/2		82.6	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.048 (J)	.048 (J)	mg/kg	SS-58 / 04-26-01	1/2	.043	0.048	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.0009 (J)	.0009 (J)	mg/kg	SS-59 / 04-26-01	1/1		0.0009	NA	66	NC	500	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0011 (J)	.0011 (J)	mg/kg	SS-59 / 04-26-01	1/1		0.0011	NA	39	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/2	.22-.42	0.42	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-62-2	Vanadium	16.5	26.9	mg/kg	SS-58 / 04-26-01	2/2		26.9	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0018	0.0018	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	45.6	57.5	mg/kg	SS-59 / 04-26-01	2/2		57.5	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Lot 208 (Resident)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/2	.006-.0063	0.0063	NA	370	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	208-96-8	Acenaphthylene	.0074	.015	mg/kg	SS-34 / 05-02-01	2/2		0.015	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	4900 (J)	8850 (J)	mg/kg	SS-35 / 05-02-01	2/2		8850	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.013	.013	mg/kg	SS-34 / 05-02-01	1/2	.0063	0.013	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/2	1	1	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	2.3	3.4	mg/kg	SS-34 / 05-02-01	2/2		3.4	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	24.3	67.9	mg/kg	SS-35 / 05-02-01	2/2		67.9	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.033	.058	mg/kg	SS-34 / 05-02-01	2/2		0.058	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	50-32-8	Benzo(a)pyrene	.038	.064	mg/kg	SS-34 / 05-02-01	2/2		0.064	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.052	.088	mg/kg	SS-34 / 05-02-01	2/2		0.088	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.029	.044	mg/kg	SS-34 / 05-02-01	2/2		0.044	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.042	.064	mg/kg	SS-34 / 05-02-01	2/2		0.064	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.34 (J)	.82 (J)	mg/kg	SS-35 / 05-02-01	2/2		0.82	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/2	.39-.4	0.4	NA	15	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/2	.042-.044	0.044	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.044 (J)	.044 (J)	mg/kg	SS-34 / 05-02-01	1/2	.25	0.044	NA	35	C	200	MCP Method 2 S-1	No	BSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.18	.19	mg/kg	SS-35 / 05-02-01	2/2		0.19	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	834 (B)	1910	mg/kg	SS-35 / 05-02-01	2/2		1910	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	24	C	NA	NA	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9.9	11.3	mg/kg	SS-35 / 05-02-01	2/2		11.3	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.053	.09	mg/kg	SS-34 / 05-02-01	2/2		0.09	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2.8	5.5	mg/kg	SS-35 / 05-02-01	2/2		5.5	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	11.3	13	mg/kg	SS-35 / 05-02-01	2/2		13	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	3.2 (J)	3.2 (J)	mg/kg	SS-35 / 05-02-01	1/2	.15	3.2	NA	1.1	NC	100	MCP Method 2 S-1	Yes	ASL
	53-70-3	Dibenz(a,h)anthracene	.0063	.0084	mg/kg	SS-34 / 05-02-01	2/2		0.0084	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	15	NC	NA	NA	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/2	.042-.044	0.044	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/2	.6-.63	0.63	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/2	1.2-1.3	1.3	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	240	NC	NA	NA	No	ND, DLBSL
	206-44-0	Fluoranthene	.074	.13	mg/kg	SS-34 / 05-02-01	2/2		0.13	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	ND	ND	mg/kg		0/2	.006-.0063	0.0063	NA	270	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/2	.6-.63	0.63	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	.034	.052	mg/kg	SS-34 / 05-02-01	2/2		0.052	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	7980 (J)	9650 (J)	mg/kg	SS-35 / 05-02-01	2/2		9650	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	57	71.9	mg/kg	SS-34 / 05-02-01	2/2		71.9	NA	400	NC	300	MCP Method 2 S-1	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7439-95-4	Magnesium [7]	1170	1340	mg/kg	SS-35 / 05-02-01	2/2		1340	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	154	286	mg/kg	SS-35 / 05-02-01	2/2		286	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.096 (J)	.17 (J)	mg/kg	SS-35 / 05-02-01	2/2		0.17	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg		0/2	.006-.0063	0.0063	NA	5.6	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	31	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	.014	.058	mg/kg	SS-35 / 05-02-01	2/2		0.058	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	5.2	7.5	mg/kg	SS-35 / 05-02-01	2/2		7.5	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/2	.042-.044	0.044	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.043	.085	mg/kg	SS-34 / 05-02-01	2/2		0.085	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	123	163	mg/kg	SS-34 / 05-02-01	2/2		163	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.067	.13	mg/kg	SS-34 / 05-02-01	2/2		0.13	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.3	.32	mg/kg	SS-34 / 05-02-01	2/2		0.32	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/2	.61	0.61	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	54.2 (B)	54.2 (B)	mg/kg	SS-34 / 05-02-01	1/2	50.9	54.2	NA	NA		NA	NA	No	NUT
	7440-28-0	Thallium	.086 (J)	.086 (J)	mg/kg	SS-35 / 05-02-01	1/2	.059	0.086	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	19	21.5	mg/kg	SS-35 / 05-02-01	2/2		21.5	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	7440-66-6	Zinc	26.6	46.8	mg/kg	SS-35 / 05-02-01	2/2		46.8	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
West of South Street On-Facility and Vacant Lot 209 (Trespasser)	83-32-9	Acenaphthene	.011	.75 (J)	mg/kg	SS-30 / 03-28-01	7/13	.0057-.0074	0.75	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.0063	2.1	mg/kg	SS-30 / 03-28-01	9/13	.0057-.22	2.1	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	.056	.068	mg/kg	SS-38 / 04-23-01	2/6	.0049-.025	0.068	NA	1400	NC	500	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	4530 (J)	9580 (J)	mg/kg	SS-36 / 02-21-01	13/13		9580	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0071	2.2	mg/kg	SS-30 / 03-28-01	8/13	.0057-.0074	2.2	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	.72 (J)	.72 (J)	mg/kg	SS-32 / 02-22-01	1/13	.29-.99	0.72	NA	3.1	NC	10	MCP Method 2 S-1	No	BSL
	7440-38-2	Arsenic	1.4	35.7 (J)	mg/kg	SS-32 / 02-22-01	13/13		35.7	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	11	98.7	mg/kg	SB-50 / S-1-2 / 04-24-01	13/13		98.7	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.0073	6.4	mg/kg	SS-30 / 03-28-01	11/13	.0057-.0065	6.4	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.0075	7.3	mg/kg	SS-30 / 03-28-01	11/13	.0057-.0065	7.3	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.011	6.7	mg/kg	SS-30 / 03-28-01	11/13	.0057-.0065	6.7	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.0072	3.2	mg/kg	SS-30 / 03-28-01	11/13	.0057-.0065	3.2	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0093	3.9	mg/kg	SS-30 / 03-28-01	11/13	.0057-.0065	3.9	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.093 (J)	4.6	mg/kg	SS-30 / 03-28-01	12/13	.46	4.6	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/6	.22-.86	0.86	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.26	.42	mg/kg	SB-49 / S-1-2 / 04-24-01, SB-50 / S-1-2 / 04-24-01	3/13	.29-.37	0.42	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/13	.038-.15	0.15	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.045 (JEB)	.17 (J)	mg/kg	SS-30 / 03-28-01	6/13	.22-.46	0.17	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	.066 (J)	.15 (J)	mg/kg	OW-102 / 02-26-01	2/13	.22-.86	0.15	NA	1200	NC	NA	NA	No	BSL
	EPH C11-22	C11-C22 Aromatic Hydrocarbons	9.8	39	mg/kg	SB-49 / S-1-2 / 04-24-01	2/2		39	NA	NA		800	MCP Method 2 S-1	No	BSL
	EPH C19-36	C19-C36 Aliphatic Hydrocarbons	21	21	mg/kg	SB-49 / S-1-2 / 04-24-01	1/2	4.5	21	NA	NA		2500	MCP Method 2 S-1	No	BSL
	VPH C5-8	C5-C8 Aliphatic Hydrocarbons	ND	ND	mg/kg		0/2	21-22	22	NA	NA		100	MCP Method 2 S-1	No	ND, DLBSL
	VPH C9-10	C9-C10 Aromatic Hydrocarbons	ND	ND	mg/kg		0/2	12-13	13	NA	NA		100	MCP Method 2 S-1	No	ND, DLBSL
	VPH C9-12	C9-C12 Aliphatic Hydrocarbons	ND	ND	mg/kg		0/2	5.9-6.4	6.4	NA	NA		1000	MCP Method 2 S-1	No	ND, DLBSL
	EPH C9-18	C9-C18 Aliphatic Hydrocarbons	4.5	4.5	mg/kg	SB-49 / S-1-2 / 04-24-01	1/2	3.4	4.5	NA	NA		1000	MCP Method 2 S-1	No	BSL
	7440-43-9	Cadmium	.082	.32	mg/kg	OW-102 / 02-26-01	11/13	.073-.087	0.32	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	658	3730 (JB)	mg/kg	OW-102 / 02-26-01	13/13		3730	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.083 (J)	.76 (J)	mg/kg	SS-30 / 03-28-01	5/13	.23-.3	0.76	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	36	NC	NA	NA	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	6.6	16.3	mg/kg	SB-49 / S-1-2 / 04-24-01	13/13		16.3	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.013	7.6	mg/kg	SS-30 / 03-28-01	11/13	.0057-.0065	7.6	NA	62	C	7	MCP Method 2 S-1	Yes	ASL
	7440-48-4	Cobalt [6]	2	6.1 (J)	mg/kg	SB-49 / S-1-2 / 04-24-01	13/13		6.1	NA	NA		NA	NA	No	NSV,NTX
	7440-50-8	Copper [6]	4.1	26.1 (J)	mg/kg	SB-49 / S-1-2 / 04-24-01	13/13		26.1	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.042 (JB)	.15 (JB)	mg/kg	OW-102 / 02-26-01	7/13	.31-.54	0.15	NA	1.1	NC	100	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.016	.88	mg/kg	SS-30 / 03-28-01	7/13	.0057-.0074	0.88	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.052 (J)	.2 (J)	mg/kg	SB-49 / S-1-2 / 04-24-01	3/13	.23-.86	0.2	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	.082 (J)	.082 (J)	mg/kg	OW-102 / 02-26-01	1/13	.22-.86	0.082	NA	4900	NC	100	MCP Method 2 S-1	No	BSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/13	.038-.15	0.15	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/13	.22-2.1	2.1	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/13	.54-4.3	4.3	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.0061	13	mg/kg	SS-30 / 03-28-01	13/13		13	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.011 (J)	1.9	mg/kg	SS-30 / 03-28-01	7/13	.0057-.0074	1.9	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0081	3.3	mg/kg	SS-30 / 03-28-01	11/13	.0057-.0065	3.3	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	6680	23600	mg/kg	SS-36 / 02-21-01	13/13		23600	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	9.6	123	mg/kg	SS-32 / 02-22-01	13/13		123	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	813 (J)	4870 (J)	mg/kg	SS-36 / 02-21-01	13/13		4870	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	79.6	284	mg/kg	SS-36 / 02-21-01	13/13		284	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.033	.53	mg/kg	SB-49 / S-1-2 / 04-24-01	11/13	.03-.035	0.53	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/6	.0045-.011	0.011	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.012 (J)	1.9	mg/kg	SS-30 / 03-28-01	7/13	.0057-.22	1.9	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0094 (J)	2.5	mg/kg	SS-30 / 03-28-01	12/13	.0065	2.5	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	5.4	22.2	mg/kg	SB-49 / S-1-2 / 04-24-01	11/13	3.8-4.2	22.2	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	2	NC	NA	NA	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/13	.038-.15	0.15	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.0075 (J)	19	mg/kg	SS-30 / 03-28-01	12/13	.0057	19	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	176 (B)	424 (B)	mg/kg	OW-102 / 02-26-01	13/13		424	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.0066	18	mg/kg	SS-30 / 03-28-01	13/13		18	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.14 (J)	.47	mg/kg	SS-33 / 02-23-01	13/13		0.47	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/13	.34-.6	0.6	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	38 (B)	574 (B)	mg/kg	SS-33 / 02-23-01	12/13	39.8	574	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.05 (J)	.098 (JB)	mg/kg	SS-33 / 02-23-01	8/13	.047-.053	0.098	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.0019 (J)	.0019 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/6	.0018-.0027	0.0019	NA	66	NC	500	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0042	.2 (J)	mg/kg	SS-28 / 07-23-01	2/6	.0019-.0027	0.2	NA	39	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/13	.22-.86	0.86	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLASL
	7440-62-2	Vanadium	12.9	37.8	mg/kg	SS-36 / 02-21-01	13/13		37.8	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/6	.0018-.0027	0.0027	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	.0019 (J)	.0019 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/6	.0018-.0027	0.0019	NA	27	NC	500	MCP Method 2 S-1	No	BSL
	106-42-3															
	95-47-6	Xylene (o-)	.001 (J)	.001 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/6	.0018-.0027	0.001	NA	27	NC	500	MCP Method 2 S-1	No	BSL
	7440-66-6	Zinc	14.9	118	mg/kg	SB-50 / S-1-2 / 04-24-01	13/13		118	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Orlando Property (Resident)	83-32-9	Acenaphthene	.0059	1.3	mg/kg	FP-06 / 10-10-01	5/11	.0058-.0064	1.3	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.007	.059	mg/kg	FP-06 / 10-10-01	7/11	.0059-.0064	0.059	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/4	.0052-.013	0.013	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	5110	9450	mg/kg	SS-72 / 07-10-01	11/11		9450	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0065	1.5	mg/kg	FP-06 / 10-10-01	7/11	.0058-.0064	1.5	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/11	.37-.97	0.97	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	1.6	4.5	mg/kg	FP-06 / 0-1 / 08-05-03	11/11		4.5	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	16.4	116	mg/kg	FP-06 / 10-10-01	11/11		116	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.0099	3.6	mg/kg	FP-06 / 10-10-01	11/11		3.6	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.0091	2.7	mg/kg	FP-06 / 10-10-01	11/11		2.7	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.014	3.2	mg/kg	FP-06 / 10-10-01	11/11		3.2	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.01	.66	mg/kg	FP-06 / 10-10-01	10/11	.0061	0.66	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0078	1.8	mg/kg	FP-06 / 10-10-01	11/11		1.8	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.045 (J)	.28 (J)	mg/kg	FP-06 / 10-10-01	10/10		0.28	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.34	.48	mg/kg	SS-68 / 07-11-01	2/11	.32-.38	0.48	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/10	.041-.17	0.17	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.091 (J)	.26 (EB)	mg/kg	FP-06 / 0-1 / 08-05-03	3/11	.23-.27	0.26	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/4	.0021-.0053	0.0053	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/4	.0021-.0053	0.0053	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.092	.66	mg/kg	FP-06 / 10-10-01	9/11	.088-.091	0.66	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	580 (B)	17400 (J)	mg/kg	SS-70 / 07-10-01	10/10		17400	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	1.2	1.2	mg/kg	FP-06 / 10-10-01	1/11	.19-.27	1.2	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/4	.0021-.0053	0.0053	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	75-00-3	Chloroethane	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/4	.0021-.0053	0.0053	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	5.7	23	mg/kg	FP-06 / 0-1 / 08-05-03	11/11		23	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	.014	3.4	mg/kg	FP-06 / 10-10-01	11/11		3.4	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2.9	9.6	mg/kg	SS-68 / 07-11-01	11/11		9.6	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	7.2	22	mg/kg	FP-06 / 0-1 / 08-05-03	11/11		22	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/10	.28-.63	0.63	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.0064	.16	mg/kg	FP-06 / 10-10-01	6/11	.0058-.0064	0.16	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.68 (J)	.68 (J)	mg/kg	FP-06 / 10-10-01	1/10	.23-.27	0.68	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/9	.23-.97	0.97	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/10	.041-.97	0.97	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/10	.58-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/10	.58-.97	0.97	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.021	10	mg/kg	FP-06 / 10-10-01	11/11		10	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.012	.97	mg/kg	FP-06 / 10-10-01	5/11	.0058-.0064	0.97	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/10	.14-.27	0.27	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0074	.72	mg/kg	FP-06 / 10-10-01	11/11		0.72	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	7290	27800	mg/kg	SS-68 / 07-11-01	11/11		27800	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	15.7	474 (J)	mg/kg	FP-06 / 10-10-01	11/11		474	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	985	3480	mg/kg	SS-68 / 07-11-01	10/10		3480	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	154	615	mg/kg	SS-69 / 07-10-01	11/11		615	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.03	.87	mg/kg	FP-06 / 0-1 / 08-05-03	8/11	.028-.033	0.87	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/4	.0052-.0089	0.0089	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.0064	.31	mg/kg	FP-06 / 10-10-01	6/11	.0058-.0064	0.31	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0067	.6	mg/kg	FP-06 / 10-10-01	6/11	.0058-.0064	0.6	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	4.8	8.4	mg/kg	FP-06 / 0-1 / 08-05-03	10/11	4.5	8.4	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/10	.041-.17	0.17	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	99	C	NA	NA	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/10	.58-.97	0.97	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.011	11	mg/kg	FP-06 / 10-10-01	11/11		11	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	184 (B)	556 (J)	mg/kg	SS-70 / 07-10-01	10/10		556	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.016	9.2	mg/kg	FP-06 / 10-10-01	11/11		9.2	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.16 (J)	.51	mg/kg	FP-06 / 0-1 / 08-05-03	11/11		0.51	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/11	.37-.57	0.57	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	48.7 (B)	75.2 (B)	mg/kg	SS-67 / 07-11-01	6/10	39.2-43.7	75.2	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.06 (J)	.063 (J)	mg/kg	FP-06 / 10-10-01	2/11	.048-.38	0.063	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/10	.23-.97	0.97	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLASL
	7440-62-2	Vanadium	13.5	56.7	mg/kg	SS-68 / 07-11-01	11/11		56.7	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/4	.0021-.0053	0.0053	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/4	.0021-.0022	0.0022	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	21.7 (B)	184	mg/kg	FP-06 / 10-10-01	11/11		184	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Old Railroad and Former Lower Mill Pond Area (Trespasser)	83-32-9	Acenaphthene	.017	4	mg/kg	SS-05 / 03-19-01	6/8	.0054-.0057	4	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.017	12	mg/kg	SS-05 / 03-19-01	6/8	.0054-.0057	12	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	.097 (J)	.097 (J)	mg/kg	SS-04 / 03-21-01	1/2	.0079	0.097	NA	1400	NC	500	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	3130	10400	mg/kg	SS-02 / 04-26-01	8/8		10400	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0062	14	mg/kg	SS-05 / 03-19-01	7/8	.0057	14	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	1.1 (J)	4.4 (J)	mg/kg	SS-04 / 03-21-01	4/8	.28-.91	4.4	NA	3.1	NC	10	MCP Method 2 S-1	Yes	ASL
	7440-38-2	Arsenic	.83	106	mg/kg	SS-04 / 03-21-01	8/8		106	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	7.7	73.1	mg/kg	SS-02 / 04-26-01	8/8		73.1	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.014	22	mg/kg	SS-05 / 03-19-01	8/8		22	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.016	18	mg/kg	SS-05 / 03-19-01	8/8		18	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.018	30	mg/kg	SS-05 / 03-19-01	8/8		30	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.01	11	mg/kg	SS-05 / 03-19-01	8/8		11	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.013	14	mg/kg	SS-05 / 03-19-01	8/8		14	NA	6.2	C	7	MCP Method 2 S-1	Yes	ASL
	65-85-0	Benzoic acid	.048 (J)	2.7 (J)	mg/kg	SS-04 / 03-21-01	6/8	.22-.24	2.7	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	.048 (J)	.048 (J)	mg/kg	SS-02 / 04-26-01	1/8	.22-.28	0.048	NA	1800	NC	NA	NA	No	BSL
	7440-41-7	Beryllium	.32	.62	mg/kg	SS-02 / 04-26-01	3/8	.25-.38	0.62	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/8	.038-.13	0.13	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.054 (J)	.11 (J)	mg/kg	SS-04 / 03-21-01	3/8	.22-.28	0.11	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.096 (J)	2.4	mg/kg	SS-02 / 04-26-01	6/8	.062-.094	2.4	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	466 (B)	18200	mg/kg	SS-05 / 03-19-01	8/8		18200	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.11 (J)	2	mg/kg	SS-05 / 03-19-01	4/8	.22-.23	2	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0013 (J)	.0013 (J)	mg/kg	SS-04 / 03-21-01	1/2	.0019	0.0013	NA	36	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	490	NC	NA	NA	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	4.1	45	mg/kg	SS-02 / 04-26-01	8/8		45	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	.02	24	mg/kg	SS-05 / 03-19-01	8/8		24	NA	62	C	7	MCP Method 2 S-1	Yes	ASL
	7440-48-4	Cobalt [6]	2.1	10.1	mg/kg	SS-02 / 04-26-01	8/8		10.1	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	8.1	56.5	mg/kg	SS-02 / 04-26-01	8/8		56.5	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.14	.14	mg/kg	SS-03 / 05-09-01	1/8	.14-.84	0.14	NA	1.1	NC	100	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.011	3.4	mg/kg	SS-05 / 03-19-01	6/8	.0054-.0057	3.4	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.15 (J)	2.8	mg/kg	SS-05 / 03-19-01	4/8	.22-.23	2.8	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	.054 (J)	.054 (J)	mg/kg	SS-02 / 04-26-01	1/8	.22-.28	0.054	NA	110	NC	100	MCP Method 2 S-1	No	BSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	.069 (J)	.069 (J)	mg/kg	SS-02 / 04-26-01	1/8	.22-.28	0.069	NA	3.4	C	40	MCP Method 2 S-1	No	BSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	.083 (J)	.37	mg/kg	SS-05 / 03-19-01	2/8	.22-.26	0.37	NA	120	NC	400	MCP Method 2 S-1	No	BSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/8	.038-.082	0.082	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/8	.26-.69	0.69	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/8	.54-1.1	1.1	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.035	56	mg/kg	SS-05 / 03-19-01	8/8		56	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.014	4.3	mg/kg	SS-05 / 03-19-01	6/8	.0054-.0057	4.3	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/8	.037-.28	0.28	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/8	.22-.57	0.57	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0098	13	mg/kg	SS-05 / 03-19-01	8/8		13	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	5080 (J)	23300 (J)	mg/kg	SS-05 / 03-19-01	8/8		23300	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	7.6	130	mg/kg	SS-02 / 04-26-01	8/8		130	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1040	3410	mg/kg	SS-06 / 03-15-01	8/8		3410	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	61.6	379 (J)	mg/kg	SS-06 / 03-15-01	8/8		379	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.034	1 (J)	mg/kg	SS-02 / 04-26-01	7/8	.03	1	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	.042 (J)	.042 (J)	mg/kg	SS-04 / 03-21-01	1/2	.016	0.042	NA	9.1	C	100	MCP Method 2 S-1	No	BSL
	91-57-6	Methylnaphthalene (2-)	.0062	2.3	mg/kg	SS-05 / 03-19-01	6/8	.0054-.0057	2.3	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	.16 (J)	.16 (J)	mg/kg	SS-05 / 03-19-01	1/8	.22-.27	0.16	NA	310	NC	NA	NA	No	BSL
	106-44-5	Methylphenol (4-)	.12 (J)	.5	mg/kg	SS-05 / 03-19-01	3/8	.22-.24	0.5	NA	31	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0093	2.2	mg/kg	SS-05 / 03-19-01	6/8	.0054-.0057	2.2	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	4.1	19.1	mg/kg	SS-02 / 04-26-01	6/8	4.3-4.5	19.1	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/8	.038-.1	0.1	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	.068 (J)	.068 (J)	mg/kg	SS-04 / 03-21-01	1/8	.22-.28	0.068	NA	3	C	7	MCP Method 2 S-1	No	BSL
	85-01-8	Phenanthrene	.024	22	mg/kg	SS-05 / 03-19-01	8/8		22	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	.067 (J)	.067 (J)	mg/kg	SS-02 / 04-26-01	1/8	.22-.28	0.067	NA	1800	NC	500	MCP Method 2 S-1	No	BSL
	7440-09-7	Potassium [7]	113	829	mg/kg	SS-06 / 03-15-01	8/8		829	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.034	45	mg/kg	SS-05 / 03-19-01	8/8		45	NA	230	NC	700	MCP Method 2 S-1	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7782-49-2	Selenium	.11 (J)	1.7 (J)	mg/kg	SS-02 / 04-26-01	7/8	.1	1.7	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/8	.34-.72	0.72	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	28.3 (JB)	317	mg/kg	SS-02 / 04-26-01	6/8	43-45.4	317	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.053 (JB)	.24 (B)	mg/kg	SS-04 / 03-21-01	5/8	.037-.057	0.24	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.003 (J)	.003 (J)	mg/kg	SS-04 / 03-21-01	1/2	.0019	0.003	NA	66	NC	500	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/8	.22-.28	0.28	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	7.1	44.3 (J)	mg/kg	SS-02 / 04-26-01	8/8		44.3	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/2	.0019-.0025	0.0025	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	17.4	252 (J)	mg/kg	SS-02 / 04-26-01	8/8		252	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
East of South Street On-Facility (Site Worker)	83-32-9	Acenaphthene	.043 (J)	5	mg/kg	SS-20 / 06-12-01	3/4	.21	5	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.079 (J)	.22 (J)	mg/kg	SS-09 / 04-23-01	3/4	4.7	0.22	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0083	0.0083	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	309-00-2	Aldrin	ND	ND	mg/kg		0/1	.00056	0.00056	NA	0.1	C	0.03	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	5340 (J)	11900 (J)	mg/kg	SS-12 / 04-17-01	4/4		11900	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.15 (J)	13	mg/kg	SS-20 / 06-12-01	4/4		13	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/4	.52-.9	0.9	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	12674-11-2	Aroclor-1016	ND	ND	mg/kg		0/1	.0056	0.0056	NA	3.7	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	11104-28-2	Aroclor-1221	ND	ND	mg/kg		0/1	.0056	0.0056	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	11141-16-5	Aroclor-1232	ND	ND	mg/kg		0/1	.0056	0.0056	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	53469-21-9	Aroclor-1242	ND	ND	mg/kg		0/1	.0056	0.0056	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	12672-29-6	Aroclor-1248	ND	ND	mg/kg		0/1	.0056	0.0056	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	11097-69-1	Aroclor-1254	ND	ND	mg/kg		0/1	.0056	0.0056	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	11096-82-5	Aroclor-1260	ND	ND	mg/kg		0/1	.0056	0.0056	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	2.5 (J)	5.1	mg/kg	SS-20 / 06-12-01	4/4		5.1	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	26.9	223	mg/kg	SS-20 / 06-12-01	4/4		223	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.47	20	mg/kg	SS-20 / 06-12-01	4/4		20	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.002	0.002	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.54	15	mg/kg	SS-20 / 06-12-01	4/4		15	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.66 (J)	17	mg/kg	SS-20 / 06-12-01	4/4		17	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.12 (J)	9.5	mg/kg	SS-20 / 06-12-01	4/4		9.5	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.48 (J)	8.6	mg/kg	SS-20 / 06-12-01	4/4		8.6	NA	21	C	7	MCP Method 2 S-1	Yes	ASL
	65-85-0	Benzoic acid	.065 (J)	.065 (J)	mg/kg	SS-14 / 04-13-01	1/3	.23-1.1	0.065	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.26	.4	mg/kg	SS-12 / 04-17-01	2/4	.3-.38	0.4	NA	190	NC	0.7	MCP Method 2 S-1	No	BSL
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/1	.00056	0.00056	NA	0.36	C	NA	NA	No	ND, DLBSL
	319-85-7	BHC (beta-)	ND	ND	mg/kg		0/1	.00056	0.00056	NA	1.3	C	NA	NA	No	ND, DLBSL
	319-86-8	BHC (delta-)	.0026 (J)	.0026 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.0026	NA	1.3	C	NA	NA	No	BSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/1	.00056	0.00056	NA	1.7	C	0.4	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/4	.037-.83	0.83	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	.05 (JEB)	.23 (JEB)	mg/kg	SS-09 / 04-23-01	3/4	4.7	0.23	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.002	0.002	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.002	0.002	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.002	0.002	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.002	0.002	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	.058 (J)	.058 (J)	mg/kg	SS-14 / 04-13-01	1/4	.23-4.7	0.058	NA	12000	NC	NA	NA	No	BSL
	7440-43-9	Cadmium	.1	.72	mg/kg	SS-20 / 06-12-01	4/4		0.72	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1390	5990	mg/kg	SS-09 / 04-23-01	4/4		5990	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.062 (J)	6.7	mg/kg	SS-20 / 06-12-01	3/4	.21	6.7	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.002	0.002	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.002	0.002	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	5103-71-9	Chlordane (alpha-)	ND	ND	mg/kg		0/1	.00056	0.00056	NA	6.5	C	1	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	5103-74-2	Chlordane (gamma-)	.0056 (J)	.0056 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.0056	NA	6.5	C	1	MCP Method 2 S-1	No	BSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.002	0.002	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.002	0.002	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.002	0.002	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.002	0.002	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	7.9	24.4	mg/kg	SS-12 / 04-17-01	4/4		24.4	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.5	19	mg/kg	SS-20 / 06-12-01	4/4		19	NA	210	C	7	MCP Method 2 S-1	Yes	ASL
	7440-48-4	Cobalt [6]	4.6	5.5 (J)	mg/kg	SS-09 / 04-23-01	4/4		5.5	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	24	218 (J)	mg/kg	SS-09 / 04-23-01	4/4		218	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/3	.28-.57	0.57	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	72-54-8	DDD (4,4'-)	ND	ND	mg/kg		0/1	.00056	0.00056	NA	10	C	2	MCP Method 2 S-1	No	ND, DLBSL
	72-55-9	DDE (4,4'-)	.0086 (J)	.0086 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.0086	NA	7	C	2	MCP Method 2 S-1	No	BSL
	50-29-3	DDT (4,4'-)	.013 (J)	.013 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.013	NA	7	C	2	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.049 (J)	1.9 (J)	mg/kg	SS-20 / 06-12-01	4/4		1.9	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.97 (J)	4 (J)	mg/kg	SS-20 / 06-12-01	2/4	.21-.23	4	NA	160	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.002	0.002	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.002	0.002	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.002	0.002	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.002	0.002	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	.0061 (J)	.0061 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.0061	NA	15	NC	100	MCP Method 2 S-1	No	BSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.002	0.002	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.002	0.002	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.002	0.002	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.002	0.002	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	60-57-1	Dieldrin	ND	ND	mg/kg		0/1	.00056	0.00056	NA	0.11	C	0.03	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/4	.037-.83	0.83	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/4	.52-12	12	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/4	1-24	24	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLASL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	2500	NC	NA	NA	No	ND, DLBSL
	959-98-8	Endosulfan I	ND	ND	mg/kg		0/1	.00056	0.00056	NA	370	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	33213-65-9	Endosulfan II	ND	ND	mg/kg		0/1	.00056	0.00056	NA	370	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	1031-07-8	Endosulfan sulfate	ND	ND	mg/kg		0/1	.00056	0.00056	NA	370	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	72-20-8	Endrin	ND	ND	mg/kg		0/1	.00056	0.00056	NA	18	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	mg/kg		0/1	.00056	0.00056	NA	18	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	53494-70-5	Endrin ketone	.0089 (J)	.0089 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.0089	NA	18	NC	6	MCP Method 2 S-1	No	BSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.002	0.002	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.98	47	mg/kg	SS-20 / 06-12-01	4/4		47	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	1.4	4.6 (J)	mg/kg	SS-20 / 06-12-01	2/4	.21-.23	4.6	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	76-44-8	Heptachlor	ND	ND	mg/kg		0/1	.00056	0.00056	NA	0.38	C	0.1	MCP Method 2 S-1	No	ND, DLBSL
	1024-57-3	Heptachlor epoxide	.0048 (J)	.0048 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.0048	NA	0.19	C	0.06	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.16 (J)	9.9	mg/kg	SS-20 / 06-12-01	4/4		9.9	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	10100	113000	mg/kg	SS-20 / 06-12-01	4/4		113000	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	40.4	372 (J)	mg/kg	SS-20 / 06-12-01	4/4		372	NA	800	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	1920 (J)	2670 (J)	mg/kg	SS-20 / 06-12-01	4/4		2670	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	155 (J)	426	mg/kg	SS-20 / 06-12-01	4/4		426	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.07	.21	mg/kg	SS-20 / 06-12-01	4/4		0.21	NA	31	NC	20	MCP Method 2 S-1	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1ft)
Direct Contact [9]

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	72-43-5	Methoxychlor	ND	ND	mg/kg		0/1	.00056	0.00056	NA	310	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.002	0.002	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.01	0.01	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.34 (J)	1.7 (J)	mg/kg	SS-20 / 06-12-01	2/4	.21-.23	1.7	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.002	0.002	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.051 (J)	4 (J)	mg/kg	SS-20 / 06-12-01	4/4		4	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	7.9	22.7	mg/kg	SS-20 / 06-12-01	4/4		22.7	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/4	.037-.83	0.83	NA	0.25	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/4	.21-12	12	NA	9	C	7	MCP Method 2 S-1	No	ND, DLASL
	85-01-8	Phenanthrene	.52	48	mg/kg	SS-20 / 06-12-01	4/4		48	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	271	591	mg/kg	SS-14 / 04-13-01	4/4		591	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.95	40	mg/kg	SS-20 / 06-12-01	4/4		40	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.19	.43	mg/kg	SS-20 / 06-12-01	3/4	.079	0.43	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	.85	.85	mg/kg	SS-20 / 06-12-01	1/4	.38-.68	0.85	NA	510	NC	100	MCP Method 2 S-1	No	BSL
	7440-23-5	Sodium [7]	52.7	59.4	mg/kg	SS-14 / 04-13-01	4/4		59.4	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.002	0.002	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.002	0.002	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.002	0.002	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.039 (J)	.082	mg/kg	SS-12 / 04-17-01	3/4	.046	0.082	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.0042 (J)	.0042 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.0042	NA	220	NC	500	MCP Method 2 S-1	No	BSL
	8001-35-2	Toxaphene	ND	ND	mg/kg		0/1	.011	0.011	NA	1.6	C	NA	NA	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.002	0.002	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.002	0.002	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	.17 (J)	.17 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.17	NA	0.11	C	70	MCP Method 2 S-1	Yes	ASL
	75-69-4	Trichlorofluoromethane	.0012 (J)	.0012 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.0012	NA	130	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/4	.21-4.7	4.7	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	15.1	35.1	mg/kg	SS-20 / 06-12-01	4/4		35.1	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.002	0.002	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.002	0.002	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	.0016 (J)	.0016 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.0016	NA	90	NC	500	MCP Method 2 S-1	No	BSL
	95-47-6	Xylene (o-)	.0016 (J)	.0016 (J)	mg/kg	SS-09 / 04-23-01	1/1		0.0016	NA	90	NC	500	MCP Method 2 S-1	No	BSL
	7440-66-6	Zinc	59.6	1060	mg/kg	SS-20 / 06-12-01	4/4		1060	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT, TRESPASSER, SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:
Shaded chemicals are selected as COPCs.
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
C - Screening toxicity value based on cancer effects
NA - Not Available
NC - Screening toxicity value based on non-cancer effects
ND - Not Detected
SAT- Soil Saturation Limit

(1) Minimum/Maximum detected concentration data qualifiers:
J- The result is estimated (uncertain) due to QC exceedance(s).
JB- The chemical was also detected in an associated non-matrix matched Blank and the result is estimated (uncertain) due to QC exceedance(s).
EB- The chemical was also detected in an associated non-matrix matched Equipment Blank.
JEB- The chemical was also detected in an associated non-matrix matched Equipment Blank and the result is estimated (uncertain) due to QC exceedance(s).
B- The chemical was also detected in an associated non-matrix matched Blank.

(2) Maximum detected concentration, or if never detected, maximum detection limit.

(3) United States Environmental Protection Agency (USEPA) Region IX. 2004. Region IX Preliminary Remediation Goal Table. Industrial soil PRGs are used to screen COPCs at the East of South Street On-Facility exposure points. PRGs for residential soil are used at all other exposure points. Non-cancer PRGs are adjusted to correspond to a HI of 0.1.
The PRG for acenaphthene is used for acenaphthylene.
The PRG for polychlorinated biphenyls (PCBs) (unspeciated mixture, low risk, e.g. Aroclor 1016) is used for Aroclor 1016. The PRG for PCBs (unspeciated mixture, high risk, e.g. Aroclor 1254) is used for Aroclors 1221, 1232, 1242, 1248, 1254 and 1260.
The PRG for pyrene is used for benzo(g,h,i)perylene.
The PRG for technical BHC is used for delta-BHC.
The PRG for chlordane is used for alpha-chlordane and gamma-chlordane.
The PRG for chromium VI is used for chromium.
The PRG for hydrogen cyanide is used for cyanide (weak acid dissociable).
The PRG for 1,3-dichloropropene is used for cis- and trans-1,3-dichloropropene.
The PRG for endosulfan is used for endosulfan I, endosulfan II and endosulfan sulfate.
The PRG for endrin is used for endrin aldehyde and endrin ketone.
The PRG for naphthalene is used for 2-methylnaphthalene.
The PRG for pyrene is used for phenanthrene.
The PRG for xylenes (total) is used for m,p-xylene and o-xylene.

(4) Massachusetts Department of Environmental Protection (MADEP). 2003. Massachusetts Contingency Plan (MCP). 310 CMR 40.0985(6). Table 5 – Method 2 Direct Contact S-1 Soil Concentrations.
The standard for chromium VI is used for chromium.
The standard for 1,3-dichloropropene is used for cis- and trans-dichloropropene.
The standard for PCBs is used for Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260.
The standard for xylenes (total) is used for m,p-xylenes and o-xylene.

(5) Rationale for Selection or Deletion:
ASL - Above Screening Level
BSL - Below or Equal to Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below or Equal to Screening Level
ND - Not Detected
NSV - No Screening Value
NTX - No Toxicity Information
NUT - Nutrient
TX- Toxicity information available

(6) USEPA Region I does not endorse quantitative evaluation of risk for these chemicals (personal communication, USEPA Region 1 risk assessor, Sarah Levinson, 2004 and Region I Risk Update, September 1999). These chemicals will not be evaluated.

(7) USEPA Region I does not quantitatively evaluate these chemicals for human effects since they are considered essential nutrients and present little hazard to humans. These chemicals, if detected, will be evaluated qualitatively.

(8) USEPA Region 1 does not endorse quantitative evaluation of risk for these chemicals (Region 1 Risk Update, September 1999). These chemicals, if detected, will be evaluated qualitatively.

(9) Surface soil (direct contact) includes all chemicals except asbestos.

(10) Plant tissue includes only arsenic, cadmium, chromium, lead, mercury, nickel, and zinc. Pathway evaluated for resident only.

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
East of South Street On-Facility (Resident)	83-32-9	Acenaphthene	.0064	25	mg/kg	SB-09 / S-2-3 / 04-23-01	24/44	.0051-2.1	25	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.0062	36	mg/kg	SB-14 / S-3-4 / 04-13-01	28/44	.0051-4.7	36	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	.0066 (JEB)	.11 (J)	mg/kg	UST-2 / S-1-2 / 04-05-01	13/33	.0046-.76	0.11	NA	1400	NC	500	MCP Method 2 S-1	No	BSL
	309-00-2	Aldrin	.00084 (J)	.00084 (J)	mg/kg	SB-13A / S-3-4 / 04-13-01	1/11	.0001-.00058	0.00084	NA	0.03	C	0.03	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	3430	12200	mg/kg	SB-26 / S-2-3 / 03-30-01	38/38		12200	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0061 (J)	66	mg/kg	SB-14 / S-3-4 / 04-13-01	37/44	.0051-.0055	66	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	.79 (J)	15 (J)	mg/kg	SS-23 / 04-11-01	3/38	.28-.95	15	NA	3.1	NC	10	MCP Method 2 S-1	Yes	ASL
	12674-11-2	Aroclor-1016	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.39	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	11104-28-2	Aroclor-1221	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	11141-16-5	Aroclor-1232	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	53469-21-9	Aroclor-1242	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	12672-29-6	Aroclor-1248	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	11097-69-1	Aroclor-1254	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	11096-82-5	Aroclor-1260	.023	.028	mg/kg	OW-104-1 / 03-29-01	2/11	.002-.0058	0.028	NA	0.11	NC	2	MCP Method 2 S-1	No	BSL
	7440-38-2	Arsenic	.69	15.5 (J)	mg/kg	SS-23 / 04-11-01	38/38		15.5	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	12.8	489	mg/kg	SS-23 / 04-11-01	38/38		489	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.007 (J)	83	mg/kg	SB-14 / S-3-4 / 04-13-01	42/44	.0051	83	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	.0015 (J)	.036 (J)	mg/kg	UST-1 / S-3-4 / 04-04-01	6/33	.0017-.28	0.036	NA	0.64	C	40	MCP Method 2 S-1	No	BSL
	50-32-8	Benzo(a)pyrene	.0055 (J)	72	mg/kg	SB-14 / S-3-4 / 04-13-01	40/44	.0051-.01	72	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0062 (J)	89	mg/kg	SB-14 / S-3-4 / 04-13-01	40/44	.0051-.01	89	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.0052	14	mg/kg	SB-14 / S-3-4 / 04-13-01	39/44	.0051-.01	14	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0053	45	mg/kg	SB-14 / S-3-4 / 04-13-01	38/44	.0051-.01	45	NA	6.2	C	7	MCP Method 2 S-1	Yes	ASL
	65-85-0	Benzoic acid	.059 (J)	.74 (J)	mg/kg	SS-17 / 04-05-01	10/32	.2-5.4	0.74	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/43	.2-5.4	5.4	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.25	.45	mg/kg	SS-26 / 03-30-01	15/38	.22-.38	0.45	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	0.09	C	NA	NA	No	ND, DLBSL
	319-85-7	BHC (beta-)	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	0.32	C	NA	NA	No	ND, DLBSL
	319-86-8	BHC (delta-)	.00077 (J)	.0026 (J)	mg/kg	SS-09 / 04-23-01	4/11	.0001-.00058	0.0026	NA	0.32	C	NA	NA	No	BSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	0.44	C	0.4	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/44	.035-.95	0.95	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	.037 (J)	.39 (J)	mg/kg	SS-17 / 04-05-01	18/44	.2-5.4	0.39	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	.0039	.0039	mg/kg	SB-25 / S-4-5 / 03-29-01	1/33	.0018-.28	0.0039	NA	2200	NC	500	MCP Method 2 S-1	No	BSL
	85-68-7	Butylbenzylphthalate	.04 (J)	4.2	mg/kg	SS-23 / 04-11-01	10/44	.2-5.4	4.2	NA	1200	NC	NA	NA	No	BSL
	EPH C11-22	C11-C22 Aromatic	15	190	mg/kg	UST-2 / S-1-2 / 04-05-01	8/11	8.8-9.2	190	NA	NA		800	MCP Method 2 S-1	No	BSL
	EPH C19-36	C19-C36 Aliphatic	4.2	290	mg/kg	UST-3 / S-1-2 / 04-04-01	9/11	4.2-4.3	290	NA	NA		2500	MCP Method 2 S-1	No	BSL
	VPH C5-8	C5-C8 Aliphatic	23	23	mg/kg	UST-2 / S-1-2 / 04-05-01	1/11	19-21	23	NA	NA		100	MCP Method 2 S-1	No	BSL
	VPH C9-10	C9-C10 Aromatic	14	17 (J)	mg/kg	SB-25 / S-4-5 / 03-29-01	2/11	11-12	17	NA	NA		100	MCP Method 2 S-1	No	BSL
	VPH C9-12	C9-C12 Aliphatic	6.2	37 (J)	mg/kg	SB-25 / S-4-5 / 03-29-01	6/11	5.3-6.1	37	NA	NA		1000	MCP Method 2 S-1	No	BSL
	EPH C9-18	C9-C18 Aliphatic	3.1	210	mg/kg	UST-3 / S-1-2 / 04-04-01	9/11	3.2	210	NA	NA		1000	MCP Method 2 S-1	No	BSL
	7440-43-9	Cadmium	.063	3.2	mg/kg	SS-23 / 04-11-01	23/38	.054-.092	3.2	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	968	26200	mg/kg	SS-24 / 04-12-01	38/38		26200	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.045 (J)	23	mg/kg	SB-09 / S-2-3 / 04-23-01	20/44	.2-1.1	23	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0041	.0041	mg/kg	UST-2 / S-3-4 / 04-05-01	1/33	.0017-.28	0.0041	NA	36	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLASL
	5103-71-9	Chlordane (alpha-)	.00084 (J)	.0013 (J)	mg/kg	SS-21 / 04-02-01, SS-25 / 03-29-01	3/11	.0001-.00058	0.0013	NA	1.6	C	1	MCP Method 2 S-1	No	BSL
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0056 (J)	mg/kg	SS-09 / 04-23-01	3/11	.0001-.00058	0.0056	NA	1.6	C	1	MCP Method 2 S-1	No	BSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/43	.2-5.4	5.4	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/33	.0017-.7	0.7	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLASL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	5.7 (J)	58	mg/kg	SB-15 / S-2-3 / 04-16-01	38/38		58	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	218-01-9	Chrysene	.0068 (J)	71	mg/kg	SB-14 / S-3-4 / 04-13-01	42/44	.0051	71	NA	62	C	7	MCP Method 2 S-1	Yes	ASL
	7440-48-4	Cobalt [6]	2.9	501	mg/kg	SS-23 / 04-11-01	38/38		501	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	9.4	273	mg/kg	SB-14 / S-3-4 / 04-13-01	38/38		273	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/34	.28-.57	0.57	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	72-54-8	DDD (4,4'-)	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	2.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	72-55-9	DDE (4,4'-)	.0086 (J)	.0086 (J)	mg/kg	SS-09 / 04-23-01	1/11	.0001-.00058	0.0086	NA	1.7	C	2	MCP Method 2 S-1	No	BSL
	50-29-3	DDT (4,4'-)	.00018 (J)	.013 (J)	mg/kg	SS-09 / 04-23-01	5/11	.00011-.00058	0.013	NA	1.7	C	2	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.0068	6.1	mg/kg	SB-14 / S-3-4 / 04-13-01	29/44	.0051-.011	6.1	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.046 (J)	28	mg/kg	SB-09 / S-2-3 / 04-23-01	16/44	.2-2.1	28	NA	15	NC	NA	NA	Yes	ASL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLASL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/43	.2-5.4	5.4	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	.0061 (J)	0.23	mg/kg	SB-09A / S-2 / 09-07-06	4/33	.0017-.0037	0.23	NA	4.3	NC	100	MCP Method 2 S-1	No	BSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	60-57-1	Dieldrin	.00056 (J)	.00059 (J)	mg/kg	OW-105-2 / 04-13-01	2/11	.0001-.00058	0.00059	NA	0.03	C	0.03	MCP Method 2 S-1	No	BSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	.1 (J)	.1 (J)	mg/kg	SS-17 / 04-05-01	1/44	.2-5.4	0.1	NA	120	NC	400	MCP Method 2 S-1	No	BSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/44	.035-.95	0.95	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/42	.21-14	14	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/42	.52-27	27	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLASL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLASL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	240	NC	NA	NA	No	ND, DLBSL
	959-98-8	Endosulfan I	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	37	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	33213-65-9	Endosulfan II	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	37	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	1031-07-8	Endosulfan sulfate	.0007 (J)	.0011 (J)	mg/kg	SS-25 / 03-29-01	2/11	.0001-.00058	0.0011	NA	37	NC	100	MCP Method 2 S-1	No	BSL
	72-20-8	Endrin	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	1.8	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	1.8	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	53494-70-5	Endrin ketone	.0015 (J)	.0089 (J)	mg/kg	SS-09 / 04-23-01	2/11	.0001-.00058	0.0089	NA	1.8	NC	6	MCP Method 2 S-1	No	BSL
	100-41-4	Ethylbenzene	.003 (J)	.016 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	3/33	.0017-.28	0.016	NA	190	NC	500	MCP Method 2 S-1	No	BSL
	206-44-0	Fluoranthene	.007	210	mg/kg	SB-14 / S-3-4 / 04-13-01	43/44	.0051	210	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.0094	44	mg/kg	SB-14 / S-3-4 / 04-13-01	26/44	.0051-.23	44	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	76-44-8	Heptachlor	.00091 (J)	.00091 (J)	mg/kg	SS-21 / 04-02-01	1/11	.0001-.00058	0.00091	NA	0.11	C	0.1	MCP Method 2 S-1	No	BSL
	1024-57-3	Heptachlor epoxide	.0007 (J)	.0048 (J)	mg/kg	SS-09 / 04-23-01	2/11	.0001-.00058	0.0048	NA	0.05	C	0.06	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/43	.2-5.4	5.4	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0052	21	mg/kg	SB-14 / S-3-4 / 04-13-01	39/44	.0051-.01	21	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	6720	135000	mg/kg	SS-18 / 04-11-01	38/38		135000	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	.065 (J)	.088 (J)	mg/kg	SB-10 / S-3 / 06-07-01	2/44	.2-5.4	0.088	NA	510	C	NA	NA	No	BSL
	7439-92-1	Lead	4.4 (J)	5620	mg/kg	SS-23 / 04-11-01	38/38		5620	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	1450	5120 (J)	mg/kg	SS-24 / 04-12-01	38/38		5120	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	87.9	723 (J)	mg/kg	SS-18 / 04-11-01	38/38		723	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.03	14	mg/kg	SB-15 / S-2-3 / 04-16-01	25/37	.024-.035	14	NA	2.3	NC	20	MCP Method 2 S-1	Yes	ASL
	72-43-5	Methoxychlor	ND	ND	mg/kg		0/11	.00051-.00058	0.00058	NA	31	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/33	.0046-.7	0.7	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.0073	31	mg/kg	SB-09 / S-2-3 / 04-23-01	31/47	.002-.23	31	NA	5.6	NC	500	MCP Method 2 S-1	Yes	ASL
	95-48-7	Methylphenol (2-)	.098 (J)	.098 (J)	mg/kg	SS-17 / 04-05-01	1/44	.2-5.4	0.098	NA	310	NC	NA	NA	No	BSL
	106-44-5	Methylphenol (4-)	.28 (J)	.28 (J)	mg/kg	SS-17 / 04-05-01	1/44	.2-5.4	0.28	NA	31	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0053	82	mg/kg	SB-09 / S-2-3 / 04-23-01	36/47	.002-.0055	82	NA	5.6	NC	100	MCP Method 2 S-1	Yes	ASL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-02-0	Nickel	5.1	95	mg/kg	SB-15 / S-2-3 / 04-16-01	38/38		95	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/43	.2-5.4	5.4	NA	1.8	NC	NA	NA	No	ND, DLASL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	2	NC	NA	NA	No	ND, DLASL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/44	.035-.95	0.95	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/44	.2-12	12	NA	3	C	7	MCP Method 2 S-1	No	ND, DLASL
	85-01-8	Phenanthrene	.0053	200	mg/kg	SB-14 / S-3-4 / 04-13-01	43/44	.0051	200	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	.18 (J)	.18 (J)	mg/kg	SS-17 / 04-05-01	1/44	.2-5.4	0.18	NA	1800	NC	500	MCP Method 2 S-1	No	BSL
	7440-09-7	Potassium [7]	210	712	mg/kg	SS-23 / 04-11-01	38/38		712	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.0052	150	mg/kg	SB-14 / S-3-4 / 04-13-01	43/44	.0051	150	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.1 (J)	.85	mg/kg	SB-15 / S-2-3 / 04-16-01	27/38	.079-.12	0.85	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	.53	15	mg/kg	SS-23 / 04-11-01	4/38	.33-.68	15	NA	39	NC	100	MCP Method 2 S-1	No	BSL
	7440-23-5	Sodium [7]	52.7	304	mg/kg	SS-16 / 06-06-01	38/38		304	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	.0015 (J)	.049 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	2/33	.0017-.28	0.049	NA	440	NC	20	MCP Method 2 S-1	No	BSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.037 (J)	.18	mg/kg	SB-14 / S-3-4 / 04-13-01	16/38	.032-.055	0.18	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.0011 (J)	.16	mg/kg	SB-09 / S-2-3 / 04-23-01	12/33	.0017-.28	0.16	NA	66	NC	500	MCP Method 2 S-1	No	BSL
	8001-35-2	Toxaphene	ND	ND	mg/kg		0/11	.01-.012	0.012	NA	0.44	C	NA	NA	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	.0018	27	mg/kg	OW-114 / S-2 / 09-07-06	6/33	.0017-.0037	27	NA	0.05	C	70	MCP Method 2 S-1	Yes	ASL
	75-69-4	Trichlorofluoromethane	.001 (J)	.0098 (J)	mg/kg	SB-16 / S-3-4 / 06-06-01	3/33	.0017-.28	0.0098	NA	39	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLASL
	7440-62-2	Vanadium	12.6	199	mg/kg	SB-15 / S-2-3 / 04-16-01	38/38		199	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLASL
	108-38-3	Xylene (m,p-)	.0011 (J)	.21 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	8/33	.0017-.28	0.21	NA	27	NC	500	MCP Method 2 S-1	No	BSL
	106-42-3															
	95-47-6	Xylene (o-)	.0012 (J)	.12 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	6/33	.0017-.28	0.12	NA	27	NC	500	MCP Method 2 S-1	No	BSL
	7440-66-6	Zinc	26	4370	mg/kg	SS-18 / 04-11-01	38/38		4370	NA	2300	NC	2500	MCP Method 2 S-1	Yes	ASL
East of South Street On-Facility (Site Worker and Construction Worker)	83-32-9	Acenaphthene	.0064	25	mg/kg	SB-09 / S-2-3 / 04-23-01	24/44	.0051-2.1	25	NA	2900	NC	1000	MCP METHOD 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.0062	36	mg/kg	SB-14 / S-3-4 / 04-13-01	28/44	.0051-4.7	36	NA	2900	NC	100	MCP METHOD 2 S-1	No	BSL
	67-64-1	Acetone	.0066 (JEB)	.11 (J)	mg/kg	UST-2 / S-1-2 / 04-05-01	13/33	.0046-.76	0.11	NA	5400	NC	500	MCP METHOD 2 S-1	No	BSL
	309-00-2	Aldrin	.00084 (J)	.00084 (J)	mg/kg	SB-13A / S-3-4 / 04-13-01	1/11	.0001-.00058	0.00084	NA	0.1	C	0.03	MCP METHOD 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	3430	12200	mg/kg	SB-26 / S-2-3 / 03-30-01	38/38		12200	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0061 (J)	66	mg/kg	SB-14 / S-3-4 / 04-13-01	37/44	.0051-.0055	66	NA	24000	NC	1000	MCP METHOD 2 S-1	No	BSL
	7440-36-0	Antimony	.79 (J)	15 (J)	mg/kg	SS-23 / 04-11-01	3/38	.28-.95	15	NA	41	NC	10	MCP METHOD 2 S-1	Yes	ASL
	12674-11-2	Aroclor-1016	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	3.7	NC	2	MCP METHOD 2 S-1	No	ND, DLBSL
	11104-28-2	Aroclor-1221	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.74	C	2	MCP METHOD 2 S-1	No	ND, DLBSL
	11141-16-5	Aroclor-1232	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.74	C	2	MCP METHOD 2 S-1	No	ND, DLBSL
	53469-21-9	Aroclor-1242	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.74	C	2	MCP METHOD 2 S-1	No	ND, DLBSL
	12672-29-6	Aroclor-1248	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.74	C	2	MCP METHOD 2 S-1	No	ND, DLBSL
	11097-69-1	Aroclor-1254	ND	ND	mg/kg		0/11	.002-.0058	0.0058	NA	0.74	C	2	MCP METHOD 2 S-1	No	ND, DLBSL
	11096-82-5	Aroclor-1260	.023	.028	mg/kg	OW-104-1 / 03-29-01	2/11	.002-.0058	0.028	NA	0.74	C	2	MCP METHOD 2 S-1	No	BSL
	7440-38-2	Arsenic	.69	15.5 (J)	mg/kg	SS-23 / 04-11-01	38/38		15.5	NA	1.6	C	30	MCP METHOD 2 S-1	Yes	ASL
	7440-39-3	Barium	12.8	489	mg/kg	SS-23 / 04-11-01	38/38		489	NA	6700	NC	1000	MCP METHOD 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.007 (J)	83	mg/kg	SB-14 / S-3-4 / 04-13-01	42/44	.0051	83	NA	2.1	C	0.7	MCP METHOD 2 S-1	Yes	ASL
	71-43-2	Benzene	.0015 (J)	.036 (J)	mg/kg	UST-1 / S-3-4 / 04-04-01	6/33	.0017-.28	0.036	NA	1.4	C	40	MCP METHOD 2 S-1	No	BSL
	50-32-8	Benzo(a)pyrene	.0055 (J)	72	mg/kg	SB-14 / S-3-4 / 04-13-01	40/44	.0051-.01	72	NA	0.21	C	0.7	MCP METHOD 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0062 (J)	89	mg/kg	SB-14 / S-3-4 / 04-13-01	40/44	.0051-.01	89	NA	2.1	C	0.7	MCP METHOD 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.0052	14	mg/kg	SB-14 / S-3-4 / 04-13-01	39/44	.0051-.01	14	NA	2900	NC	100	MCP METHOD 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0053	45	mg/kg	SB-14 / S-3-4 / 04-13-01	38/44	.0051-.01	45	NA	21	C	7	MCP METHOD 2 S-1	Yes	ASL
	65-85-0	Benzoic acid	.059 (J)	.74 (J)	mg/kg	SS-17 / 04-05-01	10/32	.2-5.4	0.74	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/43	.2-5.4	5.4	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.25	.45	mg/kg	SS-26 / 03-30-01	15/38	.22-.38	0.45	NA	190	NC	0.7	MCP METHOD 2 S-1	No	BSL
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	0.36	C	NA	NA	No	ND, DLBSL
	319-85-7	BHC (beta-)	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	1.3	C	NA	NA	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	319-86-8	BHC (delta-)	.00077 (J)	.0026 (J)	mg/kg	SS-09 / 04-23-01	4/11	.0001-.00058	0.0026	NA	1.3	C	NA	NA	No	BSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	1.7	C	0.4	MCP METHOD 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/44	.035-.95	0.95	NA	0.58	C	0.7	MCP METHOD 2 S-1	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	7.4	C	2	MCP METHOD 2 S-1	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	.037 (J)	.39 (J)	mg/kg	SS-17 / 04-05-01	18/44	.2-5.4	0.39	NA	120	C	200	MCP METHOD 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	1.8	C	20	MCP METHOD 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	220	C	100	MCP METHOD 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	1.3	NC	50	MCP METHOD 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	.0039	.0039	mg/kg	SB-25 / S-4-5 / 03-29-01	1/33	.0018-.28	0.0039	NA	11000	NC	500	MCP METHOD 2 S-1	No	BSL
	85-68-7	Butylbenzylphthalate	.04 (J)	4.2	mg/kg	SS-23 / 04-11-01	10/44	.2-5.4	4.2	NA	12000	NC	NA	NA	No	BSL
	EPH C11-22	C11-C22 Aromatic	15	190	mg/kg	UST-2 / S-1-2 / 04-05-01	8/11	8.8-9.2	190	NA	NA		800	MCP METHOD 2 S-1	No	BSL
	EPH C19-36	C19-C36 Aliphatic	4.2	290	mg/kg	UST-3 / S-1-2 / 04-04-01	9/11	4.2-4.3	290	NA	NA		2500	MCP METHOD 2 S-1	No	BSL
	VPH C5-8	C5-C8 Aliphatic	23	23	mg/kg	UST-2 / S-1-2 / 04-05-01	1/11	19-21	23	NA	NA		100	MCP METHOD 2 S-1	No	BSL
	VPH C9-10	C9-C10 Aromatic	14	17 (J)	mg/kg	SB-25 / S-4-5 / 03-29-01	2/11	11-12	17	NA	NA		100	MCP METHOD 2 S-1	No	BSL
	VPH C9-12	C9-C12 Aliphatic	6.2	37 (J)	mg/kg	SB-25 / S-4-5 / 03-29-01	6/11	5.3-6.1	37	NA	NA		1000	MCP METHOD 2 S-1	No	BSL
	EPH C9-18	C9-C18 Aliphatic	3.1	210	mg/kg	UST-3 / S-1-2 / 04-04-01	9/11	3.2	210	NA	NA		1000	MCP METHOD 2 S-1	No	BSL
	7440-43-9	Cadmium	.063	3.2	mg/kg	SS-23 / 04-11-01	23/38	.054-.092	3.2	NA	45	NC	30	MCP METHOD 2 S-1	No	BSL
	7440-70-2	Calcium [7]	968	26200	mg/kg	SS-24 / 04-12-01	38/38		26200	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.045 (J)	23	mg/kg	SB-09 / S-2-3 / 04-23-01	20/44	.2-1.1	23	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0041	.0041	mg/kg	UST-2 / S-3-4 / 04-05-01	1/33	.0017-.28	0.0041	NA	120	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.55	C	7	MCP METHOD 2 S-1	No	ND, DLBSL
	5103-71-9	Chlordane (alpha-)	.00084 (J)	.0013 (J)	mg/kg	SS-21 / 04-02-01, SS-25 / 03-29-01	3/11	.0001-.00058	0.0013	NA	6.5	C	1	MCP METHOD 2 S-1	No	BSL
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0056 (J)	mg/kg	SS-09 / 04-23-01	3/11	.0001-.00058	0.0056	NA	6.5	C	1	MCP METHOD 2 S-1	No	BSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/43	.2-5.4	5.4	NA	250	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	53	NC	500	MCP METHOD 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/33	.0017-.7	0.7	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.47	C	200	MCP METHOD 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	24	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	5.7 (J)	58	mg/kg	SB-15 / S-2-3 / 04-16-01	38/38		58	NA	64	C	200	MCP METHOD 2 S-1	No	BSL
	218-01-9	Chrysene	.0068 (J)	71	mg/kg	SB-14 / S-3-4 / 04-13-01	42/44	.0051	71	NA	210	C	7	MCP METHOD 2 S-1	Yes	ASL
	7440-48-4	Cobalt [6]	2.9	501	mg/kg	SS-23 / 04-11-01	38/38		501	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	9.4	273	mg/kg	SB-14 / S-3-4 / 04-13-01	38/38		273	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/34	.28-.57	0.57	NA	3.5	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	72-54-8	DDD (4,4'-)	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	10	C	2	MCP METHOD 2 S-1	No	ND, DLBSL
	72-55-9	DDE (4,4'-)	.0086 (J)	.0086 (J)	mg/kg	SS-09 / 04-23-01	1/11	.0001-.00058	0.0086	NA	7	C	2	MCP METHOD 2 S-1	No	BSL
	50-29-3	DDT (4,4'-)	.00018 (J)	.013 (J)	mg/kg	SS-09 / 04-23-01	5/11	.00011-.00058	0.013	NA	7	C	2	MCP METHOD 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.0068	6.1	mg/kg	SB-14 / S-3-4 / 04-13-01	29/44	.0051-.011	6.1	NA	0.21	C	0.7	MCP METHOD 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.046 (J)	28	mg/kg	SB-09 / S-2-3 / 04-23-01	16/44	.2-2.1	28	NA	160	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	2.6	C	10	MCP METHOD 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	410	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	210	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	7.9	C	40	MCP METHOD 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/43	.2-5.4	5.4	NA	3.8	C	1	MCP METHOD 2 S-1	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	170	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.6	C	10	MCP METHOD 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	41	NC	2	MCP METHOD 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	.0061 (J)	0.23	mg/kg	SB-09A / S-2 / 09-07-06	4/33	.0017-.0037	0.23	NA	15	NC	100	MCP METHOD 2 S-1	No	BSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	23	NC	500	MCP METHOD 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	180	NC	40	MCP METHOD 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.74	C	8	MCP METHOD 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	1.8	C	3	MCP METHOD 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	1.8	C	3	MCP METHOD 2 S-1	No	ND, DLBSL
	60-57-1	Dieldrin	.00056 (J)	.00059 (J)	mg/kg	OW-105-2 / 04-13-01	2/11	.0001-.00058	0.00059	NA	0.11	C	0.03	MCP METHOD 2 S-1	No	BSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	49000	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	.1 (J)	.1 (J)	mg/kg	SS-17 / 04-05-01	1/44	.2-5.4	0.1	NA	1200	NC	400	MCP METHOD 2 S-1	No	BSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	100000	MAX	1000	MCP METHOD 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/44	.035-.95	0.95	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/42	.21-14	14	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/42	.52-27	27	NA	120	NC	40	MCP METHOD 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	120	NC	1	MCP METHOD 2 S-1	No	ND, DLASL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	2500	NC	NA	NA	No	ND, DLBSL
	959-98-8	Endosulfan I	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	370	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	33213-65-9	Endosulfan II	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	370	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	1031-07-8	Endosulfan sulfate	.0007 (J)	.0011 (J)	mg/kg	SS-25 / 03-29-01	2/11	.0001-.00058	0.0011	NA	370	NC	100	MCP METHOD 2 S-1	No	BSL
	72-20-8	Endrin	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	18	NC	6	MCP METHOD 2 S-1	No	ND, DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	mg/kg		0/11	.0001-.00058	0.00058	NA	18	NC	6	MCP METHOD 2 S-1	No	ND, DLBSL
	53494-70-5	Endrin ketone	.0015 (J)	.0089 (J)	mg/kg	SS-09 / 04-23-01	2/11	.0001-.00058	0.0089	NA	18	NC	6	MCP METHOD 2 S-1	No	BSL
	100-41-4	Ethylbenzene	.003 (J)	.016 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	3/33	.0017-.28	0.016	NA	400	SAT	500	MCP METHOD 2 S-1	No	BSL
	206-44-0	Fluoranthene	.007	210	mg/kg	SB-14 / S-3-4 / 04-13-01	43/44	.0051	210	NA	2200	NC	1000	MCP METHOD 2 S-1	No	BSL
	86-73-7	Fluorene	.0094	44	mg/kg	SB-14 / S-3-4 / 04-13-01	26/44	.0051-.23	44	NA	2600	NC	1000	MCP METHOD 2 S-1	No	BSL
	76-44-8	Heptachlor	.00091 (J)	.00091 (J)	mg/kg	SS-21 / 04-02-01	1/11	.0001-.00058	0.00091	NA	0.38	C	0.1	MCP METHOD 2 S-1	No	BSL
	1024-57-3	Heptachlor epoxide	.0007 (J)	.0048 (J)	mg/kg	SS-09 / 04-23-01	2/11	.0001-.00058	0.0048	NA	0.19	C	0.06	MCP METHOD 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	1.1	C	0.7	MCP METHOD 2 S-1	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	18	NC	5	MCP METHOD 2 S-1	No	ND, DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/43	.2-5.4	5.4	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	62	NC	6	MCP METHOD 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0052	21	mg/kg	SB-14 / S-3-4 / 04-13-01	39/44	.0051-.01	21	NA	2.1	C	0.7	MCP METHOD 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	6720	135000	mg/kg	SS-18 / 04-11-01	38/38		135000	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	.065 (J)	.088 (J)	mg/kg	SB-10 / S-3 / 06-07-01	2/44	.2-5.4	0.088	NA	510	C	NA	NA	No	BSL
	7439-92-1	Lead	4.4 (J)	5620	mg/kg	SS-23 / 04-11-01	38/38		5620	NA	800	NC	300	MCP METHOD 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	1450	5120 (J)	mg/kg	SS-24 / 04-12-01	38/38		5120	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	87.9	723 (J)	mg/kg	SS-18 / 04-11-01	38/38		723	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.03	14	mg/kg	SB-15 / S-2-3 / 04-16-01	25/37	.024-.035	14	NA	31	NC	20	MCP METHOD 2 S-1	No	BSL
	72-43-5	Methoxychlor	ND	ND	mg/kg		0/11	.00051-.00058	0.00058	NA	310	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	4700	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/33	.0046-.7	0.7	NA	21	C	100	MCP METHOD 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.0073	31	mg/kg	SB-09 / S-2-3 / 04-23-01	31/47	.002-.23	31	NA	19	NC	500	MCP METHOD 2 S-1	Yes	ASL
	95-48-7	Methylphenol (2-)	.098 (J)	.098 (J)	mg/kg	SS-17 / 04-05-01	1/44	.2-5.4	0.098	NA	3100	NC	NA	NA	No	BSL
	106-44-5	Methylphenol (4-)	.28 (J)	.28 (J)	mg/kg	SS-17 / 04-05-01	1/44	.2-5.4	0.28	NA	310	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	70	C	100	MCP METHOD 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0053	82	mg/kg	SB-09 / S-2-3 / 04-23-01	36/47	.002-.0055	82	NA	19	NC	100	MCP METHOD 2 S-1	Yes	ASL
	7440-02-0	Nickel	5.1	95	mg/kg	SB-15 / S-2-3 / 04-16-01	38/38		95	NA	2000	NC	300	MCP METHOD 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/43	.2-5.4	5.4	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/44	.035-.95	0.95	NA	0.25	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/44	.2-12	12	NA	9	C	7	MCP METHOD 2 S-1	No	ND, DLASL
	85-01-8	Phenanthrene	.0053	200	mg/kg	SB-14 / S-3-4 / 04-13-01	43/44	.0051	200	NA	2900	NC	1000	MCP METHOD 2 S-1	No	BSL
	108-95-2	Phenol	.18 (J)	.18 (J)	mg/kg	SS-17 / 04-05-01	1/44	.2-5.4	0.18	NA	18000	NC	500	MCP METHOD 2 S-1	No	BSL
	7440-09-7	Potassium [7]	210	712	mg/kg	SS-23 / 04-11-01	38/38		712	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.0052	150	mg/kg	SB-14 / S-3-4 / 04-13-01	43/44	.0051	150	NA	2900	NC	700	MCP METHOD 2 S-1	No	BSL
	7782-49-2	Selenium	.1 (J)	.85	mg/kg	SB-15 / S-2-3 / 04-16-01	27/38	.079-.12	0.85	NA	510	NC	400	MCP METHOD 2 S-1	No	BSL
	7440-22-4	Silver	.53	15	mg/kg	SS-23 / 04-11-01	4/38	.33-.68	15	NA	510	NC	100	MCP METHOD 2 S-1	No	BSL
	7440-23-5	Sodium [7]	52.7	304	mg/kg	SS-16 / 06-06-01	38/38		304	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	.0015 (J)	.049 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	2/33	.0017-.28	0.049	NA	1500	SAT	20	MCP METHOD 2 S-1	No	BSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.93	C	0.5	MCP METHOD 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	1.3	C	20	MCP METHOD 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.037 (J)	.18	mg/kg	SB-14 / S-3-4 / 04-13-01	16/38	.032-.055	0.18	NA	6.7	NC	8	MCP METHOD 2 S-1	No	BSL
	108-88-3	Toluene	.0011 (J)	.16	mg/kg	SB-09 / S-2-3 / 04-23-01	12/33	.0017-.28	0.16	NA	220	NC	500	MCP METHOD 2 S-1	No	BSL
	8001-35-2	Toxaphene	ND	ND	mg/kg		0/11	.01-.012	0.012	NA	1.6	C	NA	NA	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	22	NC	400	MCP METHOD 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	690	NC	100	MCP METHOD 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	1.6	C	2	MCP METHOD 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	.0018	27	mg/kg	OW-114 / S-2 / 09-07-06	6/33	.0017-.0037	27	NA	0.11	C	70	MCP METHOD 2 S-1	Yes	ASL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	75-69-4	Trichlorofluoromethane	.001 (J)	.0098 (J)	mg/kg	SB-16 / S-3-4 / 06-06-01	3/33	.0017-.28	0.0098	NA	130	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	6200	NC	1000	MCP METHOD 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/44	.2-5.4	5.4	NA	6.2	NC	40	MCP METHOD 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	12.6	199	mg/kg	SB-15 / S-2-3 / 04-16-01	38/38		199	NA	100	NC	400	MCP METHOD 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/33	.0017-.28	0.28	NA	0.75	C	0.3	MCP METHOD 2 S-1	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	.0011 (J)	.21 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	8/33	.0017-.28	0.21	NA	90	NC	500	MCP METHOD 2 S-1	No	BSL
	95-47-6	Xylene (o-)	.0012 (J)	.12 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	6/33	.0017-.28	0.12	NA	90	NC	500	MCP METHOD 2 S-1	No	BSL
	7440-66-6	Zinc	26	4370	mg/kg	SS-18 / 04-11-01	38/38		4370	NA	31000	NC	2500	MCP METHOD 2 S-1	Yes	ASL
Lot 283, Lot 282, Lot 210, Lot 230, Lot 342 (Resident)	Since data are only available for the 0-1 foot depth interval for Lot 283, Lot 282, Lot 210, Lot 230, and Lot 342 , COPCs for the future resident in these areas are the same as current COPCs (see Table 2.1).															
	83-32-9	Acenaphthene	.036	.036	mg/kg	FP-01 / 10-10-01, OW-404 / 10-10-01	2/2		0.036	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
Lot 283 (Construction Worker)	208-96-8	Acenaphthylene	.23	.25	mg/kg	OW-404 / 10-10-01	2/2		0.25	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	4370	5320	mg/kg	OW-404 / 10-10-01	2/2		5320	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.15	.18	mg/kg	OW-404 / 10-10-01	2/2		0.18	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/2	.8-.84	0.84	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	4.9	4.9	mg/kg	FP-01 / 10-10-01, OW-404 / 10-10-01	2/2		4.9	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	37.9 (J)	70.7 (J)	mg/kg	OW-404 / 10-10-01	2/2		70.7	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.73	.83	mg/kg	OW-404 / 10-10-01	2/2		0.83	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.66	.78	mg/kg	OW-404 / 10-10-01	2/2		0.78	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.57	.67	mg/kg	OW-404 / 10-10-01	2/2		0.67	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.21	.23 (J)	mg/kg	OW-404 / 10-10-01	2/2		0.23	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.58	.62	mg/kg	OW-404 / 10-10-01	2/2		0.62	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.13 (J)	.15 (J)	mg/kg	FP-01 / 10-10-01	2/2		0.15	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/2	.22	0.22	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/2	.32-.33	0.33	NA	190	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/2	.038	0.038	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/2	.22	0.22	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.09 (J)	.09 (J)	mg/kg	OW-404 / 10-10-01	1/2	.22	0.09	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/2	.22	0.22	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.33	.4	mg/kg	OW-404 / 10-10-01	2/2		0.4	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1460 (J)	3950 (J)	mg/kg	OW-404 / 10-10-01	2/2		3950	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.037 (J)	.037 (J)	mg/kg	OW-404 / 10-10-01	1/2	.22	0.037	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	.0012 (J)	.0012 (J)	mg/kg	OW-404 / 10-10-01	1/2	.0018	0.0012	NA	0.47	C	200	MCP Method 2 S-1	No	BSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	10.9	12.7	mg/kg	OW-404 / 10-10-01	2/2		12.7	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.88	1	mg/kg	OW-404 / 10-10-01	2/2		1	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4.1	4.5	mg/kg	OW-404 / 10-10-01	2/2		4.5	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	51.6	75	mg/kg	OW-404 / 10-10-01	2/2		75	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/2	.24-.25	0.25	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.054	.064	mg/kg	OW-404 / 10-10-01	2/2		0.064	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.22	0.22	NA	160	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/2	.22	0.22	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.22	0.22	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/2	.22	0.22	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/2	.22	0.22	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/2	.22	0.22	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/2	.22	0.22	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/2	.22	0.22	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	1.2	1.4	mg/kg	OW-404 / 10-10-01	2/2		1.4	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.052	.058	mg/kg	FP-01 / 10-10-01	2/2		0.058	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/2	.03	0.03	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/2	.22	0.22	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.22	0.22	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/2	.22	0.22	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.22	.25	mg/kg	OW-404 / 10-10-01	2/2		0.25	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	19300 (J)	46300 (J)	mg/kg	OW-404 / 10-10-01	2/2		46300	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/2	.22	0.22	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	256 (J)	360 (J)	mg/kg	OW-404 / 10-10-01	2/2		360	NA	800	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	1810	2130	mg/kg	OW-404 / 10-10-01	2/2		2130	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	657	965	mg/kg	OW-404 / 10-10-01	2/2		965	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.21	.23	mg/kg	OW-404 / 10-10-01	2/2		0.23	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/2	.0044-.011	0.011	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.032	.037	mg/kg	OW-404 / 10-10-01	2/2		0.037	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.075	.08	mg/kg	OW-404 / 10-10-01	2/2		0.08	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	7.2	8.4	mg/kg	OW-404 / 10-10-01	2/2		8.4	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/2	.22	0.22	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/2	.22	0.22	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/2	.038	0.038	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/2	.22	0.22	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/2	.22	0.22	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.7	.77	mg/kg	OW-404 / 10-10-01	2/2		0.77	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/2	.22	0.22	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	228 (J)	692 (J)	mg/kg	OW-404 / 10-10-01	2/2		692	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	1.5	1.7	mg/kg	OW-404 / 10-10-01	2/2		1.7	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.17 (J)	.24	mg/kg	OW-404 / 10-10-01	2/2		0.24	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/2	.48-.5	0.5	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	68.6	239	mg/kg	OW-404 / 10-10-01	2/2		239	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-28-0	Thallium	.066 (J)	.077 (J)	mg/kg	OW-404 / 10-10-01	2/2		0.077	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	220	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	130	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/2	.22	0.22	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/2	.22	0.22	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	27.6 (J)	41.1 (J)	mg/kg	OW-404 / 10-10-01	2/2		41.1	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	70	96.1	mg/kg	OW-404 / 10-10-01	2/2		96.1	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
	83-32-9	Acenaphthene	.011	.011	mg/kg	FP-02 / 10-10-01	1/1		0.011	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
Lot 282 (Construction Worker)	208-96-8	Acenaphthylene	.05	.05	mg/kg	FP-02 / 10-10-01	1/1		0.05	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.011	0.011	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	6820	6820	mg/kg	FP-02 / 10-10-01	1/1		6820	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.047	.047	mg/kg	FP-02 / 10-10-01	1/1		0.047	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/1	.79	0.79	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	8.9	8.9	mg/kg	FP-02 / 10-10-01	1/1		8.9	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	49.5	49.5	mg/kg	FP-02 / 10-10-01	1/1		49.5	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.17	.17	mg/kg	FP-02 / 10-10-01	1/1		0.17	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.17	.17	mg/kg	FP-02 / 10-10-01	1/1		0.17	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	205-99-2	Benzo(b)fluoranthene	.2	.2	mg/kg	FP-02 / 10-10-01	1/1		0.2	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.11	.11	mg/kg	FP-02 / 10-10-01	1/1		0.11	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.14	.14	mg/kg	FP-02 / 10-10-01	1/1		0.14	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.26	.26	mg/kg	FP-02 / 10-10-01	1/1		0.26	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.22	0.22	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.37	.37	mg/kg	FP-02 / 10-10-01	1/1		0.37	NA	190	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.038	0.038	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.22	0.22	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.092 (J)	.092 (J)	mg/kg	FP-02 / 10-10-01	1/1		0.092	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0054	0.0054	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0054	0.0054	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.22	0.22	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.36	.36	mg/kg	FP-02 / 10-10-01	1/1		0.36	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1860	1860	mg/kg	FP-02 / 10-10-01	1/1		1860	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/1	.22	0.22	NA	86	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0054	0.0054	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0054	0.0054	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	18.4	18.4	mg/kg	FP-02 / 10-10-01	1/1		18.4	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.24	.24	mg/kg	FP-02 / 10-10-01	1/1		0.24	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.3	3.3	mg/kg	FP-02 / 10-10-01	1/1		3.3	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	39.1	39.1	mg/kg	FP-02 / 10-10-01	1/1		39.1	NA	NA		NA	NA	No	NUT

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.23	0.23	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.025	.025	mg/kg	FP-02 / 10-10-01	1/1		0.025	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.22	0.22	NA	160	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.22	0.22	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.22	0.22	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.22	0.22	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.22	0.22	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.22	0.22	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.22	0.22	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.22	0.22	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.32	.32	mg/kg	FP-02 / 10-10-01	1/1		0.32	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.018	.018	mg/kg	FP-02 / 10-10-01	1/1		0.018	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.031	0.031	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.22	0.22	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.22	0.22	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.22	0.22	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.096	.096	mg/kg	FP-02 / 10-10-01	1/1		0.096	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	12800	12800	mg/kg	FP-02 / 10-10-01	1/1		12800	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.22	0.22	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	152 (J)	152 (J)	mg/kg	FP-02 / 10-10-01	1/1		152	NA	800	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	7780	7780	mg/kg	FP-02 / 10-10-01	1/1		7780	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	391	391	mg/kg	FP-02 / 10-10-01	1/1		391	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.21	.21	mg/kg	FP-02 / 10-10-01	1/1		0.21	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.011	0.011	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.015	.015	mg/kg	FP-02 / 10-10-01	1/1		0.015	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0021	0.0021	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.026	.026	mg/kg	FP-02 / 10-10-01	1/1		0.026	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	30.8	30.8	mg/kg	FP-02 / 10-10-01	1/1		30.8	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.22	0.22	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.22	0.22	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.038	0.038	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.22	0.22	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.22	0.22	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.22	.22	mg/kg	FP-02 / 10-10-01	1/1		0.22	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.22	0.22	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	213	213	mg/kg	FP-02 / 10-10-01	1/1		213	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.35	.35	mg/kg	FP-02 / 10-10-01	1/1		0.35	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.15 (J)	.15 (J)	mg/kg	FP-02 / 10-10-01	1/1		0.15	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.48	0.48	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-23-5	Sodium [7]	51.3	51.3	mg/kg	FP-02 / 10-10-01	1/1		51.3	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.07 (J)	.07 (J)	mg/kg	FP-02 / 10-10-01	1/1		0.07	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	220	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	130	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.22	0.22	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.22	0.22	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	36.5 (J)	36.5 (J)	mg/kg	FP-02 / 10-10-01	1/1		36.5	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0054	0.0054	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	98.7	98.7	mg/kg	FP-02 / 10-10-01	1/1		98.7	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
	83-32-9	Acenaphthene	.022	.022	mg/kg	FP-03 / 10-10-01	1/1		0.022	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
Lot 210 (Construction Worker)	208-96-8	Acenaphthylene	.16	.16	mg/kg	FP-03 / 10-10-01	1/1		0.16	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0052	0.0052	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	7100	7100	mg/kg	FP-03 / 10-10-01	1/1		7100	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.14	.14	mg/kg	FP-03 / 10-10-01	1/1		0.14	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/1	.88	0.88	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	3.6	3.6	mg/kg	FP-03 / 10-10-01	1/1		3.6	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	34.6	34.6	mg/kg	FP-03 / 10-10-01	1/1		34.6	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.53	.53	mg/kg	FP-03 / 10-10-01	1/1		0.53	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.61	.61	mg/kg	FP-03 / 10-10-01	1/1		0.61	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.8	.8	mg/kg	FP-03 / 10-10-01	1/1		0.8	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.21	.21	mg/kg	FP-03 / 10-10-01	1/1		0.21	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.53	.53	mg/kg	FP-03 / 10-10-01	1/1		0.53	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.83	.83	mg/kg	FP-03 / 10-10-01	1/1		0.83	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.23	0.23	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/1	.34	0.34	NA	190	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.04	0.04	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.23	0.23	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.072 (J)	.072 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.072	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0052	0.0052	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0052	0.0052	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.23	0.23	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.24	.24	mg/kg	FP-03 / 10-10-01	1/1		0.24	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1220	1220	mg/kg	FP-03 / 10-10-01	1/1		1220	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.085 (J)	.085 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.085	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0052	0.0052	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-47-3	Chromium	12	12	mg/kg	FP-03 / 10-10-01	1/1		12	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.79	.79	mg/kg	FP-03 / 10-10-01	1/1		0.79	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.4	3.4	mg/kg	FP-03 / 10-10-01	1/1		3.4	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	117	117	mg/kg	FP-03 / 10-10-01	1/1		117	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.27	0.27	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.054	.054	mg/kg	FP-03 / 10-10-01	1/1		0.054	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	.04 (J)	.04 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.04	NA	160	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.23	0.23	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.23	0.23	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.23	0.23	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.23	0.23	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.23	0.23	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.23	0.23	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.23	0.23	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	1.3	1.3	mg/kg	FP-03 / 10-10-01	1/1		1.3	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.098	.098	mg/kg	FP-03 / 10-10-01	1/1		0.098	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.032	0.032	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.23	0.23	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.23	0.23	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.23	0.23	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.22	.22	mg/kg	FP-03 / 10-10-01	1/1		0.22	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	46800	46800	mg/kg	FP-03 / 10-10-01	1/1		46800	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.23	0.23	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	52.2 (J)	52.2 (J)	mg/kg	FP-03 / 10-10-01	1/1		52.2	NA	800	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1440	1440	mg/kg	FP-03 / 10-10-01	1/1		1440	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	347	347	mg/kg	FP-03 / 10-10-01	1/1		347	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.11	.11	mg/kg	FP-03 / 10-10-01	1/1		0.11	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.035	.035	mg/kg	FP-03 / 10-10-01	1/1		0.035	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0021	0.0021	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.056	.056	mg/kg	FP-03 / 10-10-01	1/1		0.056	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	165	165	mg/kg	FP-03 / 10-10-01	1/1		165	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.23	0.23	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.23	0.23	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	.049 (J)	.049 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.049	NA	NA		NA	NA	No	NTX
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.04	0.04	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.23	0.23	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.23	0.23	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.79	.79	mg/kg	FP-03 / 10-10-01	1/1		0.79	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.23	0.23	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-09-7	Potassium [7]	340	340	mg/kg	FP-03 / 10-10-01	1/1		340	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	1.2	1.2	mg/kg	FP-03 / 10-10-01	1/1		1.2	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	ND	ND	mg/kg		0/1	.11	0.11	NA	510	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.53	0.53	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	45.7	45.7	mg/kg	FP-03 / 10-10-01	1/1		45.7	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.071 (J)	.071 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.071	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	220	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	130	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.23	0.23	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.23	0.23	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	33.6 (J)	33.6 (J)	mg/kg	FP-03 / 10-10-01	1/1		33.6	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0052	0.0052	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	50.3	50.3	mg/kg	FP-03 / 10-10-01	1/1		50.3	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
	83-32-9	Acenaphthene	.017	.017	mg/kg	FP-04 / 10-10-01	1/1		0.017	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
Lot 230 (Construction Worker)	208-96-8	Acenaphthylene	.087	.087	mg/kg	FP-04 / 10-10-01	1/1		0.087	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0081	0.0081	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	10200 (J)	10200 (J)	mg/kg	FP-04 / 10-10-01	1/1		10200	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.086	.086	mg/kg	FP-04 / 10-10-01	1/1		0.086	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/1	.88	0.88	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	6.8 (J)	6.8 (J)	mg/kg	FP-04 / 10-10-01	1/1		6.8	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	24.3	24.3	mg/kg	FP-04 / 10-10-01	1/1		24.3	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.37	.37	mg/kg	FP-04 / 10-10-01	1/1		0.37	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.42	.42	mg/kg	FP-04 / 10-10-01	1/1		0.42	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.43	.43	mg/kg	FP-04 / 10-10-01	1/1		0.43	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.13	.13	mg/kg	FP-04 / 10-10-01	1/1		0.13	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.4	.4	mg/kg	FP-04 / 10-10-01	1/1		0.4	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.05 (J)	.05 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.05	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.19	0.19	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/1	.34	0.34	NA	190	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.034	0.034	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.19	0.19	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.051 (J)	.051 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.051	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0081	0.0081	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0081	0.0081	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.26	.26	mg/kg	FP-04 / 10-10-01	1/1		0.26	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	454	454	mg/kg	FP-04 / 10-10-01	1/1		454	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.066 (J)	.066 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.066	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0032	0.0032	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0081	0.0081	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0081	0.0081	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	18.5	18.5	mg/kg	FP-04 / 10-10-01	1/1		18.5	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.57	.57	mg/kg	FP-04 / 10-10-01	1/1		0.57	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.2	3.2	mg/kg	FP-04 / 10-10-01	1/1		3.2	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	14.1	14.1	mg/kg	FP-04 / 10-10-01	1/1		14.1	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.37	0.37	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.041	.041	mg/kg	FP-04 / 10-10-01	1/1		0.041	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.19	0.19	NA	160	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	.04 (J)	.04 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.04	NA	410	NC	100	MCP Method 2 S-1	No	BSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.19	0.19	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.19	0.19	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.19	0.19	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.19	0.19	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.89	.89	mg/kg	FP-04 / 10-10-01	1/1		0.89	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.034	.034	mg/kg	FP-04 / 10-10-01	1/1		0.034	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.027	0.027	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.19	0.19	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.19	0.19	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.19	0.19	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.17	.17	mg/kg	FP-04 / 10-10-01	1/1		0.17	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	9070	9070	mg/kg	FP-04 / 10-10-01	1/1		9070	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.19	0.19	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	90.5 (J)	90.5 (J)	mg/kg	FP-04 / 10-10-01	1/1		90.5	NA	800	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1240	1240	mg/kg	FP-04 / 10-10-01	1/1		1240	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	143	143	mg/kg	FP-04 / 10-10-01	1/1		143	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.35	.35	mg/kg	FP-04 / 10-10-01	1/1		0.35	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.017	0.017	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.024	.024	mg/kg	FP-04 / 10-10-01	1/1		0.024	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0032	0.0032	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.042	.042	mg/kg	FP-04 / 10-10-01	1/1		0.042	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	5.1	5.1	mg/kg	FP-04 / 10-10-01	1/1		5.1	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.19	0.19	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.19	0.19	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.034	0.034	NA	0.25	C	NA	NA	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.19	0.19	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.19	0.19	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.55	.55	mg/kg	FP-04 / 10-10-01	1/1		0.55	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.19	0.19	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	114	114	mg/kg	FP-04 / 10-10-01	1/1		114	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.81	.81	mg/kg	FP-04 / 10-10-01	1/1		0.81	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.59	.59	mg/kg	FP-04 / 10-10-01	1/1		0.59	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.53	0.53	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	75.8	75.8	mg/kg	FP-04 / 10-10-01	1/1		75.8	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.098 (J)	.098 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.098	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	220	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	130	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.19	0.19	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.19	0.19	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	28.3 (J)	28.3 (J)	mg/kg	FP-04 / 10-10-01	1/1		28.3	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0081	0.0081	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	47.9	47.9	mg/kg	FP-04 / 10-10-01	1/1		47.9	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
Lot 257 (Resident)	83-32-9	Acenaphthene	.037	.057	mg/kg	FP-05 / 0-1 / 08-05-03	3/4	.01	0.057	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.016	.22	mg/kg	FP-05 / 0-1 / 08-05-03, FP-05 / 10-10-01	4/4		0.22	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.008	0.008	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	4300	6800	mg/kg	OW-410 / 08-05-03	4/4		6800	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.012	.21	mg/kg	FP-05 / 10-10-01	4/4		0.21	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	1 (J)	1.1 (J)	mg/kg	FP-05 / 0-1 / 08-05-03	2/4	.42-.94	1.1	NA	3.1	NC	10	MCP Method 2 S-1	No	BSL
	7440-38-2	Arsenic	1.2	10.5 (J)	mg/kg	FP-05 / 10-10-01	4/4		10.5	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	19	120	mg/kg	FP-05 / 0-1 / 08-05-03, OW-410 / 08-05-03	4/4		120	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.041	.79	mg/kg	FP-05 / 10-10-01	4/4		0.79	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.046	.82	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.82	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.057	1.1	mg/kg	OW-410 / 08-05-03	4/4		1.1	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.035	.55	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.55	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.031	.64	mg/kg	FP-05 / 10-10-01	4/4		0.64	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.14 (J)	.14 (J)	mg/kg	FP-05 / 10-10-01	1/1		0.14	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.2	0.2	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.17	.42	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.42	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.035	0.035	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.2	0.2	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.21	.53 (EB)	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.53	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.008	0.008	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.008	0.008	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	.037 (J)	.037 (J)	mg/kg	FP-05 / 10-10-01	1/1		0.037	NA	1200	NC	NA	NA	No	BSL
	7440-43-9	Cadmium	.13	1.5	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		1.5	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1280	1280	mg/kg	FP-05 / 10-10-01	1/1		1280	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.057 (J)	.057 (J)	mg/kg	FP-05 / 10-10-01	1/4	.2-.22	0.057	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0032	0.0032	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.008	0.008	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.008	0.008	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9.3	26	mg/kg	FP-05 / 10-10-01	4/4		26	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	.046	1.1	mg/kg	FP-05 / 10-10-01	4/4		1.1	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	1.2	5.5	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		5.5	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	6.3	56.5	mg/kg	FP-05 / 10-10-01	4/4		56.5	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.42	0.42	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.01	.15	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.15	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.2	0.2	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.2	0.2	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.093	1.7	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		1.7	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.06	.078	mg/kg	FP-05 / 10-10-01	3/4	.01	0.078	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.028	0.028	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.2	0.2	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.2	0.2	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.048	.73	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.73	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	4500	13000	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		13000	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.2	0.2	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	54	657 (J)	mg/kg	FP-05 / 10-10-01	4/4		657	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	2430	2430	mg/kg	FP-05 / 10-10-01	1/1		2430	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	53 (J)	430 (J)	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		430	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.043	.58	mg/kg	FP-05 / 10-10-01	4/4		0.58	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.008	0.008	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.02	.088	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.088	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0032	0.0032	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.072	.1	mg/kg	FP-05 / 10-10-01	3/4	.01	0.1	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	2.8	14.1	mg/kg	FP-05 / 10-10-01	4/4		14.1	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.2	0.2	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.2	0.2	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.035	0.035	NA	0.07	C	NA	NA	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.2	0.2	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.2	0.2	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.059	1	mg/kg	FP-05 / 0-1 / 08-05-03, FP-05 / 10-10-01	4/4		1	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.2	0.2	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	166	166	mg/kg	FP-05 / 10-10-01	1/1		166	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.086	1.6	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		1.6	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.41	.83	mg/kg	FP-05 / 10-10-01	4/4		0.83	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/4	.42-.57	0.57	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	137	137	mg/kg	FP-05 / 10-10-01	1/1		137	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.1 (J)	.1 (J)	mg/kg	FP-05 / 10-10-01	1/4	.34-.47	0.1	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.2	0.2	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	10	35.9 (J)	mg/kg	FP-05 / 10-10-01	4/4		35.9	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.008	0.008	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	34	290	mg/kg	FP-05 / 10-10-01	4/4		290	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
	83-32-9	Acenaphthene	.037	.057	mg/kg	FP-05 / 0-1 / 08-05-03	3/4	.01	0.057	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
Lot 257 (Construction Worker)	208-96-8	Acenaphthylene	.016	.22	mg/kg	FP-05 / 0-1 / 08-05-03, FP-05 / 10-10-01	4/4		0.22	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.008	0.008	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	4300	6800	mg/kg	OW-410 / 08-05-03	4/4		6800	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.012	.21	mg/kg	FP-05 / 10-10-01	4/4		0.21	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	1 (J)	1.1 (J)	mg/kg	FP-05 / 0-1 / 08-05-03	2/4	.42-.94	1.1	NA	41	NC	10	MCP Method 2 S-1	No	BSL
	7440-38-2	Arsenic	1.2	10.5 (J)	mg/kg	FP-05 / 10-10-01	4/4		10.5	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	19	120	mg/kg	FP-05 / 0-1 / 08-05-03, OW-410 / 08-05-03	4/4		120	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.041	.79	mg/kg	FP-05 / 10-10-01	4/4		0.79	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.046	.82	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.82	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.057	1.1	mg/kg	OW-410 / 08-05-03	4/4		1.1	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.035	.55	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.55	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.031	.64	mg/kg	FP-05 / 10-10-01	4/4		0.64	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.14 (J)	.14 (J)	mg/kg	FP-05 / 10-10-01	1/1		0.14	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.2	0.2	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.17	.42	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.42	NA	190	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.035	0.035	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.2	0.2	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.21	.53 (EB)	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.53	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.008	0.008	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.008	0.008	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	.037 (J)	.037 (J)	mg/kg	FP-05 / 10-10-01	1/1		0.037	NA	12000	NC	NA	NA	No	BSL
	7440-43-9	Cadmium	.13	1.5	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		1.5	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1280	1280	mg/kg	FP-05 / 10-10-01	1/1		1280	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.057 (J)	.057 (J)	mg/kg	FP-05 / 10-10-01	1/4	.2-.22	0.057	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0032	0.0032	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.008	0.008	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.008	0.008	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9.3	26	mg/kg	FP-05 / 10-10-01	4/4		26	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.046	1.1	mg/kg	FP-05 / 10-10-01	4/4		1.1	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	1.2	5.5	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		5.5	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	6.3	56.5	mg/kg	FP-05 / 10-10-01	4/4		56.5	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.42	0.42	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.01	.15	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.15	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.2	0.2	NA	160	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.2	0.2	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.093	1.7	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		1.7	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.06	.078	mg/kg	FP-05 / 10-10-01	3/4	.01	0.078	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.028	0.028	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.2	0.2	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.048	.73	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.73	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	4500	13000	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		13000	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.2	0.2	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	54	657 (J)	mg/kg	FP-05 / 10-10-01	4/4		657	NA	800	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	2430	2430	mg/kg	FP-05 / 10-10-01	1/1		2430	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	53 (J)	430 (J)	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		430	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.043	.58	mg/kg	FP-05 / 10-10-01	4/4		0.58	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.008	0.008	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.02	.088	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.088	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0032	0.0032	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.072	.1	mg/kg	FP-05 / 10-10-01	3/4	.01	0.1	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	2.8	14.1	mg/kg	FP-05 / 10-10-01	4/4		14.1	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.2	0.2	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.035	0.035	NA	0.25	C	NA	NA	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.2	0.2	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.2	0.2	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.059	1	mg/kg	FP-05 / 0-1 / 08-05-03, FP-05 / 10-10-01	4/4		1	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.2	0.2	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	166	166	mg/kg	FP-05 / 10-10-01	1/1		166	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.086	1.6	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		1.6	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.41	.83	mg/kg	FP-05 / 10-10-01	4/4		0.83	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/4	.42-.57	0.57	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	137	137	mg/kg	FP-05 / 10-10-01	1/1		137	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.1 (J)	.1 (J)	mg/kg	FP-05 / 10-10-01	1/4	.34-.47	0.1	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	220	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	130	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	10	35.9 (J)	mg/kg	FP-05 / 10-10-01	4/4		35.9	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.008	0.008	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	34	290	mg/kg	FP-05 / 10-10-01	4/4		290	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
Orlando Property (Resident)	83-32-9	Acenaphthene	.0059	1.3	mg/kg	FP-06 / 10-10-01	7/15	.0055-.0064	1.3	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.007	.073	mg/kg	FP-06 / 1-3 / 08-05-03	9/15	.0055-.0064	0.073	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/5	.005-.013	0.013	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	4860	9950 (J)	mg/kg	SB-66 / S-3-4 / 07-10-01	15/15		9950	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0065	1.5	mg/kg	FP-06 / 10-10-01	9/15	.0055-.0064	1.5	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/15	.37-.97	0.97	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	.46	4.5	mg/kg	FP-06 / 0-1 / 08-05-03	15/15		4.5	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	16.4	116	mg/kg	FP-06 / 10-10-01	15/15		116	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.0099	3.6	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	3.6	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.0091	2.7	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	2.7	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.014	3.2	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	3.2	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.01	.66	mg/kg	FP-06 / 10-10-01	12/15	.0055-.0061	0.66	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0078	1.8	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	1.8	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.045 (J)	.28 (J)	mg/kg	FP-06 / 10-10-01	11/13	.22	0.28	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.27	.48	mg/kg	SS-68 / 07-11-01	5/15	.31-.38	0.48	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/13	.039-.17	0.17	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.091 (J)	.26 (EB)	mg/kg	FP-06 / 0-1 / 08-05-03	3/15	.19-.27	0.26	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.092	.66	mg/kg	FP-06 / 10-10-01	11/15	.077-.091	0.66	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	580 (B)	17400 (J)	mg/kg	SS-70 / 07-10-01	13/13		17400	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	1.2	1.2	mg/kg	FP-06 / 10-10-01	1/15	.19-.27	1.2	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	5.7	23	mg/kg	FP-06 / 0-1 / 08-05-03	15/15		23	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	.014	3.4	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	3.4	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2.9	25.1 (J)	mg/kg	SB-66 / S-3-4 / 07-10-01	15/15		25.1	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	7.2	41.6	mg/kg	SB-66 / S-3-4 / 07-10-01	15/15		41.6	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/13	.28-.63	0.63	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.0064	.16	mg/kg	FP-06 / 10-10-01	8/15	.0055-.0064	0.16	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.68 (J)	.68 (J)	mg/kg	FP-06 / 10-10-01	1/13	.22-.27	0.68	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/12	.22-.97	0.97	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/13	.039-.97	0.97	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/13	.55-.97	0.97	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.021	10	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	10	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.012	.97	mg/kg	FP-06 / 10-10-01	7/15	.0055-.0064	0.97	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/13	.14-.27	0.27	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0074	.72	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	0.72	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	7230	27800	mg/kg	SS-68 / 07-11-01	15/15		27800	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	5.1 (J)	474 (J)	mg/kg	FP-06 / 10-10-01	15/15		474	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	959	4380 (J)	mg/kg	SB-66 / S-3-4 / 07-10-01	13/13		4380	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	141	615	mg/kg	SS-69 / 07-10-01	15/15		615	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.03	.87	mg/kg	FP-06 / 0-1 / 08-05-03	9/15	.026-.033	0.87	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/5	.005-.0089	0.0089	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.0064	.31	mg/kg	FP-06 / 10-10-01	8/15	.0055-.0064	0.31	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0067	.6	mg/kg	FP-06 / 10-10-01	8/15	.0055-.0064	0.6	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	4.2	24.3	mg/kg	SB-66 / S-3-4 / 07-10-01	14/15	4.5	24.3	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	1.8	NC	NA	NA	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/13	.039-.17	0.17	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.011	11	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	11	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	184 (B)	556 (J)	mg/kg	SS-70 / 07-10-01	13/13		556	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.016	9.2	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	9.2	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.16 (J)	.51	mg/kg	FP-06 / 0-1 / 08-05-03	12/15	.1-.37	0.51	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/15	.37-.57	0.57	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	48.3 (B)	94.8 (B)	mg/kg	SB-68 / S-2-3 / 07-11-01	9/13	39.2-43.7	94.8	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.052 (J)	.063 (J)	mg/kg	FP-06 / 10-10-01	3/15	.046-.38	0.063	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLASL
	7440-62-2	Vanadium	13	56.7	mg/kg	SS-68 / 07-11-01	15/15		56.7	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	21.7 (B)	184	mg/kg	FP-06 / 10-10-01	15/15		184	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Orlando Property (Construction Worker)	83-32-9	Acenaphthene	.0059	1.3	mg/kg	FP-06 / 10-10-01	7/15	.0055-.0064	1.3	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.007	.073	mg/kg	FP-06 / 1-3 / 08-05-03	9/15	.0055-.0064	0.073	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/5	.005-.013	0.013	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [7]	4860	9950 (J)	mg/kg	SB-66 / S-3-4 / 07-10-01	15/15		9950	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0065	1.5	mg/kg	FP-06 / 10-10-01	9/15	.0055-.0064	1.5	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/15	.37-.97	0.97	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	.46	4.5	mg/kg	FP-06 / 0-1 / 08-05-03	15/15		4.5	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	16.4	116	mg/kg	FP-06 / 10-10-01	15/15		116	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.0099	3.6	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	3.6	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.0091	2.7	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	2.7	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.014	3.2	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	3.2	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.01	.66	mg/kg	FP-06 / 10-10-01	12/15	.0055-.0061	0.66	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0078	1.8	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	1.8	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.045 (J)	.28 (J)	mg/kg	FP-06 / 10-10-01	11/13	.22	0.28	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.27	.48	mg/kg	SS-68 / 07-11-01	5/15	.31-.38	0.48	NA	190	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/13	.039-.17	0.17	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.091 (J)	.26 (EB)	mg/kg	FP-06 / 0-1 / 08-05-03	3/15	.19-.27	0.26	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.092	.66	mg/kg	FP-06 / 10-10-01	11/15	.077-.091	0.66	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	580 (B)	17400 (J)	mg/kg	SS-70 / 07-10-01	13/13		17400	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	1.2	1.2	mg/kg	FP-06 / 10-10-01	1/15	.19-.27	1.2	NA	86	C	NA	NA	No	BSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	5.7	23	mg/kg	FP-06 / 0-1 / 08-05-03	15/15		23	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.014	3.4	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	3.4	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2.9	25.1 (J)	mg/kg	SB-66 / S-3-4 / 07-10-01	15/15		25.1	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	7.2	41.6	mg/kg	SB-66 / S-3-4 / 07-10-01	15/15		41.6	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/13	.28-.63	0.63	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.0064	.16	mg/kg	FP-06 / 10-10-01	8/15	.0055-.0064	0.16	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	.68 (J)	.68 (J)	mg/kg	FP-06 / 10-10-01	1/13	.22-.27	0.68	NA	160	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/12	.22-.97	0.97	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/13	.039-.97	0.97	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/13	.55-.97	0.97	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.021	10	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	10	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.012	.97	mg/kg	FP-06 / 10-10-01	7/15	.0055-.0064	0.97	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/13	.14-.27	0.27	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0074	.72	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	0.72	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	7230	27800	mg/kg	SS-68 / 07-11-01	15/15		27800	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	5.1 (J)	474 (J)	mg/kg	FP-06 / 10-10-01	15/15		474	NA	800	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	959	4380 (J)	mg/kg	SB-66 / S-3-4 / 07-10-01	13/13		4380	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	141	615	mg/kg	SS-69 / 07-10-01	15/15		615	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.03	.87	mg/kg	FP-06 / 0-1 / 08-05-03	9/15	.026-.033	0.87	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/5	.005-.0089	0.0089	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.0064	.31	mg/kg	FP-06 / 10-10-01	8/15	.0055-.0064	0.31	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0067	.6	mg/kg	FP-06 / 10-10-01	8/15	.0055-.0064	0.6	NA	19	NC	100	MCP Method 2 S-1	No	BSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-02-0	Nickel	4.2	24.3	mg/kg	SB-66 / S-3-4 / 07-10-01	14/15	4.5	24.3	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/13	.039-.17	0.17	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.011	11	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	11	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	184 (B)	556 (J)	mg/kg	SS-70 / 07-10-01	13/13		556	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.016	9.2	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	9.2	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.16 (J)	.51	mg/kg	FP-06 / 0-1 / 08-05-03	12/15	.1-.37	0.51	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/15	.37-.57	0.57	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	48.3 (B)	94.8 (B)	mg/kg	SB-68 / S-2-3 / 07-11-01	9/13	39.2-43.7	94.8	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.052 (J)	.063 (J)	mg/kg	FP-06 / 10-10-01	3/15	.046-.38	0.063	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	220	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	130	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	13	56.7	mg/kg	SS-68 / 07-11-01	15/15		56.7	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	21.7 (B)	184	mg/kg	FP-06 / 10-10-01	15/15		184	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
	83-32-9	Acenaphthene	ND	ND	mg/kg		0/1	.01	0.01	NA	2900	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
Lot 342 (Construction Worker)	208-96-8	Acenaphthylene	.028	.028	mg/kg	FP-08 / 10-10-01	1/1		0.028	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0094	0.0094	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	10400 (J)	10400 (J)	mg/kg	FP-08 / 10-10-01	1/1		10400	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.024	.024	mg/kg	FP-08 / 10-10-01	1/1		0.024	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/1	.85	0.85	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	5.7 (J)	5.7 (J)	mg/kg	FP-08 / 10-10-01	1/1		5.7	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	24.1	24.1	mg/kg	FP-08 / 10-10-01	1/1		24.1	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.1	.1	mg/kg	FP-08 / 10-10-01	1/1		0.1	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.1	.1	mg/kg	FP-08 / 10-10-01	1/1		0.1	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	205-99-2	Benzo(b)fluoranthene	.15	.15	mg/kg	FP-08 / 10-10-01	1/1		0.15	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.04	.04	mg/kg	FP-08 / 10-10-01	1/1		0.04	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.12	.12	mg/kg	FP-08 / 10-10-01	1/1		0.12	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.1 (J)	.1 (J)	mg/kg	FP-08 / 10-10-01	1/1		0.1	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/1	.2	0.2	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/1	.37	0.37	NA	190	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.035	0.035	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.2	0.2	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.046 (J)	.046 (J)	mg/kg	FP-08 / 10-10-01	1/1		0.046	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0037	0.0037	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0094	0.0094	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0094	0.0094	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.15	.15	mg/kg	FP-08 / 10-10-01	1/1		0.15	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	682	682	mg/kg	FP-08 / 10-10-01	1/1		682	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/1	.2	0.2	NA	86	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0037	0.0037	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0094	0.0094	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0094	0.0094	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	25.3	25.3	mg/kg	FP-08 / 10-10-01	1/1		25.3	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.18	.18	mg/kg	FP-08 / 10-10-01	1/1		0.18	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2	2	mg/kg	FP-08 / 10-10-01	1/1		2	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	16	16	mg/kg	FP-08 / 10-10-01	1/1		16	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/1	.47	0.47	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.013	.013	mg/kg	FP-08 / 10-10-01	1/1		0.013	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.2	0.2	NA	160	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.2	0.2	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.2	0.2	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.2	0.2	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.24	.24	mg/kg	FP-08 / 10-10-01	1/1		0.24	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.013	.013	mg/kg	FP-08 / 10-10-01	1/1		0.013	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.028	0.028	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.2	0.2	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.2	0.2	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.05	.05	mg/kg	FP-08 / 10-10-01	1/1		0.05	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	10200	10200	mg/kg	FP-08 / 10-10-01	1/1		10200	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.2	0.2	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	77.2 (J)	77.2 (J)	mg/kg	FP-08 / 10-10-01	1/1		77.2	NA	800	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	798	798	mg/kg	FP-08 / 10-10-01	1/1		798	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	98.4	98.4	mg/kg	FP-08 / 10-10-01	1/1		98.4	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.13	.13	mg/kg	FP-08 / 10-10-01	1/1		0.13	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.01	0.01	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.03	.03	mg/kg	FP-08 / 10-10-01	1/1		0.03	NA	19	NC	500	MCP Method 2 S-1	No	BSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0037	0.0037	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.05	.05	mg/kg	FP-08 / 10-10-01	1/1		0.05	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	4.8	4.8	mg/kg	FP-08 / 10-10-01	1/1		4.8	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.2	0.2	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.2	0.2	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.035	0.035	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.2	0.2	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.2	0.2	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.19	.19	mg/kg	FP-08 / 10-10-01	1/1		0.19	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.2	0.2	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	152	152	mg/kg	FP-08 / 10-10-01	1/1		152	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.19	.19	mg/kg	FP-08 / 10-10-01	1/1		0.19	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	1.1	1.1	mg/kg	FP-08 / 10-10-01	1/1		1.1	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.51	0.51	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	63	63	mg/kg	FP-08 / 10-10-01	1/1		63	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.12	.12	mg/kg	FP-08 / 10-10-01	1/1		0.12	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	220	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	130	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.2	0.2	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	39.2 (J)	39.2 (J)	mg/kg	FP-08 / 10-10-01	1/1		39.2	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0094	0.0094	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	20.4	20.4	mg/kg	FP-08 / 10-10-01	1/1		20.4	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
Lot 360 (Resident)	Since Lot 360 is in a wetland area and is unlikely to be developed, potential risk to a future resident will be evaluated using data from the 0-1 foot soil interval only. Therefore, COPC screening results are identical to those for the current resident (see Table 2.1).															
Lot 350 (Resident)	Since Lot 350 is in a wetland area and is unlikely to be developed, potential risk to a future resident will be evaluated using data from the 0-1 foot soil interval only. Therefore, COPC screening results are identical to those for the current trespasser (see Table 2.1).															
Gleason Court Vacant Lot (Resident)	83-32-9	Acenaphthene	.019	.034	mg/kg	SS-64 / 03-23-01	2/4	.0053-.0054	0.034	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.053	.1	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.1	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0091	0.0091	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	5440 (J)	10800	mg/kg	SS-65 / 03-26-01	4/4		10800	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0066	.19	mg/kg	SS-64 / 03-23-01	3/4	.0054	0.19	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/4	.28-.68	0.68	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	.76	19.3	mg/kg	SS-65 / 03-26-01	4/4		19.3	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	12	74.3	mg/kg	SS-65 / 03-26-01	4/4		74.3	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.011	.32	mg/kg	SS-64 / 03-23-01	3/4	.0054	0.32	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.01	.29	mg/kg	SS-65 / 03-26-01	3/4	.0054	0.29	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0065	.37	mg/kg	SS-65 / 03-26-01	4/4		0.37	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.061	.086	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.086	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0069	.26	mg/kg	SS-65 / 03-26-01	3/4	.0054	0.26	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.3 (J)	.77 (J)	mg/kg	SS-64 / 03-23-01	2/4	.21-.22	0.77	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.38	.4	mg/kg	SS-65 / 03-26-01	2/4	.25-.33	0.4	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/4	.038-.12	0.12	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	35	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	NA		NA	NA	No	ND, NSV

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0019	0.0019	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.18 (J)	.35 (J)	mg/kg	SS-65 / 03-26-01	2/4	.064-.082	0.35	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1180	2290	mg/kg	SS-64 / 03-23-01	4/4		2290	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.067 (J)	.067 (J)	mg/kg	SS-64 / 03-23-01	1/4	.21-.24	0.067	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0019	0.0019	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9	13.6	mg/kg	SS-65 / 03-26-01	4/4		13.6	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.0061	.36	mg/kg	SS-65 / 03-26-01	4/4		0.36	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.7 (J)	4.7 (J)	mg/kg	SB-65 / S-4-5 / 03-26-01	4/4		4.7	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	9.9	30.7	mg/kg	SS-65 / 03-26-01	4/4		30.7	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.35	.48	mg/kg	SS-64 / 03-23-01	2/4	.47-.52	0.48	NA	1.1	NC	100	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.021	.027	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.027	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/4	.038-.076	0.076	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/4	.22-.65	0.65	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/4	.53-.65	0.65	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.011	.84	mg/kg	SS-64 / 03-23-01	4/4		0.84	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.028	.063	mg/kg	SS-64 / 03-23-01	2/4	.0053-.0054	0.063	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.078	.1	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.1	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	10600	12500 (J)	mg/kg	SB-64 / S-3-4 / 03-23-01	4/4		12500	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	5.5 (J)	278	mg/kg	SS-65 / 03-26-01	4/4		278	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1540	3250	mg/kg	SB-64 / S-3-4 / 03-23-01	4/4		3250	NA	NA		NA	NA	No	NUT

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7439-96-5	Manganese	183 (J)	235 (J)	mg/kg	SB-64 / S-3-4 / 03-23-01	4/4		235	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.1	.31	mg/kg	SS-65 / 03-26-01	2/4	.027-.032	0.31	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0071	0.0071	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.009	.019	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.019	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0019	0.0019	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.017	.035	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.035	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	6.1	8.9	mg/kg	SS-65 / 03-26-01	4/4		8.9	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/4	.038-.098	0.098	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.0078	.68	mg/kg	SS-64 / 03-23-01	4/4		0.68	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	206	296	mg/kg	SB-64 / S-3-4 / 03-23-01	4/4		296	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.01	.63	mg/kg	SS-64 / 03-23-01	4/4		0.63	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.12 (J)	1 (J)	mg/kg	SS-65 / 03-26-01	4/4		1	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/4	.38-.43	0.43	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	43.4 (JB)	75.2 (JB)	mg/kg	SB-64 / S-3-4 / 03-23-01	4/4		75.2	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.073 (JB)	.11 (B)	mg/kg	SS-65 / 03-26-01	2/4	.038-.049	0.11	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	18.8	29	mg/kg	SS-65 / 03-26-01	4/4		29	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0019	0.0019	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	26	109 (J)	mg/kg	SS-65 / 03-26-01	4/4		109	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Gleason Court Vacant Lot (Construction Worker)	83-32-9	Acenaphthene	.019	.034	mg/kg	SS-64 / 03-23-01	2/4	.0053-.0054	0.034	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.053	.1	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.1	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0091	0.0091	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	5440 (J)	10800	mg/kg	SS-65 / 03-26-01	4/4		10800	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0066	.19	mg/kg	SS-64 / 03-23-01	3/4	.0054	0.19	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/4	.28-.68	0.68	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	.76	19.3	mg/kg	SS-65 / 03-26-01	4/4		19.3	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	12	74.3	mg/kg	SS-65 / 03-26-01	4/4		74.3	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.011	.32	mg/kg	SS-64 / 03-23-01	3/4	.0054	0.32	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.01	.29	mg/kg	SS-65 / 03-26-01	3/4	.0054	0.29	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0065	.37	mg/kg	SS-65 / 03-26-01	4/4		0.37	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.061	.086	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.086	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0069	.26	mg/kg	SS-65 / 03-26-01	3/4	.0054	0.26	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.3 (J)	.77 (J)	mg/kg	SS-64 / 03-23-01	2/4	.21-.22	0.77	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.38	.4	mg/kg	SS-65 / 03-26-01	2/4	.25-.33	0.4	NA	190	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/4	.038-.12	0.12	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	120	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0019	0.0019	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND,NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.18 (J)	.35 (J)	mg/kg	SS-65 / 03-26-01	2/4	.064-.082	0.35	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1180	2290	mg/kg	SS-64 / 03-23-01	4/4		2290	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.067 (J)	.067 (J)	mg/kg	SS-64 / 03-23-01	1/4	.21-.24	0.067	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0019	0.0019	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9	13.6	mg/kg	SS-65 / 03-26-01	4/4		13.6	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.0061	.36	mg/kg	SS-65 / 03-26-01	4/4		0.36	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.7 (J)	4.7 (J)	mg/kg	SB-65 / S-4-5 / 03-26-01	4/4		4.7	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	9.9	30.7	mg/kg	SS-65 / 03-26-01	4/4		30.7	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.35	.48	mg/kg	SS-64 / 03-23-01	2/4	.47-.52	0.48	NA	3.5	NC	100	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.021	.027	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.027	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	160	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/4	.038-.076	0.076	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/4	.22-.65	0.65	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/4	.53-.65	0.65	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.011	.84	mg/kg	SS-64 / 03-23-01	4/4		0.84	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.028	.063	mg/kg	SS-64 / 03-23-01	2/4	.0053-.0054	0.063	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.078	.1	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.1	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	10600	12500 (J)	mg/kg	SB-64 / S-3-4 / 03-23-01	4/4		12500	NA	NA		NA	NA	No	NUT

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	78-59-1	Isophorone	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	5.5 (J)	278	mg/kg	SS-65 / 03-26-01	4/4		278	NA	800	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1540	3250	mg/kg	SB-64 / S-3-4 / 03-23-01	4/4		3250	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	183 (J)	235 (J)	mg/kg	SB-64 / S-3-4 / 03-23-01	4/4		235	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.1	.31	mg/kg	SS-65 / 03-26-01	2/4	.027-.032	0.31	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0071	0.0071	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.009	.019	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.019	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0019	0.0019	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.017	.035	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.035	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	6.1	8.9	mg/kg	SS-65 / 03-26-01	4/4		8.9	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/4	.038-.098	0.098	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.0078	.68	mg/kg	SS-64 / 03-23-01	4/4		0.68	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	206	296	mg/kg	SB-64 / S-3-4 / 03-23-01	4/4		296	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.01	.63	mg/kg	SS-64 / 03-23-01	4/4		0.63	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.12 (J)	1 (J)	mg/kg	SS-65 / 03-26-01	4/4		1	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/4	.38-.43	0.43	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	43.4 (JB)	75.2 (JB)	mg/kg	SB-64 / S-3-4 / 03-23-01	4/4		75.2	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.073 (JB)	.11 (B)	mg/kg	SS-65 / 03-26-01	2/4	.038-.049	0.11	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	220	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	130	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	18.8	29	mg/kg	SS-65 / 03-26-01	4/4		29	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0019	0.0019	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	26	109 (J)	mg/kg	SS-65 / 03-26-01	4/4		109	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
	83-32-9	Acenaphthene	.011	.011	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.011	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
Gleason Court Lot 122 (Resident)	208-96-8	Acenaphthylene	.013	.058 (J)	mg/kg	OW-105-1 / 04-17-01	4/5	.006	0.058	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/3	.0056-.0085	0.0085	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	7560 (J)	12200	mg/kg	SS-63 / 04-02-01	5/5		12200	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.016	.072 (J)	mg/kg	OW-105-1 / 04-17-01	4/5	.006	0.072	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/5	.33-.89	0.89	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	1.1	14.3	mg/kg	SS-63 / 04-02-01	5/5		14.3	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	17.6	67.3	mg/kg	SS-63 / 04-02-01	5/5		67.3	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.01	.3	mg/kg	OW-105-1 / 04-17-01	5/5		0.3	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.011	.4	mg/kg	OW-105-1 / 04-17-01	5/5		0.4	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.019	.57	mg/kg	OW-105-1 / 04-17-01	5/5		0.57	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.0086	.23 (J)	mg/kg	SS-62 / 04-17-01	5/5		0.23	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0065	.38	mg/kg	OW-105-1 / 04-17-01	5/5		0.38	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.13 (J)	.64 (J)	mg/kg	OW-105-1 / 04-17-01	3/5	.24	0.64	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	1800	NC	NA	NA	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-41-7	Beryllium	.36	.4	mg/kg	OW-105-1 / 04-17-01, SS-63 / 04-02-01	4/5	.37	0.4	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/5	.041-.042	0.042	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.04 (JEB)	.071 (J)	mg/kg	SS-63 / 04-02-01	3/5	.24	0.071	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/3	.0022-.0052	0.0052	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.15	.82	mg/kg	SB-63 / S-1-2 / 04-02-01	4/5	.092	0.82	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1100	1890 (J)	mg/kg	SB-62 / S-3-4 / 04-17-01	5/5		1890	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.053 (J)	.074 (J)	mg/kg	OW-105-1 / 04-17-01	3/5	.24	0.074	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9.4 (J)	15	mg/kg	SS-63 / 04-02-01	5/5		15	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.014	.47	mg/kg	OW-105-1 / 04-17-01	5/5		0.47	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4	5.2	mg/kg	OW-105-1 / 04-17-01, SS-62 / 04-17-01	5/5		5.2	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	10.7	32.6	mg/kg	SS-63 / 04-02-01	5/5		32.6	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/2	.35-.45	0.45	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.0078	.055 (J)	mg/kg	OW-105-1 / 04-17-01, SS-62 / 04-17-01	4/5	.006	0.055	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/5	.041-.042	0.042	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/5	.24-.6	0.6	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/5	.6-1.2	1.2	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.028	.82	mg/kg	OW-105-1 / 04-17-01	5/5		0.82	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.015	.015	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.015	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0083	.26	mg/kg	SS-62 / 04-17-01	5/5		0.26	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	11900	15700	mg/kg	SS-62 / 04-17-01	5/5		15700	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	10.3 (J)	205	mg/kg	SS-63 / 04-02-01	5/5		205	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	2040 (J)	2600	mg/kg	SB-63 / S-1-2 / 04-02-01	5/5		2600	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	162 (J)	210	mg/kg	SB-63 / S-1-2 / 04-02-01	5/5		210	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.037	.2	mg/kg	SS-63 / 04-02-01	4/5	.029	0.2	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/3	.0097-.022	0.022	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.014	.014	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.014	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0077	.022	mg/kg	SS-63 / 04-02-01	2/5	.006-.23	0.022	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	6.4	11.3	mg/kg	SS-63 / 04-02-01	5/5		11.3	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/5	.041-.042	0.042	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.014	.44	mg/kg	SS-63 / 04-02-01	5/5		0.44	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	184	312	mg/kg	SB-62 / S-3-4 / 04-17-01	5/5		312	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.023	.67	mg/kg	OW-105-1 / 04-17-01	5/5		0.67	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.25	.46 (J)	mg/kg	SS-63 / 04-02-01	4/5	.12	0.46	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/5	.39-.53	0.53	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	53.4	87.7	mg/kg	OW-105-1 / 04-17-01	5/5		87.7	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.061 (J)	.093	mg/kg	SS-63 / 04-02-01	4/5	.055	0.093	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0027	.0027	mg/kg	OW-105-1 / 04-17-01	1/3	.0021-.0022	0.0027	NA	39	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	29.2	36.7	mg/kg	SS-63 / 04-02-01	5/5		36.7	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	22.6	192	mg/kg	SS-63 / 04-02-01	5/5		192	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Gleason Court Lot 122	83-32-9	Acenaphthene	.011	.011	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.011	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
(Construction Worker)	208-96-8	Acenaphthylene	.013	.058 (J)	mg/kg	OW-105-1 / 04-17-01	4/5	.006	0.058	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/3	.0056-.0085	0.0085	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	7560 (J)	12200	mg/kg	SS-63 / 04-02-01	5/5		12200	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.016	.072 (J)	mg/kg	OW-105-1 / 04-17-01	4/5	.006	0.072	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/5	.33-.89	0.89	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	1.1	14.3	mg/kg	SS-63 / 04-02-01	5/5		14.3	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	17.6	67.3	mg/kg	SS-63 / 04-02-01	5/5		67.3	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.01	.3	mg/kg	OW-105-1 / 04-17-01	5/5		0.3	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.011	.4	mg/kg	OW-105-1 / 04-17-01	5/5		0.4	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.019	.57	mg/kg	OW-105-1 / 04-17-01	5/5		0.57	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.0086	.23 (J)	mg/kg	SS-62 / 04-17-01	5/5		0.23	NA	2900	NC	100	MCP Method 2 S-1	No	BSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	207-08-9	Benzo(k)fluoranthene	.0065	.38	mg/kg	OW-105-1 / 04-17-01	5/5		0.38	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.13 (J)	.64 (J)	mg/kg	OW-105-1 / 04-17-01	3/5	.24	0.64	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.36	.4	mg/kg	OW-105-1 / 04-17-01, SS-63 / 04-02-01	4/5	.37	0.4	NA	190	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/5	.041-.042	0.042	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.04 (JEB)	.071 (J)	mg/kg	SS-63 / 04-02-01	3/5	.24	0.071	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/3	.0022-.0052	0.0052	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.15	.82	mg/kg	SB-63 / S-1-2 / 04-02-01	4/5	.092	0.82	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1100	1890 (J)	mg/kg	SB-62 / S-3-4 / 04-17-01	5/5		1890	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.053 (J)	.074 (J)	mg/kg	OW-105-1 / 04-17-01	3/5	.24	0.074	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9.4 (J)	15	mg/kg	SS-63 / 04-02-01	5/5		15	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.014	.47	mg/kg	OW-105-1 / 04-17-01	5/5		0.47	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4	5.2	mg/kg	OW-105-1 / 04-17-01, SS-62 / 04-17-01	5/5		5.2	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	10.7	32.6	mg/kg	SS-63 / 04-02-01	5/5		32.6	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/2	.35-.45	0.45	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.0078	.055 (J)	mg/kg	OW-105-1 / 04-17-01, SS-62 / 04-17-01	4/5	.006	0.055	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	160	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/5	.041-.042	0.042	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/5	.24-.6	0.6	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/5	.6-1.2	1.2	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.028	.82	mg/kg	OW-105-1 / 04-17-01	5/5		0.82	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.015	.015	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.015	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0083	.26	mg/kg	SS-62 / 04-17-01	5/5		0.26	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	11900	15700	mg/kg	SS-62 / 04-17-01	5/5		15700	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	10.3 (J)	205	mg/kg	SS-63 / 04-02-01	5/5		205	NA	800	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	2040 (J)	2600	mg/kg	SB-63 / S-1-2 / 04-02-01	5/5		2600	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	162 (J)	210	mg/kg	SB-63 / S-1-2 / 04-02-01	5/5		210	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.037	.2	mg/kg	SS-63 / 04-02-01	4/5	.029	0.2	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/3	.0097-.022	0.022	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.014	.014	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.014	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0077	.022	mg/kg	SS-63 / 04-02-01	2/5	.006-.23	0.022	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	6.4	11.3	mg/kg	SS-63 / 04-02-01	5/5		11.3	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/5	.041-.042	0.042	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.014	.44	mg/kg	SS-63 / 04-02-01	5/5		0.44	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	184	312	mg/kg	SB-62 / S-3-4 / 04-17-01	5/5		312	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.023	.67	mg/kg	OW-105-1 / 04-17-01	5/5		0.67	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.25	.46 (J)	mg/kg	SS-63 / 04-02-01	4/5	.12	0.46	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/5	.39-.53	0.53	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	53.4	87.7	mg/kg	OW-105-1 / 04-17-01	5/5		87.7	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.061 (J)	.093	mg/kg	SS-63 / 04-02-01	4/5	.055	0.093	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	220	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0027	.0027	mg/kg	OW-105-1 / 04-17-01	1/3	.0021-.0022	0.0027	NA	130	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	29.2	36.7	mg/kg	SS-63 / 04-02-01	5/5		36.7	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	22.6	192	mg/kg	SS-63 / 04-02-01	5/5		192	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
	83-32-9	Acenaphthene	.013	.071 (J)	mg/kg	SS-60 / 04-25-01	2/4	.0054-.0055	0.071	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
Gleason Court Lot 124 (Resident)	208-96-8	Acenaphthylene	.032	.093 (J)	mg/kg	SS-60 / 04-25-01	2/4	.0054-.0055	0.093	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	5850 (J)	11500 (J)	mg/kg	SS-61 / 04-25-01	4/4		11500	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.007	.2 (J)	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.2	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/4	.72-.93	0.93	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	1.6	3.6	mg/kg	SS-60 / 04-25-01	4/4		3.6	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	25.3	72.3	mg/kg	SS-61 / 04-25-01	4/4		72.3	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.025	.6	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.6	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	50-32-8	Benzo(a)pyrene	.024	.64	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.64	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.027	.87	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.87	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	191-24-2	Benzo(g,h,i)perylene	.017	.23	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.23	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.02	.4	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.4	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.095 (J)	.29 (J)	mg/kg	SS-61 / 04-25-01	3/4	.22	0.29	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.3	.39	mg/kg	SS-61 / 04-25-01	3/4	.31	0.39	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/4	.038-.042	0.042	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.12 (JEB)	.46 (EB)	mg/kg	SS-60 / 04-25-01	2/4	.22	0.46	NA	35	C	200	MCP Method 2 S-1	No	BSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.083	.43	mg/kg	SS-61 / 04-25-01	4/4		0.43	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	968	2240	mg/kg	SS-61 / 04-25-01	4/4		2240	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.14 (J)	.14 (J)	mg/kg	SS-60 / 04-25-01	1/4	.22-.24	0.14	NA	24	C	NA	NA	No	BSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9.3 (J)	14.5	mg/kg	SS-60 / 04-25-01, SS-61 / 04-25-01	4/4		14.5	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.033	.74	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.74	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4 (J)	4.8 (J)	mg/kg	SB-60 / S-4-5 / 04-25-01	4/4		4.8	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	9.6 (J)	31.9 (J)	mg/kg	SS-61 / 04-25-01	4/4		31.9	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/4	.41-.54	0.54	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.017	.075 (J)	mg/kg	SS-60 / 04-25-01	2/4	.0054-.0055	0.075	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	15	NC	NA	NA	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/4	.038-.042	0.042	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/4	.22-.59	0.59	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/4	.54-1.2	1.2	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	240	NC	NA	NA	No	ND, DLBSL
	206-44-0	Fluoranthene	.0096	1.5	mg/kg	SS-60 / 04-25-01	4/4		1.5	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.017	.077 (J)	mg/kg	SS-60 / 04-25-01	2/4	.0054-.0055	0.077	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	.017	.29	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.29	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	10600	12800	mg/kg	SS-61 / 04-25-01	4/4		12800	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	6.2 (J)	232	mg/kg	SS-60 / 04-25-01	4/4		232	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1930	3330 (J)	mg/kg	SB-60 / S-4-5 / 04-25-01	4/4		3330	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	162	213	mg/kg	SB-60 / S-4-5 / 04-25-01	4/4		213	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.097	.23	mg/kg	SS-60 / 04-25-01	2/4	.026-.029	0.23	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	91-57-6	Methylnaphthalene (2-)	.0094	.0094	mg/kg	SS-61 / 04-25-01	1/4	.0054-.22	0.0094	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	31	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	.021	.071 (J)	mg/kg	SS-60 / 04-25-01	2/4	.0054-.0055	0.071	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	7.2	15.3	mg/kg	SS-61 / 04-25-01	4/4		15.3	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/4	.038-.042	0.042	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.0082	1	mg/kg	SS-60 / 04-25-01	4/4		1	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	206	436	mg/kg	SB-60 / S-4-5 / 04-25-01	4/4		436	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.0078	1.3	mg/kg	SS-60 / 04-25-01	4/4		1.3	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.12 (J)	.29	mg/kg	SS-60 / 04-25-01	3/4	.1	0.29	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/4	.43-.51	0.51	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	43.2	127	mg/kg	SS-60 / 04-25-01	4/4		127	NA	NA		NA	NA	No	NUT
	7440-28-0	Thallium	.07 (J)	.072 (J)	mg/kg	SS-61 / 04-25-01	2/4	.042-.047	0.072	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	20.4	32	mg/kg	SS-61 / 04-25-01	4/4		32	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	7440-66-6	Zinc	28	116	mg/kg	SS-61 / 04-25-01	4/4		116	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Gleason Court Lot 124	83-32-9	Acenaphthene	.013	.071 (J)	mg/kg	SS-60 / 04-25-01	2/4	.0054-.0055	0.071	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
(Construction Worker)	208-96-8	Acenaphthylene	.032	.093 (J)	mg/kg	SS-60 / 04-25-01	2/4	.0054-.0055	0.093	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	5850 (J)	11500 (J)	mg/kg	SS-61 / 04-25-01	4/4		11500	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.007	.2 (J)	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.2	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/4	.72-.93	0.93	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	1.6	3.6	mg/kg	SS-60 / 04-25-01	4/4		3.6	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	25.3	72.3	mg/kg	SS-61 / 04-25-01	4/4		72.3	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.025	.6	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.6	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	50-32-8	Benzo(a)pyrene	.024	.64	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.64	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.027	.87	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.87	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.017	.23	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.23	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.02	.4	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.4	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.095 (J)	.29 (J)	mg/kg	SS-61 / 04-25-01	3/4	.22	0.29	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.3	.39	mg/kg	SS-61 / 04-25-01	3/4	.31	0.39	NA	190	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/4	.038-.042	0.042	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.12 (JEB)	.46 (EB)	mg/kg	SS-60 / 04-25-01	2/4	.22	0.46	NA	120	C	200	MCP Method 2 S-1	No	BSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.083	.43	mg/kg	SS-61 / 04-25-01	4/4		0.43	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	968	2240	mg/kg	SS-61 / 04-25-01	4/4		2240	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.14 (J)	.14 (J)	mg/kg	SS-60 / 04-25-01	1/4	.22-.24	0.14	NA	86	C	NA	NA	No	BSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9.3 (J)	14.5	mg/kg	SS-60 / 04-25-01, SS-61 / 04-25-01	4/4		14.5	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.033	.74	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.74	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4 (J)	4.8 (J)	mg/kg	SB-60 / S-4-5 / 04-25-01	4/4		4.8	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	9.6 (J)	31.9 (J)	mg/kg	SS-61 / 04-25-01	4/4		31.9	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/4	.41-.54	0.54	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.017	.075 (J)	mg/kg	SS-60 / 04-25-01	2/4	.0054-.0055	0.075	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	160	NC	NA	NA	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/4	.038-.042	0.042	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/4	.22-.59	0.59	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/4	.54-1.2	1.2	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	2500	NC	NA	NA	No	ND, DLBSL
	206-44-0	Fluoranthene	.0096	1.5	mg/kg	SS-60 / 04-25-01	4/4		1.5	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.017	.077 (J)	mg/kg	SS-60 / 04-25-01	2/4	.0054-.0055	0.077	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	.017	.29	mg/kg	SS-60 / 04-25-01	3/4	.0054	0.29	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	10600	12800	mg/kg	SS-61 / 04-25-01	4/4		12800	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	6.2 (J)	232	mg/kg	SS-60 / 04-25-01	4/4		232	NA	800	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1930	3330 (J)	mg/kg	SB-60 / S-4-5 / 04-25-01	4/4		3330	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	162	213	mg/kg	SB-60 / S-4-5 / 04-25-01	4/4		213	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.097	.23	mg/kg	SS-60 / 04-25-01	2/4	.026-.029	0.23	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	91-57-6	Methylnaphthalene (2-)	.0094	.0094	mg/kg	SS-61 / 04-25-01	1/4	.0054-.22	0.0094	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	310	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	.021	.071 (J)	mg/kg	SS-60 / 04-25-01	2/4	.0054-.0055	0.071	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	7.2	15.3	mg/kg	SS-61 / 04-25-01	4/4		15.3	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/4	.038-.042	0.042	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.0082	1	mg/kg	SS-60 / 04-25-01	4/4		1	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	206	436	mg/kg	SB-60 / S-4-5 / 04-25-01	4/4		436	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.0078	1.3	mg/kg	SS-60 / 04-25-01	4/4		1.3	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.12 (J)	.29	mg/kg	SS-60 / 04-25-01	3/4	.1	0.29	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/4	.43-.51	0.51	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	43.2	127	mg/kg	SS-60 / 04-25-01	4/4		127	NA	NA		NA	NA	No	NUT
	7440-28-0	Thallium	.07 (J)	.072 (J)	mg/kg	SS-61 / 04-25-01	2/4	.042-.047	0.072	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/4	.22-.24	0.24	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	20.4	32	mg/kg	SS-61 / 04-25-01	4/4		32	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	7440-66-6	Zinc	28	116	mg/kg	SS-61 / 04-25-01	4/4		116	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
	83-32-9	Acenaphthene	.045	.1 (J)	mg/kg	SS-59 / 04-26-01	2/4	.0051-.0056	0.1	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
Gleason Court Lot 125 (Resident)	208-96-8	Acenaphthylene	.042	.59	mg/kg	SS-59 / 04-26-01	2/4	.0051-.0056	0.59	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0044	0.0044	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	5650 (J)	7510	mg/kg	SS-58 / 04-26-01	4/4		7510	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.12	.5	mg/kg	SS-59 / 04-26-01	2/4	.0051-.0056	0.5	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/4	.75-.91	0.91	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	1.7	9.2	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		9.2	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	21.2	618	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		618	NA	540	NC	1000	MCP Method 2 S-1	Yes	ASL
	56-55-3	Benz(a)anthracene	.0077	1.2	mg/kg	SS-59 / 04-26-01	4/4		1.2	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.0069	1.4	mg/kg	SS-59 / 04-26-01	4/4		1.4	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0074	1.7	mg/kg	SS-59 / 04-26-01	4/4		1.7	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.012	.35 (J)	mg/kg	SS-59 / 04-26-01	3/4	.0051	0.35	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0057	.94	mg/kg	SS-59 / 04-26-01	4/4		0.94	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.15 (J)	.24 (J)	mg/kg	SB-58 / S-2-3 / 04-26-01	2/4	.2-.42	0.24	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.4	.4	mg/kg	SS-58 / 04-26-01	1/4	.28-.31	0.4	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/4	.036-.073	0.073	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.055 (JEB)	.055 (JEB)	mg/kg	SB-58 / S-2-3 / 04-26-01	1/4	.2-.42	0.055	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	NA		NA	NA	No	ND, NSV

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0018	0.0018	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.13	1.2	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		1.2	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1500	45800	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		45800	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.093 (J)	.096 (J)	mg/kg	SS-59 / 04-26-01	2/4	.2-.22	0.096	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0018	0.0018	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	6.9	17.5	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		17.5	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.0082	1.4	mg/kg	SS-59 / 04-26-01	4/4		1.4	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4.3 (J)	7.3	mg/kg	SS-58 / 04-26-01	4/4		7.3	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	12.7	36.5 (J)	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		36.5	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/4	.47-.56	0.56	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.018	.12 (J)	mg/kg	SS-59 / 04-26-01	2/4	.0051-.0056	0.12	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.065 (J)	.065 (J)	mg/kg	SB-58 / S-2-3 / 04-26-01	1/4	.2-.42	0.065	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/4	.036-.073	0.073	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/4	.2-1	1	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/4	.51-2.1	2.1	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.017	2.3	mg/kg	SS-59 / 04-26-01	4/4		2.3	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.056	.12 (J)	mg/kg	SS-59 / 04-26-01	2/4	.0051-.0056	0.12	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.01	.41 (J)	mg/kg	SS-59 / 04-26-01	3/4	.0051	0.41	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	9840	13700	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		13700	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	16.4	1140	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		1140	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	2480 (J)	7650 (J)	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		7650	NA	NA		NA	NA	No	NUT

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FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7439-96-5	Manganese	203	369	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		369	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.19	.19	mg/kg	SB-58 / S-2-3 / 04-26-01	1/4	.025-.028	0.19	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.017	0.017	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.047	.047	mg/kg	SB-58 / S-2-3 / 04-26-01	1/4	.0051-.42	0.047	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0018	0.0018	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.061	.061	mg/kg	SB-58 / S-2-3 / 04-26-01	1/4	.0051-.42	0.061	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	7.1	11.7	mg/kg	SS-58 / 04-26-01	4/4		11.7	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/4	.036-.073	0.073	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.012	1.3	mg/kg	SS-59 / 04-26-01	4/4		1.3	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	343	536	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		536	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.017	2.6	mg/kg	SS-59 / 04-26-01	4/4		2.6	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.13 (J)	.38	mg/kg	SB-58 / S-2-3 / 04-26-01	3/4	.099	0.38	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/4	.42-.48	0.48	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	70.2	151	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		151	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.048 (J)	.059 (J)	mg/kg	SB-58 / S-2-3 / 04-26-01	2/4	.043-.046	0.059	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.0009 (J)	.0009 (J)	mg/kg	SS-59 / 04-26-01	1/1		0.0009	NA	66	NC	500	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0011 (J)	.0011 (J)	mg/kg	SS-59 / 04-26-01	1/1		0.0011	NA	39	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	16.5	26.9	mg/kg	SS-58 / 04-26-01	4/4		26.9	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0018	0.0018	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	45.6	1190	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		1190	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Gleason Court Lot 125 (Construction Worker)	83-32-9	Acenaphthene	.045	.1 (J)	mg/kg	SS-59 / 04-26-01	2/4	.0051-.0056	0.1	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.042	.59	mg/kg	SS-59 / 04-26-01	2/4	.0051-.0056	0.59	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0044	0.0044	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	5650 (J)	7510	mg/kg	SS-58 / 04-26-01	4/4		7510	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.12	.5	mg/kg	SS-59 / 04-26-01	2/4	.0051-.0056	0.5	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/4	.75-.91	0.91	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	1.7	9.2	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		9.2	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	21.2	618	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		618	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.0077	1.2	mg/kg	SS-59 / 04-26-01	4/4		1.2	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.0069	1.4	mg/kg	SS-59 / 04-26-01	4/4		1.4	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0074	1.7	mg/kg	SS-59 / 04-26-01	4/4		1.7	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.012	.35 (J)	mg/kg	SS-59 / 04-26-01	3/4	.0051	0.35	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0057	.94	mg/kg	SS-59 / 04-26-01	4/4		0.94	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.15 (J)	.24 (J)	mg/kg	SB-58 / S-2-3 / 04-26-01	2/4	.2-.42	0.24	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.4	.4	mg/kg	SS-58 / 04-26-01	1/4	.28-.31	0.4	NA	190	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/4	.036-.073	0.073	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.055 (JEB)	.055 (JEB)	mg/kg	SB-58 / S-2-3 / 04-26-01	1/4	.2-.42	0.055	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0018	0.0018	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.13	1.2	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		1.2	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1500	45800	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		45800	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.093 (J)	.096 (J)	mg/kg	SS-59 / 04-26-01	2/4	.2-.22	0.096	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0018	0.0018	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	6.9	17.5	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		17.5	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.0082	1.4	mg/kg	SS-59 / 04-26-01	4/4		1.4	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	4.3 (J)	7.3	mg/kg	SS-58 / 04-26-01	4/4		7.3	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	12.7	36.5 (J)	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		36.5	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/4	.47-.56	0.56	NA	3.5	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.018	.12 (J)	mg/kg	SS-59 / 04-26-01	2/4	.0051-.0056	0.12	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	.065 (J)	.065 (J)	mg/kg	SB-58 / S-2-3 / 04-26-01	1/4	.2-.42	0.065	NA	160	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0018	0.0018	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/4	.036-.073	0.073	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/4	.2-1	1	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/4	.51-2.1	2.1	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.017	2.3	mg/kg	SS-59 / 04-26-01	4/4		2.3	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.056	.12 (J)	mg/kg	SS-59 / 04-26-01	2/4	.0051-.0056	0.12	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.01	.41 (J)	mg/kg	SS-59 / 04-26-01	3/4	.0051	0.41	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	9840	13700	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		13700	NA	NA		NA	NA	No	NUT

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	78-59-1	Isophorone	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	16.4	1140	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		1140	NA	800	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	2480 (J)	7650 (J)	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		7650	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	203	369	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		369	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.19	.19	mg/kg	SB-58 / S-2-3 / 04-26-01	1/4	.025-.028	0.19	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.017	0.017	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.047	.047	mg/kg	SB-58 / S-2-3 / 04-26-01	1/4	.0051-.42	0.047	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0018	0.0018	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.061	.061	mg/kg	SB-58 / S-2-3 / 04-26-01	1/4	.0051-.42	0.061	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	7.1	11.7	mg/kg	SS-58 / 04-26-01	4/4		11.7	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/4	.036-.073	0.073	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.012	1.3	mg/kg	SS-59 / 04-26-01	4/4		1.3	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	343	536	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		536	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.017	2.6	mg/kg	SS-59 / 04-26-01	4/4		2.6	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.13 (J)	.38	mg/kg	SB-58 / S-2-3 / 04-26-01	3/4	.099	0.38	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/4	.42-.48	0.48	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	70.2	151	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		151	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.048 (J)	.059 (J)	mg/kg	SB-58 / S-2-3 / 04-26-01	2/4	.043-.046	0.059	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.0009 (J)	.0009 (J)	mg/kg	SS-59 / 04-26-01	1/1		0.0009	NA	220	NC	500	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0011 (J)	.0011 (J)	mg/kg	SS-59 / 04-26-01	1/1		0.0011	NA	130	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/4	.2-.42	0.42	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	16.5	26.9	mg/kg	SS-58 / 04-26-01	4/4		26.9	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0018	0.0018	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0018	0.0018	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0018	0.0018	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	45.6	1190	mg/kg	SB-58 / S-2-3 / 04-26-01	4/4		1190	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
Lot 208 (Resident)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	370	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	208-96-8	Acenaphthylene	.0074	.015	mg/kg	SS-34 / 05-02-01	2/3	.0066	0.015	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0052	0.0052	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	4900 (J)	8850 (J)	mg/kg	SS-35 / 05-02-01	3/3		8850	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.013	.013	mg/kg	SS-34 / 05-02-01	1/3	.0063-.0066	0.013	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/3	1	1	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	1.1	3.4	mg/kg	SS-34 / 05-02-01	3/3		3.4	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	24.3	67.9	mg/kg	SS-35 / 05-02-01	3/3		67.9	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.008	.058	mg/kg	SS-34 / 05-02-01	3/3		0.058	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.009	.064	mg/kg	SS-34 / 05-02-01	3/3		0.064	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.011	.088	mg/kg	SS-34 / 05-02-01	3/3		0.088	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.0071	.044	mg/kg	SS-34 / 05-02-01	3/3		0.044	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0095	.064	mg/kg	SS-34 / 05-02-01	3/3		0.064	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.21 (J)	.82 (J)	mg/kg	SS-35 / 05-02-01	3/3		0.82	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	1800	NC	NA	NA	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-41-7	Beryllium	ND	ND	mg/kg		0/3	.39-.43	0.43	NA	15	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/3	.042-.046	0.046	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.044 (J)	.044 (J)	mg/kg	SS-34 / 05-02-01	1/3	.25-.26	0.044	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.18	.19	mg/kg	SS-35 / 05-02-01	2/3	.11	0.19	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	834 (B)	2370	mg/kg	SB-35 / S-1-2 / 05-02-01	3/3		2370	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	24	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9.5	11.3	mg/kg	SS-35 / 05-02-01	3/3		11.3	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.012	.09	mg/kg	SS-34 / 05-02-01	3/3		0.09	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2.3	5.5	mg/kg	SS-35 / 05-02-01	3/3		5.5	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	7.3	13	mg/kg	SS-35 / 05-02-01	3/3		13	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.34 (J)	3.2 (J)	mg/kg	SS-35 / 05-02-01	2/3	.15	3.2	NA	1.1	NC	100	MCP Method 2 S-1	Yes	ASL
	53-70-3	Dibenz(a,h)anthracene	.0063	.0084	mg/kg	SS-34 / 05-02-01	2/3	.0066	0.0084	NA	0.06	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/3	.042-.046	0.046	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/3	.6-.66	0.66	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/3	1.2-1.3	1.3	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.018	.13	mg/kg	SS-34 / 05-02-01	3/3		0.13	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	270	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/3	.6-.66	0.66	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0075	.052	mg/kg	SS-34 / 05-02-01	3/3		0.052	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	6640 (J)	9650 (J)	mg/kg	SS-35 / 05-02-01	3/3		9650	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	26.5	71.9	mg/kg	SS-34 / 05-02-01	3/3		71.9	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1170	1340	mg/kg	SS-35 / 05-02-01	3/3		1340	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	154	286	mg/kg	SS-35 / 05-02-01	3/3		286	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.096 (J)	.17 (J)	mg/kg	SS-35 / 05-02-01	3/3		0.17	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	5.6	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0021	0.0021	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.014	.058	mg/kg	SS-35 / 05-02-01	2/3	.0066	0.058	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	5.2	7.5	mg/kg	SS-35 / 05-02-01	2/3	5.1	7.5	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/3	.042-.046	0.046	NA	0.07	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.012	.085	mg/kg	SS-34 / 05-02-01	3/3		0.085	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	123	163	mg/kg	SS-34 / 05-02-01	3/3		163	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.017	.13	mg/kg	SS-34 / 05-02-01	3/3		0.13	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.3	.51	mg/kg	SB-35 / S-1-2 / 05-02-01	3/3		0.51	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/3	.61	0.61	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	54.2 (B)	54.2 (B)	mg/kg	SS-34 / 05-02-01	1/3	50.9-51	54.2	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.086 (J)	.086 (J)	mg/kg	SS-35 / 05-02-01	1/3	.059-.064	0.086	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0045 (J)	.0045 (J)	mg/kg	SB-35 / S-1-2 / 05-02-01	1/1		0.0045	NA	39	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	16	21.5	mg/kg	SS-35 / 05-02-01	3/3		21.5	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0021	0.0021	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	25.9	46.8	mg/kg	SS-35 / 05-02-01	3/3		46.8	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
	83-32-9	Acenaphthene	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	2900	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
Lot 208 (Construction Worker)	208-96-8	Acenaphthylene	.0074	.015	mg/kg	SS-34 / 05-02-01	2/3	.0066	0.015	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0052	0.0052	NA	5400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	4900 (J)	8850 (J)	mg/kg	SS-35 / 05-02-01	3/3		8850	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.013	.013	mg/kg	SS-34 / 05-02-01	1/3	.0063-.0066	0.013	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/3	1	1	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	1.1	3.4	mg/kg	SS-34 / 05-02-01	3/3		3.4	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	24.3	67.9	mg/kg	SS-35 / 05-02-01	3/3		67.9	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.008	.058	mg/kg	SS-34 / 05-02-01	3/3		0.058	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.009	.064	mg/kg	SS-34 / 05-02-01	3/3		0.064	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	205-99-2	Benzo(b)fluoranthene	.011	.088	mg/kg	SS-34 / 05-02-01	3/3		0.088	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.0071	.044	mg/kg	SS-34 / 05-02-01	3/3		0.044	NA	2900	NC	100	MCP Method 2 S-1	No	BSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	207-08-9	Benzo(k)fluoranthene	.0095	.064	mg/kg	SS-34 / 05-02-01	3/3		0.064	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.21 (J)	.82 (J)	mg/kg	SS-35 / 05-02-01	3/3		0.82	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/3	.39-.43	0.43	NA	190	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/3	.042-.046	0.046	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.044 (J)	.044 (J)	mg/kg	SS-34 / 05-02-01	1/3	.25-.26	0.044	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.18	.19	mg/kg	SS-35 / 05-02-01	2/3	.11	0.19	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	834 (B)	2370	mg/kg	SB-35 / S-1-2 / 05-02-01	3/3		2370	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	86	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	120	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	9.5	11.3	mg/kg	SS-35 / 05-02-01	3/3		11.3	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.012	.09	mg/kg	SS-34 / 05-02-01	3/3		0.09	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2.3	5.5	mg/kg	SS-35 / 05-02-01	3/3		5.5	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	7.3	13	mg/kg	SS-35 / 05-02-01	3/3		13	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.34 (J)	3.2 (J)	mg/kg	SS-35 / 05-02-01	2/3	.15	3.2	NA	3.5	NC	100	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.0063	.0084	mg/kg	SS-34 / 05-02-01	2/3	.0066	0.0084	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	160	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/3	.042-.046	0.046	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/3	.6-.66	0.66	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/3	1.2-1.3	1.3	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.018	.13	mg/kg	SS-34 / 05-02-01	3/3		0.13	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	2600	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/3	.6-.66	0.66	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0075	.052	mg/kg	SS-34 / 05-02-01	3/3		0.052	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	6640 (J)	9650 (J)	mg/kg	SS-35 / 05-02-01	3/3		9650	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	26.5	71.9	mg/kg	SS-34 / 05-02-01	3/3		71.9	NA	800	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1170	1340	mg/kg	SS-35 / 05-02-01	3/3		1340	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	154	286	mg/kg	SS-35 / 05-02-01	3/3		286	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.096 (J)	.17 (J)	mg/kg	SS-35 / 05-02-01	3/3		0.17	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	19	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	310	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/1	.0021	0.0021	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.014	.058	mg/kg	SS-35 / 05-02-01	2/3	.0066	0.058	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	5.2	7.5	mg/kg	SS-35 / 05-02-01	2/3	5.1	7.5	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/3	.042-.046	0.046	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.012	.085	mg/kg	SS-34 / 05-02-01	3/3		0.085	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	123	163	mg/kg	SS-34 / 05-02-01	3/3		163	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.017	.13	mg/kg	SS-34 / 05-02-01	3/3		0.13	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.3	.51	mg/kg	SB-35 / S-1-2 / 05-02-01	3/3		0.51	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/3	.61	0.61	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	54.2 (B)	54.2 (B)	mg/kg	SS-34 / 05-02-01	1/3	50.9-51	54.2	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.086 (J)	.086 (J)	mg/kg	SS-35 / 05-02-01	1/3	.059-.064	0.086	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	220	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0045 (J)	.0045 (J)	mg/kg	SB-35 / S-1-2 / 05-02-01	1/1		0.0045	NA	130	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	16	21.5	mg/kg	SS-35 / 05-02-01	3/3		21.5	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/1	.0021	0.0021	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	25.9	46.8	mg/kg	SS-35 / 05-02-01	3/3		46.8	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
Old Railroad and Former Lower Mill Pond Area (Resident)	83-32-9	Acenaphthene	.017	4	mg/kg	SS-05 / 03-19-01	8/14	.0054-.0057	4	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.0098	12	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	12	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	.097 (J)	.097 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0051-.0079	0.097	NA	1400	NC	500	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	3130	10400	mg/kg	SS-02 / 04-26-01	14/14		10400	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0062	14	mg/kg	SS-05 / 03-19-01	10/14	.0055-.0057	14	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	1.1 (J)	4.4 (J)	mg/kg	SS-04 / 03-21-01	4/14	.27-.91	4.4	NA	3.1	NC	10	MCP Method 2 S-1	Yes	ASL
	7440-38-2	Arsenic	.83	106	mg/kg	SS-04 / 03-21-01	14/14		106	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	7.7	73.1	mg/kg	SS-02 / 04-26-01	14/14		73.1	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.007	22	mg/kg	SS-05 / 03-19-01	14/14		22	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	50-32-8	Benzo(a)pyrene	.0067	18	mg/kg	SS-05 / 03-19-01	14/14		18	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0076	30	mg/kg	SS-05 / 03-19-01	14/14		30	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.0062	11	mg/kg	SS-05 / 03-19-01	13/14	.0055	11	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0067	14	mg/kg	SS-05 / 03-19-01	13/14	.0055	14	NA	6.2	C	7	MCP Method 2 S-1	Yes	ASL
	65-85-0	Benzoic acid	.038 (J)	2.7 (J)	mg/kg	SS-04 / 03-21-01	8/14	.21-.24	2.7	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	.048 (J)	.048 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.048	NA	1800	NC	NA	NA	No	BSL
	7440-41-7	Beryllium	.29	.62	mg/kg	SS-02 / 04-26-01	5/14	.23-.38	0.62	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/14	.038-.13	0.13	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.039 (J)	.11 (J)	mg/kg	SS-04 / 03-21-01	4/14	.21-.28	0.11	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.062 (J)	2.4	mg/kg	SS-02 / 04-26-01	8/14	.057-.094	2.4	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	466 (B)	18200	mg/kg	SS-05 / 03-19-01	14/14		18200	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.066 (J)	2	mg/kg	SS-05 / 03-19-01	5/14	.21-.23	2	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0013 (J)	.0013 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0019-.0021	0.0013	NA	36	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	4.1	45	mg/kg	SS-02 / 04-26-01	14/14		45	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	.007	24	mg/kg	SS-05 / 03-19-01	14/14		24	NA	62	C	7	MCP Method 2 S-1	Yes	ASL
	7440-48-4	Cobalt [6]	2.1	10.1	mg/kg	SS-02 / 04-26-01	14/14		10.1	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	8	56.5	mg/kg	SS-02 / 04-26-01	14/14		56.5	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.14	.52	mg/kg	SB-04 / S-4-5 / 03-21-01	2/14	.14-.84	0.52	NA	1.1	NC	100	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.011	3.4	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	3.4	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.15 (J)	2.8	mg/kg	SS-05 / 03-19-01	5/14	.21-.23	2.8	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	.054 (J)	.054 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.054	NA	110	NC	100	MCP Method 2 S-1	No	BSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	.069 (J)	.069 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.069	NA	3.4	C	40	MCP Method 2 S-1	No	BSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	.083 (J)	.37	mg/kg	SS-05 / 03-19-01	2/14	.21-.26	0.37	NA	120	NC	400	MCP Method 2 S-1	No	BSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/14	.038-.082	0.082	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/14	.26-.69	0.69	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/14	.53-1.1	1.1	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	206-44-0	Fluoranthene	.015	56	mg/kg	SS-05 / 03-19-01	14/14		56	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.014	4.3	mg/kg	SS-05 / 03-19-01	8/14	.0054-.0057	4.3	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/14	.037-.28	0.28	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/14	.21-.57	0.57	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0056	13	mg/kg	SS-05 / 03-19-01	13/14	.0055	13	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	5080 (J)	23300 (J)	mg/kg	SS-05 / 03-19-01	14/14		23300	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	5	130	mg/kg	SS-02 / 04-26-01	14/14		130	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1040	3920	mg/kg	SB-05 / S-2-3 / 03-19-01	14/14		3920	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	61.6	379 (J)	mg/kg	SS-06 / 03-15-01	14/14		379	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.034	1 (J)	mg/kg	SS-02 / 04-26-01	7/14	.027-.033	1	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	.042 (J)	.042 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0055-.016	0.042	NA	9.1	C	100	MCP Method 2 S-1	No	BSL
	91-57-6	Methylnaphthalene (2-)	.0062	2.3	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	2.3	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	.16 (J)	.16 (J)	mg/kg	SS-05 / 03-19-01	1/14	.21-.27	0.16	NA	310	NC	NA	NA	No	BSL
	106-44-5	Methylphenol (4-)	.12 (J)	.5	mg/kg	SS-05 / 03-19-01	3/14	.21-.24	0.5	NA	31	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0093	2.2	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	2.2	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	4.1	19.1	mg/kg	SS-02 / 04-26-01	12/14	4.3-4.5	19.1	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/14	.038-.1	0.1	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	.068 (J)	.068 (J)	mg/kg	SS-04 / 03-21-01	1/14	.21-.28	0.068	NA	3	C	7	MCP Method 2 S-1	No	BSL
	85-01-8	Phenanthrene	.01	22	mg/kg	SS-05 / 03-19-01	14/14		22	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	.067 (J)	.067 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.067	NA	1800	NC	500	MCP Method 2 S-1	No	BSL
	7440-09-7	Potassium [7]	113	829	mg/kg	SS-06 / 03-15-01	14/14		829	NA		NA	NA	NA	No	NUT
	129-00-0	Pyrene	.014	45	mg/kg	SS-05 / 03-19-01	14/14		45	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.089 (J)	1.7 (J)	mg/kg	SS-02 / 04-26-01	12/14	.078-.1	1.7	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/14	.33-.72	0.72	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	28.3 (JB)	317	mg/kg	SS-02 / 04-26-01	11/14	43-45.6	317	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.053 (JB)	.24 (B)	mg/kg	SS-04 / 03-21-01	5/14	.033-.057	0.24	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.003 (J)	.003 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0019-.0021	0.003	NA	66	NC	500	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	7.1	44.3 (J)	mg/kg	SS-02 / 04-26-01	14/14		44.3	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	17.4	252 (J)	mg/kg	SS-02 / 04-26-01	14/14		252	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Old Railroad and Former Lower Mill Pond Area (Construction Worker)	83-32-9	Acenaphthene	.017	4	mg/kg	SS-05 / 03-19-01	8/14	.0054-.0057	4	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.0098	12	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	12	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	.097 (J)	.097 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0051-.0079	0.097	NA	5400	NC	500	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	3130	10400	mg/kg	SS-02 / 04-26-01	14/14		10400	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0062	14	mg/kg	SS-05 / 03-19-01	10/14	.0055-.0057	14	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	1.1 (J)	4.4 (J)	mg/kg	SS-04 / 03-21-01	4/14	.27-.91	4.4	NA	41	NC	10	MCP Method 2 S-1	No	BSL
	7440-38-2	Arsenic	.83	106	mg/kg	SS-04 / 03-21-01	14/14		106	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-39-3	Barium	7.7	73.1	mg/kg	SS-02 / 04-26-01	14/14		73.1	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.007	22	mg/kg	SS-05 / 03-19-01	14/14		22	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.0067	18	mg/kg	SS-05 / 03-19-01	14/14		18	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0076	30	mg/kg	SS-05 / 03-19-01	14/14		30	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.0062	11	mg/kg	SS-05 / 03-19-01	13/14	.0055	11	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0067	14	mg/kg	SS-05 / 03-19-01	13/14	.0055	14	NA	21	C	7	MCP Method 2 S-1	Yes	ASL
	65-85-0	Benzoic acid	.038 (J)	2.7 (J)	mg/kg	SS-04 / 03-21-01	8/14	.21-.24	2.7	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	.048 (J)	.048 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.048	NA	18000	NC	NA	NA	No	BSL
	7440-41-7	Beryllium	.29	.62	mg/kg	SS-02 / 04-26-01	5/14	.23-.38	0.62	NA	190	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/14	.038-.13	0.13	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.039 (J)	.11 (J)	mg/kg	SS-04 / 03-21-01	4/14	.21-.28	0.11	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	11000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.062 (J)	2.4	mg/kg	SS-02 / 04-26-01	8/14	.057-.094	2.4	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	466 (B)	18200	mg/kg	SS-05 / 03-19-01	14/14		18200	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.066 (J)	2	mg/kg	SS-05 / 03-19-01	5/14	.21-.23	2	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0013 (J)	.0013 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0019-.0021	0.0013	NA	120	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.47	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	4.1	45	mg/kg	SS-02 / 04-26-01	14/14		45	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.007	24	mg/kg	SS-05 / 03-19-01	14/14		24	NA	210	C	7	MCP Method 2 S-1	Yes	ASL
	7440-48-4	Cobalt [6]	2.1	10.1	mg/kg	SS-02 / 04-26-01	14/14		10.1	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	8	56.5	mg/kg	SS-02 / 04-26-01	14/14		56.5	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.14	.52	mg/kg	SB-04 / S-4-5 / 03-21-01	2/14	.14-.84	0.52	NA	3.5	NC	100	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.011	3.4	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	3.4	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.15 (J)	2.8	mg/kg	SS-05 / 03-19-01	5/14	.21-.23	2.8	NA	160	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	.054 (J)	.054 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.054	NA	410	NC	100	MCP Method 2 S-1	No	BSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	.069 (J)	.069 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.069	NA	7.9	C	40	MCP Method 2 S-1	No	BSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	.083 (J)	.37	mg/kg	SS-05 / 03-19-01	2/14	.21-.26	0.37	NA	1200	NC	400	MCP Method 2 S-1	No	BSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/14	.038-.082	0.082	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/14	.26-.69	0.69	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/14	.53-1.1	1.1	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	2500	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.015	56	mg/kg	SS-05 / 03-19-01	14/14		56	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.014	4.3	mg/kg	SS-05 / 03-19-01	8/14	.0054-.0057	4.3	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/14	.037-.28	0.28	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/14	.21-.57	0.57	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0056	13	mg/kg	SS-05 / 03-19-01	13/14	.0055	13	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	5080 (J)	23300 (J)	mg/kg	SS-05 / 03-19-01	14/14		23300	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	5	130	mg/kg	SS-02 / 04-26-01	14/14		130	NA	800	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1040	3920	mg/kg	SB-05 / S-2-3 / 03-19-01	14/14		3920	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	61.6	379 (J)	mg/kg	SS-06 / 03-15-01	14/14		379	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.034	1 (J)	mg/kg	SS-02 / 04-26-01	7/14	.027-.033	1	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	.042 (J)	.042 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0055-.016	0.042	NA	21	C	100	MCP Method 2 S-1	No	BSL
	91-57-6	Methylnaphthalene (2-)	.0062	2.3	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	2.3	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	.16 (J)	.16 (J)	mg/kg	SS-05 / 03-19-01	1/14	.21-.27	0.16	NA	3100	NC	NA	NA	No	BSL
	106-44-5	Methylphenol (4-)	.12 (J)	.5	mg/kg	SS-05 / 03-19-01	3/14	.21-.24	0.5	NA	310	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0093	2.2	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	2.2	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	4.1	19.1	mg/kg	SS-02 / 04-26-01	12/14	4.3-4.5	19.1	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/14	.038-.1	0.1	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	.068 (J)	.068 (J)	mg/kg	SS-04 / 03-21-01	1/14	.21-.28	0.068	NA	9	C	7	MCP Method 2 S-1	No	BSL
	85-01-8	Phenanthrene	.01	22	mg/kg	SS-05 / 03-19-01	14/14		22	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	.067 (J)	.067 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.067	NA	18000	NC	500	MCP Method 2 S-1	No	BSL
	7440-09-7	Potassium [7]	113	829	mg/kg	SS-06 / 03-15-01	14/14		829	NA		NA	NA	NA	No	NUT
	129-00-0	Pyrene	.014	45	mg/kg	SS-05 / 03-19-01	14/14		45	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.089 (J)	1.7 (J)	mg/kg	SS-02 / 04-26-01	12/14	.078-.1	1.7	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/14	.33-.72	0.72	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	28.3 (JB)	317	mg/kg	SS-02 / 04-26-01	11/14	43-45.6	317	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.053 (JB)	.24 (B)	mg/kg	SS-04 / 03-21-01	5/14	.033-.057	0.24	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.003 (J)	.003 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0019-.0021	0.003	NA	220	NC	500	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	690	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	130	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/14	.21-.28	0.28	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	7.1	44.3 (J)	mg/kg	SS-02 / 04-26-01	14/14		44.3	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	90	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	17.4	252 (J)	mg/kg	SS-02 / 04-26-01	14/14		252	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
Vacant Lot 209 (Resident)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/1	.0062	0.0062	NA	370	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	208-96-8	Acenaphthylene	.0063	.0063	mg/kg	SS-36 / 02-21-01	1/1		0.0063	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	9580 (J)	9580 (J)	mg/kg	SS-36 / 02-21-01	1/1		9580	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0071	.0071	mg/kg	SS-36 / 02-21-01	1/1		0.0071	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	7440-36-0	Antimony	ND	ND	mg/kg		0/1	.41	0.41	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	3.4 (J)	3.4 (J)	mg/kg	SS-36 / 02-21-01	1/1		3.4	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	24.1	24.1	mg/kg	SS-36 / 02-21-01	1/1		24.1	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.033	.033	mg/kg	SS-36 / 02-21-01	1/1		0.033	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	50-32-8	Benzo(a)pyrene	.029	.029	mg/kg	SS-36 / 02-21-01	1/1		0.029	NA	0.062	C	0.7	MCP Method 2 S-1	No	BSL
	205-99-2	Benzo(b)fluoranthene	.033	.033	mg/kg	SS-36 / 02-21-01	1/1		0.033	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.018 (J)	.018 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.018	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.024	.024	mg/kg	SS-36 / 02-21-01	1/1		0.024	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.29 (J)	.29 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.29	NA	24000	NC	NA	NA	No	BSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/1	.32	0.32	NA	15	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.11	0.11	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.25	0.25	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.045 (JEB)	.045 (JEB)	mg/kg	SS-36 / 02-21-01	1/1		0.045	NA	35	C	200	MCP Method 2 S-1	No	BSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND,NSV
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.25	0.25	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.12	.12	mg/kg	SS-36 / 02-21-01	1/1		0.12	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1100 (JB)	1100 (JB)	mg/kg	SS-36 / 02-21-01	1/1		1100	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/1	.25	0.25	NA	24	C	NA	NA	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	11.8	11.8	mg/kg	SS-36 / 02-21-01	1/1		11.8	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.041 (J)	.041 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.041	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.4	3.4	mg/kg	SS-36 / 02-21-01	1/1		3.4	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	11.8	11.8	mg/kg	SS-36 / 02-21-01	1/1		11.8	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.1 (JB)	.1 (JB)	mg/kg	SS-36 / 02-21-01	1/1		0.1	NA	1.1	NC	100	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	mg/kg		0/1	.0062	0.0062	NA	0.06	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.25	0.25	NA	15	NC	NA	NA	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.25	0.25	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.25	0.25	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.25	0.25	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.25	0.25	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.073	0.073	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.62	0.62	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.62	0.62	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.25	0.25	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.25	0.25	NA	240	NC	NA	NA	No	ND, DLBSL
	206-44-0	Fluoranthene	.067	.067	mg/kg	SS-36 / 02-21-01	1/1		0.067	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	ND	ND	mg/kg		0/1	.0062	0.0062	NA	270	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.25	0.25	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.25	0.25	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.62	0.62	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.25	0.25	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	.021	.021	mg/kg	SS-36 / 02-21-01	1/1		0.021	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	23600	23600	mg/kg	SS-36 / 02-21-01	1/1		23600	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.25	0.25	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	73.7	73.7	mg/kg	SS-36 / 02-21-01	1/1		73.7	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	4870 (J)	4870 (J)	mg/kg	SS-36 / 02-21-01	1/1		4870	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	284	284	mg/kg	SS-36 / 02-21-01	1/1		284	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.068	.068	mg/kg	SS-36 / 02-21-01	1/1		0.068	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg		0/1	.0062	0.0062	NA	5.6	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	31	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	.0094 (J)	.0094 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.0094	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	12.9	12.9	mg/kg	SS-36 / 02-21-01	1/1		12.9	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	18	NC	NA	NA	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.25	0.25	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.25	0.25	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.094	0.094	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.25	0.25	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.25	0.25	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.048 (J)	.048 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.048	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.25	0.25	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	176 (B)	176 (B)	mg/kg	SS-36 / 02-21-01	1/1		176	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.071	.071	mg/kg	SS-36 / 02-21-01	1/1		0.071	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.42	.42	mg/kg	SS-36 / 02-21-01	1/1		0.42	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.49	0.49	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	40.9 (B)	40.9 (B)	mg/kg	SS-36 / 02-21-01	1/1		40.9	NA	NA		NA	NA	No	NUT
	7440-28-0	Thallium	.067 (JB)	.067 (JB)	mg/kg	SS-36 / 02-21-01	1/1		0.067	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.25	0.25	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.25	0.25	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	37.8	37.8	mg/kg	SS-36 / 02-21-01	1/1		37.8	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	7440-66-6	Zinc	45.6	45.6	mg/kg	SS-36 / 02-21-01	1/1		45.6	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Vacant Lot 209 (Construction Worker)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/1	.0062	0.0062	NA	2900	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	208-96-8	Acenaphthylene	.0063	.0063	mg/kg	SS-36 / 02-21-01	1/1		0.0063	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	9580 (J)	9580 (J)	mg/kg	SS-36 / 02-21-01	1/1		9580	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0071	.0071	mg/kg	SS-36 / 02-21-01	1/1		0.0071	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/1	.41	0.41	NA	41	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	3.4 (J)	3.4 (J)	mg/kg	SS-36 / 02-21-01	1/1		3.4	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	24.1	24.1	mg/kg	SS-36 / 02-21-01	1/1		24.1	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.033	.033	mg/kg	SS-36 / 02-21-01	1/1		0.033	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	50-32-8	Benzo(a)pyrene	.029	.029	mg/kg	SS-36 / 02-21-01	1/1		0.029	NA	0.21	C	0.7	MCP Method 2 S-1	No	BSL
	205-99-2	Benzo(b)fluoranthene	.033	.033	mg/kg	SS-36 / 02-21-01	1/1		0.033	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.018 (J)	.018 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.018	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.024	.024	mg/kg	SS-36 / 02-21-01	1/1		0.024	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.29 (J)	.29 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.29	NA	100000	MAX	NA	NA	No	BSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/1	.32	0.32	NA	190	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/1	.11	0.11	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/1	.25	0.25	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.045 (JEB)	.045 (JEB)	mg/kg	SS-36 / 02-21-01	1/1		0.045	NA	120	C	200	MCP Method 2 S-1	No	BSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/1	.25	0.25	NA	12000	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.12	.12	mg/kg	SS-36 / 02-21-01	1/1		0.12	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	1100 (JB)	1100 (JB)	mg/kg	SS-36 / 02-21-01	1/1		1100	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/1	.25	0.25	NA	86	C	NA	NA	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	11.8	11.8	mg/kg	SS-36 / 02-21-01	1/1		11.8	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.041 (J)	.041 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.041	NA	210	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	3.4	3.4	mg/kg	SS-36 / 02-21-01	1/1		3.4	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	11.8	11.8	mg/kg	SS-36 / 02-21-01	1/1		11.8	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.1 (JB)	.1 (JB)	mg/kg	SS-36 / 02-21-01	1/1		0.1	NA	3.5	NC	100	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	mg/kg		0/1	.0062	0.0062	NA	0.21	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.25	0.25	NA	160	NC	NA	NA	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/1	.25	0.25	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/1	.25	0.25	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/1	.25	0.25	NA	49000	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/1	.25	0.25	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/1	.073	0.073	NA	6200	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/1	.62	0.62	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/1	.62	0.62	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/1	.25	0.25	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/1	.25	0.25	NA	2500	NC	NA	NA	No	ND, DLBSL
	206-44-0	Fluoranthene	.067	.067	mg/kg	SS-36 / 02-21-01	1/1		0.067	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	ND	ND	mg/kg		0/1	.0062	0.0062	NA	2600	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/1	.25	0.25	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/1	.25	0.25	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/1	.62	0.62	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/1	.25	0.25	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	193-39-5	Indeno(1,2,3-cd)pyrene	.021	.021	mg/kg	SS-36 / 02-21-01	1/1		0.021	NA	2.1	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	23600	23600	mg/kg	SS-36 / 02-21-01	1/1		23600	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/1	.25	0.25	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	73.7	73.7	mg/kg	SS-36 / 02-21-01	1/1		73.7	NA	800	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	4870 (J)	4870 (J)	mg/kg	SS-36 / 02-21-01	1/1		4870	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	284	284	mg/kg	SS-36 / 02-21-01	1/1		284	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.068	.068	mg/kg	SS-36 / 02-21-01	1/1		0.068	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg		0/1	.0062	0.0062	NA	19	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	310	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	.0094 (J)	.0094 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.0094	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	12.9	12.9	mg/kg	SS-36 / 02-21-01	1/1		12.9	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/1	.25	0.25	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/1	.25	0.25	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/1	.094	0.094	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/1	.25	0.25	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/1	.25	0.25	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.048 (J)	.048 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.048	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/1	.25	0.25	NA	18000	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	176 (B)	176 (B)	mg/kg	SS-36 / 02-21-01	1/1		176	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.071	.071	mg/kg	SS-36 / 02-21-01	1/1		0.071	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.42	.42	mg/kg	SS-36 / 02-21-01	1/1		0.42	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/1	.49	0.49	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	40.9 (B)	40.9 (B)	mg/kg	SS-36 / 02-21-01	1/1		40.9	NA	NA		NA	NA	No	NUT
	7440-28-0	Thallium	.067 (JB)	.067 (JB)	mg/kg	SS-36 / 02-21-01	1/1		0.067	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/1	.25	0.25	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/1	.25	0.25	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	37.8	37.8	mg/kg	SS-36 / 02-21-01	1/1		37.8	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	7440-66-6	Zinc	45.6	45.6	mg/kg	SS-36 / 02-21-01	1/1		45.6	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL
West of South Street On-Facility (Resident)	83-32-9	Acenaphthene	.0099	.94 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	13/29	.005-.22	0.94	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.0065	2.1	mg/kg	SS-30 / 03-28-01	14/29	.005-.22	2.1	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	.056	.068	mg/kg	SS-38 / 04-23-01	2/17	.0045-.031	0.068	NA	1400	NC	500	MCP Method 2 S-1	No	BSL
	309-00-2	Aldrin	.0021 (J)	.0025 (J)	mg/kg	OW-106 / 04-24-01	2/4	.00051-.00052	0.0025	NA	0.03	C	0.03	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	3090 (J)	9440 (J)	mg/kg	OW-106 / 04-24-01	29/29		9440	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0071 (J)	2.2	mg/kg	SS-30 / 03-28-01	15/29	.005-.0074	2.2	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	.72 (J)	1.5 (J)	mg/kg	SB-54 / S-1 / 05-03-01	2/29	.28-.99	1.5	NA	3.1	NC	10	MCP Method 2 S-1	No	BSL
	12674-11-2	Aroclor-1016	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.39	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	11104-28-2	Aroclor-1221	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	11141-16-5	Aroclor-1232	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	53469-21-9	Aroclor-1242	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	12672-29-6	Aroclor-1248	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	11097-69-1	Aroclor-1254	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	11096-82-5	Aroclor-1260	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.11	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	.65	35.7 (J)	mg/kg	SS-32 / 02-22-01	29/29		35.7	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	11	436	mg/kg	OW-106 / 04-24-01	29/29		436	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.007 (J)	6.4	mg/kg	SS-30 / 03-28-01	22/29	.0051-.0065	6.4	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	50-32-8	Benzo(a)pyrene	.0062	7.3	mg/kg	SS-30 / 03-28-01	22/29	.0051-.0065	7.3	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0066 (J)	6.7	mg/kg	SS-30 / 03-28-01	22/29	.0051-.0065	6.7	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.0066	3.2	mg/kg	SS-30 / 03-28-01	20/29	.005-.0065	3.2	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0052 (J)	3.9	mg/kg	SS-30 / 03-28-01	21/29	.0051-.0065	3.9	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.041 (J)	4.6	mg/kg	SS-30 / 03-28-01	21/28	.21-.6	4.6	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/21	.2-.86	0.86	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.26	.51	mg/kg	OW-106 / 04-24-01	6/29	.24-.37	0.51	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	0.09	C	NA	NA	No	ND, DLBSL
	319-85-7	BHC (beta-)	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	0.32	C	NA	NA	No	ND, DLBSL
	319-86-8	BHC (delta-)	.0046 (J)	.006 (J)	mg/kg	OW-106 / 04-24-01	2/4	.00051-.00052	0.006	NA	0.32	C	NA	NA	No	BSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	0.44	C	0.4	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/29	.035-.15	0.15	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.046 (JEB)	.2 (J)	mg/kg	SH-05S / S-1 / 02-05-01	7/29	.2-.47	0.2	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	.0043 (J)	.0043 (J)	mg/kg	SB-40 / S-2-3 / 02-26-01	1/17	.0018-.0027	0.0043	NA	2200	NC	500	MCP Method 2 S-1	No	BSL
	85-68-7	Butylbenzylphthalate	.066 (J)	.15 (J)	mg/kg	OW-102 / 02-26-01	2/29	.2-.86	0.15	NA	1200	NC	NA	NA	No	BSL
	EPH C11-22	C11-C22 Aromatic	9.8	39	mg/kg	SB-49 / S-1-2 / 04-24-01	4/5	9.7	39	NA	NA		800	MCP Method 2 S-1	No	BSL
	EPH C19-36	C19-C36 Aliphatic	21	34	mg/kg	OW-106 / 04-24-01	3/5	4.5-4.6	34	NA	NA		2500	MCP Method 2 S-1	No	BSL
	VPH C5-8	C5-C8 Aliphatic	ND	ND	mg/kg		0/5	19-23	23	NA	NA		100	MCP Method 2 S-1	No	ND, DLBSL
	VPH C9-10	C9-C10 Aromatic	ND	ND	mg/kg		0/5	11-13	13	NA	NA		100	MCP Method 2 S-1	No	ND, DLBSL
	VPH C9-12	C9-C12 Aliphatic	ND	ND	mg/kg		0/5	5.4-6.7	6.7	NA	NA		1000	MCP Method 2 S-1	No	ND, DLBSL
	EPH C9-18	C9-C18 Aliphatic	4.5	4.9	mg/kg	OW-106 / 04-24-01	3/5	3.4	4.9	NA	NA		1000	MCP Method 2 S-1	No	BSL
	7440-43-9	Cadmium	.075	.78	mg/kg	SB-54 / S-1 / 05-03-01	19/29	.061-.087	0.78	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	658	4260	mg/kg	SB-54 / S-1 / 05-03-01	29/29		4260	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.039 (J)	1.2 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	8/29	.2-.3	1.2	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0009 (J)	.0061	mg/kg	SH-05S / S-1 / 02-05-01	2/17	.0018-.0027	0.0061	NA	36	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	5103-71-9	Chlordane (alpha-)	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	1.6	C	1	MCP Method 2 S-1	No	ND, DLBSL
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0013 (J)	mg/kg	OW-106 / 04-24-01, SB-49 / S-3-4 / 04-24-01	2/4	.00051-.00052	0.0016	NA	1.6	C	1	MCP Method 2 S-1	No	BSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	.0013 (J)	.0013 (J)	mg/kg	SB-54 / S-1 / 05-03-01	1/17	.0018-.0027	0.0013	NA	0.22	C	200	MCP Method 2 S-1	No	BSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	4.7	33.8	mg/kg	OW-106 / 04-24-01	29/29		33.8	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	.007 (J)	7.6	mg/kg	SS-30 / 03-28-01	22/29	.0051-.0065	7.6	NA	62	C	7	MCP Method 2 S-1	Yes	ASL
	7440-48-4	Cobalt [6]	2	16.1	mg/kg	SB-27 / S-2-3 / 06-15-01	29/29		16.1	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	4.1	165 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	29/29		165	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.042 (JB)	.53	mg/kg	SS-29 / 03-28-01	10/29	.13-.58	0.53	NA	1.1	NC	100	MCP Method 2 S-1	No	BSL
	72-54-8	DDD (4,4'-)	.02 (J)	.023 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/4	.00051-.00052	0.023	NA	2.4	C	2	MCP Method 2 S-1	No	BSL
	72-55-9	DDE (4,4'-)	.0083 (J)	.0091 (J)	mg/kg	OW-106 / 04-24-01	2/4	.00051-.00052	0.0091	NA	1.7	C	2	MCP Method 2 S-1	No	BSL
	50-29-3	DDT (4,4'-)	.037 (J)	.037 (J)	mg/kg	OW-106 / 04-24-01, SB-49 / S-3-4 / 04-24-01	2/4	.00051-.00052	0.037	NA	1.7	C	2	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.0055	.88	mg/kg	SS-30 / 03-28-01	14/29	.005-.0074	0.88	NA	0.06	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.044 (J)	.79 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	6/29	.2-.86	0.79	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	60-57-1	Dieldrin	.0044 (J)	.0044 (J)	mg/kg	OW-106 / 04-24-01	1/4	.00051-.00059	0.0044	NA	0.03	C	0.03	MCP Method 2 S-1	No	BSL
	84-66-2	Diethylphthalate	.082 (J)	.16 (J)	mg/kg	SB-31 / S-3-4 / 02-26-01	2/29	.2-.86	0.16	NA	4900	NC	100	MCP Method 2 S-1	No	BSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	.35	.35	mg/kg	OW-107 / 05-03-01	1/29	.035-.15	0.35	NA	610	NC	NA	NA	No	BSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/28	.22-2.1	2.1	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/26	.54-4.3	4.3	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	240	NC	NA	NA	No	ND, DLBSL
	959-98-8	Endosulfan I	.0029 (J)	.0029 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	1/4	.00051-.0006	0.0029	NA	37	NC	100	MCP Method 2 S-1	No	BSL
	33213-65-9	Endosulfan II	.0082 (J)	.0095 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/4	.00051-.00052	0.0095	NA	37	NC	100	MCP Method 2 S-1	No	BSL
	1031-07-8	Endosulfan sulfate	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	37	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	72-20-8	Endrin	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	1.8	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	1.8	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	53494-70-5	Endrin ketone	.00067 (J)	.015 (J)	mg/kg	OW-106 / 04-24-01	3/4	.00051	0.015	NA	1.8	NC	6	MCP Method 2 S-1	No	BSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.0061	13	mg/kg	SS-30 / 03-28-01	26/29	.0051-.006	13	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.0061	1.9	mg/kg	SS-30 / 03-28-01	13/29	.005-.22	1.9	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	76-44-8	Heptachlor	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	0.11	C	0.1	MCP Method 2 S-1	No	ND, DLBSL
	1024-57-3	Heptachlor epoxide	.0029 (J)	.0029 (J)	mg/kg	OW-106 / 04-24-01, SB-49 / S-3-4 / 04-24-01	2/4	.00051-.00052	0.0029	NA	0.05	C	0.06	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/28	.2-.86	0.86	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0062	3.3	mg/kg	SS-30 / 03-28-01	20/29	.005-.0065	3.3	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	6680	25200	mg/kg	OW-106 / 04-24-01	29/29		25200	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	4.3	1290	mg/kg	OW-106 / 04-24-01	29/29		1290	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	813 (J)	13200 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	29/29		13200	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	79.6	331	mg/kg	SB-49 / S-3-4 / 04-24-01	29/29		331	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.033	5.6 (J)	mg/kg	SB-54 / S-1 / 05-03-01	15/29	.024-.035	5.6	NA	2.3	NC	20	MCP Method 2 S-1	Yes	ASL
	72-43-5	Methoxychlor	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	31	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/17	.0045-.022	0.022	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.0064	1.9	mg/kg	SS-30 / 03-28-01	13/29	.005-.22	1.9	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	.07 (J)	.16 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/29	.2-.86	0.16	NA	31	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0086 (J)	2.5	mg/kg	SS-30 / 03-28-01	19/29	.005-.0065	2.5	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	4.8	117	mg/kg	SB-49 / S-3-4 / 04-24-01	26/29	3.8-4.4	117	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/29	.035-.15	0.15	NA	0.07	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.0071	19	mg/kg	SS-30 / 03-28-01	26/29	.0051-.006	19	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	.054 (J)	.12 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/29	.2-.86	0.12	NA	1800	NC	500	MCP Method 2 S-1	No	BSL
	7440-09-7	Potassium [7]	158	571	mg/kg	SB-54 / S-1 / 05-03-01	29/29		571	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.0066	18	mg/kg	SS-30 / 03-28-01	26/29	.0051-.006	18	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.11 (J)	.47	mg/kg	SS-33 / 02-23-01	20/29	.079-.11	0.47	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/29	.34-.6	0.6	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	38 (B)	1180	mg/kg	SB-55 / S-1 / 05-03-01	27/29	39.8-47.7	1180	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.05 (J)	.11	mg/kg	OW-106 / 04-24-01	9/29	.035-.053	0.11	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.0019 (J)	.0019 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/17	.0018-.0027	0.0019	NA	66	NC	500	MCP Method 2 S-1	No	BSL
	8001-35-2	Toxaphene	ND	ND	mg/kg		0/4	.01-.012	0.012	NA	0.44	C	NA	NA	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	.0051 (J)	.0051 (J)	mg/kg	SB-27 / S-2-3 / 06-15-01	1/17	.0018-.0027	0.0051	NA	200	NC	100	MCP Method 2 S-1	No	BSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.05	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0015 (J)	.2 (J)	mg/kg	SS-28 / 07-23-01	3/17	.0018-.0027	0.2	NA	39	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLASL
	7440-62-2	Vanadium	8.5	36	mg/kg	SB-49 / S-1-2 / 04-24-01	29/29		36	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.08	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	.0019 (J)	.0019 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/17	.0018-.0027	0.0019	NA	27	NC	500	MCP Method 2 S-1	No	BSL
	106-42-3															
	95-47-6	Xylene (o-)	.001 (J)	.001 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/17	.0018-.0027	0.001	NA	27	NC	500	MCP Method 2 S-1	No	BSL
	7440-66-6	Zinc	14.9	694	mg/kg	SB-54 / S-1 / 05-03-01	29/29		694	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
West of South Street On-Facility (Site Worker and Construction Worker)	83-32-9	Acenaphthene	.0099	.94 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	13/29	.005-.22	0.94	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.0065	2.1	mg/kg	SS-30 / 03-28-01	14/29	.005-.22	2.1	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	.056	.068	mg/kg	SS-38 / 04-23-01	2/17	.0045-.031	0.068	NA	5400	NC	500	MCP Method 2 S-1	No	BSL
	309-00-2	Aldrin	.0021 (J)	.0025 (J)	mg/kg	OW-106 / 04-24-01	2/4	.00051-.00052	0.0025	NA	0.1	C	0.03	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	3090 (J)	9440 (J)	mg/kg	OW-106 / 04-24-01	29/29		9440	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.0071 (J)	2.2	mg/kg	SS-30 / 03-28-01	15/29	.005-.0074	2.2	NA	24000	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	.72 (J)	1.5 (J)	mg/kg	SB-54 / S-1 / 05-03-01	2/29	.28-.99	1.5	NA	41	NC	10	MCP Method 2 S-1	No	BSL
	12674-11-2	Aroclor-1016	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	3.7	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	11104-28-2	Aroclor-1221	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	11141-16-5	Aroclor-1232	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	53469-21-9	Aroclor-1242	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	12672-29-6	Aroclor-1248	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	11097-69-1	Aroclor-1254	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	11096-82-5	Aroclor-1260	ND	ND	mg/kg		0/4	.0051-.006	0.006	NA	0.74	C	2	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	.65	35.7 (J)	mg/kg	SS-32 / 02-22-01	29/29		35.7	NA	1.6	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	11	436	mg/kg	OW-106 / 04-24-01	29/29		436	NA	6700	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.007 (J)	6.4	mg/kg	SS-30 / 03-28-01	22/29	.0051-.0065	6.4	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	1.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.0062	7.3	mg/kg	SS-30 / 03-28-01	22/29	.0051-.0065	7.3	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0066 (J)	6.7	mg/kg	SS-30 / 03-28-01	22/29	.0051-.0065	6.7	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.0066	3.2	mg/kg	SS-30 / 03-28-01	20/29	.005-.0065	3.2	NA	2900	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0052 (J)	3.9	mg/kg	SS-30 / 03-28-01	21/29	.0051-.0065	3.9	NA	21	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.041 (J)	4.6	mg/kg	SS-30 / 03-28-01	21/28	.21-.6	4.6	NA	100000	MAX	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/21	.2-.86	0.86	NA	18000	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.26	.51	mg/kg	OW-106 / 04-24-01	6/29	.24-.37	0.51	NA	190	NC	0.7	MCP Method 2 S-1	No	BSL
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	0.36	C	NA	NA	No	ND, DLBSL
	319-85-7	BHC (beta-)	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	1.3	C	NA	NA	No	ND, DLBSL
	319-86-8	BHC (delta-)	.0046 (J)	.006 (J)	mg/kg	OW-106 / 04-24-01	2/4	.00051-.00052	0.006	NA	1.3	C	NA	NA	No	BSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	1.7	C	0.4	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/29	.035-.15	0.15	NA	0.58	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	7.4	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.046 (JEB)	.2 (J)	mg/kg	SH-05S / S-1 / 02-05-01	7/29	.2-.47	0.2	NA	120	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	1.8	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	220	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	1.3	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	.0043 (J)	.0043 (J)	mg/kg	SB-40 / S-2-3 / 02-26-01	1/17	.0018-.0027	0.0043	NA	11000	NC	500	MCP Method 2 S-1	No	BSL
	85-68-7	Butylbenzylphthalate	.066 (J)	.15 (J)	mg/kg	OW-102 / 02-26-01	2/29	.2-.86	0.15	NA	12000	NC	NA	NA	No	BSL
	EPH C11-22	C11-C22 Aromatic	9.8	39	mg/kg	SB-49 / S-1-2 / 04-24-01	4/5	9.7	39	NA	NA		800	MCP Method 2 S-1	No	BSL
	EPH C19-36	C19-C36 Aliphatic	21	34	mg/kg	OW-106 / 04-24-01	3/5	4.5-4.6	34	NA	NA		2500	MCP Method 2 S-1	No	BSL
	VPH C5-8	C5-C8 Aliphatic	ND	ND	mg/kg		0/5	19-23	23	NA	NA		100	MCP Method 2 S-1	No	ND, DLBSL
	VPH C9-10	C9-C10 Aromatic	ND	ND	mg/kg		0/5	11-13	13	NA	NA		100	MCP Method 2 S-1	No	ND, DLBSL
	VPH C9-12	C9-C12 Aliphatic	ND	ND	mg/kg		0/5	5.4-6.7	6.7	NA	NA		1000	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	EPH C9-18	C9-C18 Aliphatic	4.5	4.9	mg/kg	OW-106 / 04-24-01	3/5	3.4	4.9	NA	NA		1000	MCP Method 2 S-1	No	BSL
	7440-43-9	Cadmium	.075	.78	mg/kg	SB-54 / S-1 / 05-03-01	19/29	.061-.087	0.78	NA	45	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	658	4260	mg/kg	SB-54 / S-1 / 05-03-01	29/29		4260	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.039 (J)	1.2 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	8/29	.2-.3	1.2	NA	86	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0009 (J)	.0061	mg/kg	SH-05S / S-1 / 02-05-01	2/17	.0018-.0027	0.0061	NA	120	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.55	C	7	MCP Method 2 S-1	No	ND, DLBSL
	5103-71-9	Chlordane (alpha-)	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	6.5	C	1	MCP Method 2 S-1	No	ND, DLBSL
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0013 (J)	mg/kg	OW-106 / 04-24-01, SB-49 / S-3-4 / 04-24-01	2/4	.00051-.00052	0.0016	NA	6.5	C	1	MCP Method 2 S-1	No	BSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	250	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	53	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	6.5	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	.0013 (J)	.0013 (J)	mg/kg	SB-54 / S-1 / 05-03-01	1/17	.0018-.0027	0.0013	NA	0.47	C	200	MCP Method 2 S-1	No	BSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	16	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	2300	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	4.7	33.8	mg/kg	OW-106 / 04-24-01	29/29		33.8	NA	64	C	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.007 (J)	7.6	mg/kg	SS-30 / 03-28-01	22/29	.0051-.0065	7.6	NA	210	C	7	MCP Method 2 S-1	Yes	ASL
	7440-48-4	Cobalt [6]	2	16.1	mg/kg	SB-27 / S-2-3 / 06-15-01	29/29		16.1	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	4.1	165 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	29/29		165	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	.042 (JB)	.53	mg/kg	SS-29 / 03-28-01	10/29	.13-.58	0.53	NA	3.5	NC	100	MCP Method 2 S-1	No	BSL
	72-54-8	DDD (4,4'-)	.02 (J)	.023 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/4	.00051-.00052	0.023	NA	10	C	2	MCP Method 2 S-1	No	BSL
	72-55-9	DDE (4,4'-)	.0083 (J)	.0091 (J)	mg/kg	OW-106 / 04-24-01	2/4	.00051-.00052	0.0091	NA	7	C	2	MCP Method 2 S-1	No	BSL
	50-29-3	DDT (4,4'-)	.037 (J)	.037 (J)	mg/kg	OW-106 / 04-24-01, SB-49 / S-3-4 / 04-24-01	2/4	.00051-.00052	0.037	NA	7	C	2	MCP Method 2 S-1	No	BSL
	53-70-3	Dibenz(a,h)anthracene	.0055	.88	mg/kg	SS-30 / 03-28-01	14/29	.005-.0074	0.88	NA	0.21	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.044 (J)	.79 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	6/29	.2-.86	0.79	NA	160	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	2.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	410	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	210	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	7.9	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	3.8	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	170	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.6	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	41	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	15	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	23	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	180	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.74	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	1.8	C	3	MCP Method 2 S-1	No	ND, DLBSL
	60-57-1	Dieldrin	.0044 (J)	.0044 (J)	mg/kg	OW-106 / 04-24-01	1/4	.00051-.00059	0.0044	NA	0.11	C	0.03	MCP Method 2 S-1	No	BSL
	84-66-2	Diethylphthalate	.082 (J)	.16 (J)	mg/kg	SB-31 / S-3-4 / 02-26-01	2/29	.2-.86	0.16	NA	49000	NC	100	MCP Method 2 S-1	No	BSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	1200	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	100000	MAX	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	.35	.35	mg/kg	OW-107 / 05-03-01	1/29	.035-.15	0.35	NA	6200	NC	NA	NA	No	BSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/28	.22-2.1	2.1	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/26	.54-4.3	4.3	NA	120	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	120	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	62	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	2500	NC	NA	NA	No	ND, DLBSL
	959-98-8	Endosulfan I	.0029 (J)	.0029 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	1/4	.00051-.0006	0.0029	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	33213-65-9	Endosulfan II	.0082 (J)	.0095 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/4	.00051-.00052	0.0095	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	1031-07-8	Endosulfan sulfate	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	370	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	72-20-8	Endrin	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	18	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	7421-93-4	Endrin aldehyde	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	18	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	53494-70-5	Endrin ketone	.00067 (J)	.015 (J)	mg/kg	OW-106 / 04-24-01	3/4	.00051	0.015	NA	18	NC	6	MCP Method 2 S-1	No	BSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	400	SAT	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.0061	13	mg/kg	SS-30 / 03-28-01	26/29	.0051-.006	13	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.0061	1.9	mg/kg	SS-30 / 03-28-01	13/29	.005-.22	1.9	NA	2600	NC	1000	MCP Method 2 S-1	No	BSL
	76-44-8	Heptachlor	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	0.38	C	0.1	MCP Method 2 S-1	No	ND, DLBSL
	1024-57-3	Heptachlor epoxide	.0029 (J)	.0029 (J)	mg/kg	OW-106 / 04-24-01, SB-49 / S-3-4 / 04-24-01	2/4	.00051-.00052	0.0029	NA	0.19	C	0.06	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	1.1	C	0.7	MCP Method 2 S-1	No	ND, DLASL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10ft)
Direct Contact [9]

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue [10]

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	18	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/28	.2-.86	0.86	NA	370	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	62	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.0062	3.3	mg/kg	SS-30 / 03-28-01	20/29	.005-.0065	3.3	NA	2.1	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	6680	25200	mg/kg	OW-106 / 04-24-01	29/29		25200	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	4.3	1290	mg/kg	OW-106 / 04-24-01	29/29		1290	NA	800	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	813 (J)	13200 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	29/29		13200	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	79.6	331	mg/kg	SB-49 / S-3-4 / 04-24-01	29/29		331	NA	1900	NC	NA	NA	No	BSL
	7439-97-6	Mercury	.033	5.6 (J)	mg/kg	SB-54 / S-1 / 05-03-01	15/29	.024-.035	5.6	NA	31	NC	20	MCP Method 2 S-1	No	BSL
	72-43-5	Methoxychlor	ND	ND	mg/kg		0/4	.00051-.0006	0.0006	NA	310	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	4700	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/17	.0045-.022	0.022	NA	21	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.0064	1.9	mg/kg	SS-30 / 03-28-01	13/29	.005-.22	1.9	NA	19	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	3100	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	.07 (J)	.16 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/29	.2-.86	0.16	NA	310	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	70	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0086 (J)	2.5	mg/kg	SS-30 / 03-28-01	19/29	.005-.0065	2.5	NA	19	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	4.8	117	mg/kg	SB-49 / S-3-4 / 04-24-01	26/29	3.8-4.4	117	NA	2000	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	180	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	18	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	82	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	10	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/29	.035-.15	0.15	NA	0.25	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	350	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	9	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.0071	19	mg/kg	SS-30 / 03-28-01	26/29	.0051-.006	19	NA	2900	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	.054 (J)	.12 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/29	.2-.86	0.12	NA	18000	NC	500	MCP Method 2 S-1	No	BSL
	7440-09-7	Potassium [7]	158	571	mg/kg	SB-54 / S-1 / 05-03-01	29/29		571	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.0066	18	mg/kg	SS-30 / 03-28-01	26/29	.0051-.006	18	NA	2900	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.11 (J)	.47	mg/kg	SS-33 / 02-23-01	20/29	.079-.11	0.47	NA	510	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/29	.34-.6	0.6	NA	510	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	38 (B)	1180	mg/kg	SB-55 / S-1 / 05-03-01	27/29	39.8-47.7	1180	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	1500	SAT	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.93	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	1.3	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.05 (J)	.11	mg/kg	OW-106 / 04-24-01	9/29	.035-.053	0.11	NA	6.7	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.0019 (J)	.0019 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/17	.0018-.0027	0.0019	NA	220	NC	500	MCP Method 2 S-1	No	BSL
	8001-35-2	Toxaphene	ND	ND	mg/kg		0/4	.01-.012	0.012	NA	1.6	C	NA	NA	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	22	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	.0051 (J)	.0051 (J)	mg/kg	SB-27 / S-2-3 / 06-15-01	1/17	.0018-.0027	0.0051	NA	690	NC	100	MCP Method 2 S-1	No	BSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	1.6	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.11	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	.0015 (J)	.2 (J)	mg/kg	SS-28 / 07-23-01	3/17	.0018-.0027	0.2	NA	130	NC	NA	NA	No	BSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	6200	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/29	.2-.86	0.86	NA	6.2	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	8.5	36	mg/kg	SB-49 / S-1-2 / 04-24-01	29/29		36	NA	100	NC	400	MCP Method 2 S-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	140	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/17	.0018-.0027	0.0027	NA	0.75	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	.0019 (J)	.0019 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/17	.0018-.0027	0.0019	NA	90	NC	500	MCP Method 2 S-1	No	BSL
	95-47-6	Xylene (o-)	.001 (J)	.001 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/17	.0018-.0027	0.001	NA	90	NC	500	MCP Method 2 S-1	No	BSL
	7440-66-6	Zinc	14.9	694	mg/kg	SB-54 / S-1 / 05-03-01	29/29		694	NA	31000	NC	2500	MCP Method 2 S-1	No	BSL

TABLE 2.2
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:
Shaded chemicals are selected as COPCs.
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
C - Screening toxicity value based on cancer effects
NA - Not Available
NC - Screening toxicity value based on non-cancer effects
ND - Not Detected
SAT- Soil Saturation Limit

(1) Minimum/Maximum detected concentration data qualifiers:
J- The result is estimated (uncertain) due to QC exceedance(s).
JB- The chemical was also detected in an associated non-matrix matched Blank and the result is estimated (uncertain) due to QC exceedance(s).
EB- The chemical was also detected in an associated non-matrix matched Equipment Blank.
JEB- The chemical was also detected in an associated non-matrix matched Equipment Blank and the result is estimated (uncertain) due to QC exceedance(s).
B- The chemical was also detected in an associated non-matrix matched Blank.

(2) Maximum detected concentration, or if never detected, maximum detection limit.

(3) United States Environmental Protection Agency (USEPA) Region IX. 2004. Region IX Preliminary Remediation Goal table. Non-cancer PRGs are adjusted to account for a HI of 0.1.
We screened against the residential PRGs for the resident and industrial PRGs for the construction worker and site worker.
The PRG for acenaphthene is used for acenaphthylene.
The PRG for polychlorinated biphenyls (PCBs) (unspeciated mixture, low risk, e.g. Aroclor 1016) is used for Aroclor 1016. The PRG for PCBs (unspeciated mixture, high risk, e.g. Aroclor 1254) is used for Aroclors 1221, 1232, 1242, 1248, 1254 and 1260.
The PRG for pyrene is used for benzo(g,h,i)perylene.
The PRG for technical BHC is used for delta-BHC.
The PRG for chlordane is used for alpha-chlordane and gamma-chlordane.
The PRG for chromium VI is used for chromium.
The PRG for hydrogen cyanide is used for cyanide (weak acid dissociable).
The PRG for 1,3-dichloropropene is used for cis- and trans-1,3-dichloropropene.
The PRG for endosulfan is used for endosulfan I, endosulfan II and endosulfan sulfate.
The PRG for endrin is used for endrin aldehyde and endrin ketone.
The PRG for naphthalene is used for 2-methylnaphthalene.
The PRG for pyrene is used for phenanthrene.
The PRG for xylenes (total) is used for m,p-xylene and o-xylene.

(4) Massachusetts Department of Environmental Protection (MADEP). 2003. Massachusetts Contingency Plan (MCP). 310 CMR 40.0985(6). Table 5 – Method 2 Direct Contact S-1 Soil Concentrations.
The standard for PCBs is used for Aroclors 1016, 1221, 1232, 1242, 1248, 1254 and 1260.

(5) Rationale for Selection or Deletion:
ASL - Above Screening Level
BSL - Below Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below Screening Level
ND - Not Detected
NSV - No Screening Value
NUT - Nutrient
NTX - No Toxicity Information

(6) USEPA Region I does not endorse quantitative evaluation of risk for these chemicals (personal communication, USEPA Region 1 risk assessor, Sarah Levinson, 2004 and Region I Risk Update, September 1999). These chemicals will not be evaluated.

(7) USEPA Region I does not quantitatively evaluate these chemicals for human effects since they are considered essential nutrients and present little hazard to humans. These chemicals, if detected, will be evaluated qualitatively.

(8) USEPA Region 1 does not endorse quantitative evaluation of risk for these chemicals (Region 1 Risk Update, September 1999). These chemicals, if detected, will be evaluated qualitatively.

(9) Soil (direct contact) includes all chemicals except asbestos.

(10) Plant tissue includes only arsenic, cadmium, chromium, lead, mercury, nickel, and zinc. Pathway evaluated for resident only.

TABLE 2.3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT RESIDENT AND SITE WORKER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
Off-Site Residential Building 1 (Indoor Air - Resident)	83-32-9	Acenaphthene	0.011	0.011	mg/kg	OW-102 / 02-26-01, SS-31 / 02-26-01	2/3	.0056	0.011	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/2	.019-.025	0.025	NA	0.43	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.036	0.39	mg/kg	SS-31 / 02-26-01	3/3		0.39	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	.04 (J)	.39 (J)	mg/kg	SS-31 / 02-26-01	3/3		0.39	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/3	.22-.28	0.28	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/3	.22-.28	0.28	NA	0.27	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/3	.22-.28	0.28	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	0.0015	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	.011 (J)	.011 (J)	mg/kg	OW-102 / 02-26-01, SS-31 / 02-26-01	2/3	.0056	0.011	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/2	.0064-.011	0.011	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.012 (J)	.025 (J)	mg/kg	OW-102 / 02-26-01	2/3	.0056	0.025	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.0086 (J)	.11 (J)	mg/kg	OW-102 / 02-26-01	3/3		0.11	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.065	0.67	mg/kg	SS-31 / 02-26-01	3/3		0.67	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	0.041	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	0.013	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m, p-)	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	1.4	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/2	.0022-.0027	0.0027	NA	1.9	NC	NA	NA	No	ND, DLBSL
Off-Site Residential Building 2 (Indoor Air - Resident)	83-32-9	Acenaphthene	.011	.94 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	6/8	.0056-.0058	0.94	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	.056	.056	mg/kg	SB-49 / S-1-2 / 04-24-01	1/7	.0049-.025	0.056	NA	0.43	NC	NA	NA	No	BSL
	309-00-2	Aldrin	.0021 (J)	.0025 (J)	mg/kg	OW-106 / 04-24-01	2/2		0.0025	NA	0.7	C	NA	NA	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	.036	3.6 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	7/8	.0058	3.6	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/2	.00059-.0006	0.0006	NA	0.016	C	NA	NA	No	ND, DLBSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/2	.00059-.0006	0.0006	NA	0.049	C	NA	NA	No	ND, DLBSL
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	5103-71-9	Chlordane (alpha-)	ND	ND	mg/kg		0/2	.00059-.0006	0.0006	NA	5	C	NA	NA	No	ND, DLBSL
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0016 (J)	mg/kg	OW-106 / 04-24-01, SB-49 / S-3-4 / 04-24-01	2/2		0.0016	NA	5	C	NA	NA	No	BSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	.04 (J)	3.2 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	7/8	.0058	3.2	NA	NA		NA	NA	No	NSV [6]
	72-55-9	DDE (4,4'-)	.0083 (J)	.0091 (J)	mg/kg	OW-106 / 04-24-01	2/2		0.0091	NA	560	C	NA	NA	No	BSL
	132-64-9	Dibenzofuran	.054 (J)	.79 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	4/8	.22-.28	0.79	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/8	.22-.47	0.47	NA	0.27	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/8	.22-.47	0.47	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	0.0015	NC	NA	NA	No	ND, DLASL
	60-57-1	Dieldrin	.0044 (J)	.0044 (J)	mg/kg	OW-106 / 04-24-01	1/2	.00059	0.0044	NA	0.098	C	NA	NA	No	BSL
	959-98-8	Endosulfan I	.0029 (J)	.0029 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	1/2	.0006	0.0029	NA	NA		NA	NA	No	NSV [6]
	33213-65-9	Endosulfan II	.0082 (J)	.0095 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/2		0.0095	NA	NA		NA	NA	No	NSV [6]
	1031-07-8	Endosulfan sulfate	ND	ND	mg/kg		0/2	.00059-.0006	0.0006	NA	NA		NA	NA	No	ND, NSV [6]
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	.011 (J)	.99 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	6/8	.0056-.0058	0.99	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	ND	ND	mg/kg		0/2	.00059-.0006	0.0006	NA	0.00014	C	NA	NA	No	ND, DLASL

TABLE 2.3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT RESIDENT AND SITE WORKER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/7	.0064-.022	0.022	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.012 (J)	.47 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	6/8	.0056-.0058	0.47	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.0086 (J)	1.4 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	7/8	.0058	1.4	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	.065	5.9 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	7/8	.0058	5.9	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.0019 (J)	.0019 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/7	.002-.0027	0.0019	NA	0.041	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	0.013	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m, p-)	.0019 (J)	.0019 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/7	.002-.0027	0.0019	NA	1.4	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.001 (J)	.001 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/7	.002-.0027	0.001	NA	1.9	NC	NA	NA	No	BSL
Lot 283 (Indoor Air - Resident)	83-32-9	Acenaphthene	.036	.036	mg/kg	FP-01 / 10-10-01, OW-404 / 10-10-01	2/2		0.036	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	0.43	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	.57	.67	mg/kg	OW-404 / 10-10-01	2/2		0.67	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	.0012 (J)	.0012 (J)	mg/kg	OW-404 / 10-10-01	1/2	.0018	0.0012	NA	0.000054	C	NA	NA	Yes	ASL
	218-01-9	Chrysene	.88	1	mg/kg	OW-404 / 10-10-01	2/2		1	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	0.27	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0015	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	.052	.058	mg/kg	FP-01 / 10-10-01	2/2		0.058	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/2	.0044-.011	0.011	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.032	.037	mg/kg	OW-404 / 10-10-01	2/2		0.037	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.075	.08	mg/kg	OW-404 / 10-10-01	2/2		0.08	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	1.5	1.7	mg/kg	OW-404 / 10-10-01	2/2		1.7	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.041	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.013	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m, p-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.4	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.9	NC	NA	NA	No	ND, DLBSL
Lot 282 (Indoor Air - Resident)	83-32-9	Acenaphthene	0.011	0.011	mg/kg	FP-02 / 10-10-01	1/1		0.011	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.011	0.011	NA	0.43	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.2	0.2	mg/kg	FP-02 / 10-10-01	1/1		0.2	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0054	0.0054	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.24	0.24	mg/kg	FP-02 / 10-10-01	1/1		0.24	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	0.27	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0015	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.018	0.018	mg/kg	FP-02 / 10-10-01	1/1		0.018	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.011	0.011	NA	0.0021	C	NA	NA	No	ND, DLASL

TABLE 2.3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT RESIDENT AND SITE WORKER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	91-57-6	Methylnaphthalene (2-)	0.015	0.015	mg/kg	FP-02 / 10-10-01	1/1		0.015	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.026	0.026	mg/kg	FP-02 / 10-10-01	1/1		0.026	NA	0.057	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.35	0.35	mg/kg	FP-02 / 10-10-01	1/1		0.35	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.041	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.013	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.4	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.9	NC	NA	NA	No	ND, DLBSL
Lot 210 (Indoor Air - Resident)	83-32-9	Acenaphthene	0.022	0.022	mg/kg	FP-03 / 10-10-01	1/1		0.022	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.43	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.8	0.8	mg/kg	FP-03 / 10-10-01	1/1		0.8	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0052	0.0052	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.79	0.79	mg/kg	FP-03 / 10-10-01	1/1		0.79	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.04 (J)	.04 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.04	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	0.27	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0015	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.098	0.098	mg/kg	FP-03 / 10-10-01	1/1		0.098	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.035	0.035	mg/kg	FP-03 / 10-10-01	1/1		0.035	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.056	0.056	mg/kg	FP-03 / 10-10-01	1/1		0.056	NA	0.057	NC	NA	NA	No	BSL
	129-00-0	Pyrene	1.2	1.2	mg/kg	FP-03 / 10-10-01	1/1		1.2	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.041	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.013	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.4	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.9	NC	NA	NA	No	ND, DLBSL
Orlando Property (Indoor Air - Resident)	83-32-9	Acenaphthene	0.0059	1.3	mg/kg	FP-06 / 10-10-01	4/5	.0055	1.3	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0053	0.0053	NA	0.43	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.097	3.2	mg/kg	FP-06 / 10-10-01	4/5	.0055	3.2	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0053	0.0053	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.1	3.4	mg/kg	FP-06 / 10-10-01	4/5	.0055	3.4	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.68 (J)	.68 (J)	mg/kg	FP-06 / 10-10-01	1/3	.22-.23	0.68	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/3	.22-.97	0.97	NA	0.27	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/3	.22-.97	0.97	NA	0.83	NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0015	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.012	0.97	mg/kg	FP-06 / 10-10-01	4/5	.0055	0.97	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0053	0.0053	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.01	0.31	mg/kg	FP-06 / 10-10-01	4/5	.0055	0.31	NA	2.3	NC	NA	NA	No	BSL

TABLE 2.3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT RESIDENT AND SITE WORKER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	91-20-3	Naphthalene	0.014	0.6	mg/kg	FP-06 / 10-10-01	4/5	.0055	0.6	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.16	9.2	mg/kg	FP-06 / 10-10-01	4/5	.0055	9.2	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.041	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.013	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m, p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.4	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.9	NC	NA	NA	No	ND, DLBSL
Gleason Court Lot 122 (Indoor Air - Resident)	83-32-9	Acenaphthene	.011	.034	mg/kg	SS-64 / 03-23-01	3/9	.0053-.23	0.034	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/4	.0056-.0091	0.0091	NA	0.43	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	.012	.57	mg/kg	OW-105-1 / 04-17-01	9/9		0.57	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	.011	.47	mg/kg	OW-105-1 / 04-17-01	9/9		0.47	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/9	.21-.26	0.26	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/9	.21-.26	0.26	NA	0.27	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/9	.21-.26	0.26	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	0.0015	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	.015	.063	mg/kg	SS-64 / 03-23-01	3/9	.0053-.23	0.063	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/4	.0071-.022	0.022	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.009	.014	mg/kg	SS-63 / 04-02-01	3/9	.0053-.23	0.014	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.0077	.022	mg/kg	SS-63 / 04-02-01	4/9	.0053-.23	0.022	NA	0.057	NC	NA	NA	No	BSL
	129-00-0	Pyrene	.022	.67	mg/kg	OW-105-1 / 04-17-01	9/9		0.67	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	0.041	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	.0027	.0027	mg/kg	OW-105-1 / 04-17-01	1/4	.0019-.0022	0.0027	NA	0.013	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m, p-)	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	1.4	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/4	.0019-.0022	0.0022	NA	1.9	NC	NA	NA	No	ND, DLBSL
Gleason Court Lot 124 (Indoor Air - Resident) [7]	67-64-1	Acetone	.00406 (J)	.00489	mg/m3	SV-03 / 09-07-06	3/3		0.00489	NA	0.35	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00108 (J)	.00212	mg/m3	SV-03 / 09-07-06	3/3		0.00212	NA	0.0031	C	NA	NA	No	BSL
	78-93-3	Butanone (2-)	ND	ND	mg/m3		0/3	.00147-.00295	0.00295	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/m3		0/3	.00156-.00311	0.00311	NA	0.7	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/m3		0/3	.00314-.00629	0.00629	NA	0.0016	C	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/m3		0/3	.00244-.00488	0.00488	NA	0.0011	C	NA	NA	No	ND, DLASL
	541-73-1	Dichlorobenzene (1,3-)	.00206 (J)	.00206 (J)	mg/m3	SV-03 / 09-07-06	1/3	.003-.00601	0.00206	NA	0.11	NC	NA	NA	No	BSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/m3		0/3	.00198-.00396	0.00396	NA	0.035	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	.005	.0158	mg/m3	SV-02 / 09-07-06	3/3		0.0158	NA	0.022	C	NA	NA	No	BSL
	110-54-3	Hexane (n-)	.000994 (J)	.00523 (J)	mg/m3	SV-02 / 09-07-06	3/3		0.00523	NA	0.2	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/m3		0/3	.00205-.00409	0.00409	NA	0.08	NC	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	.00241 (J)	.00452 (J)	mg/m3	SV-02 / 09-07-06	2/3	.00347	0.00452	NA	0.052	C	NA	NA	No	BSL
	91-57-6	Methylnaphthalene (2-)	.00419 (J)	.00419 (J)	mg/m3	SV-02 / 09-07-06	1/3	.008	0.00419	NA	0.07	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.00156 (J)	.0109	mg/m3	SV-02 / 09-07-06	3/3		0.0109	NA	0.003	NC	NA	NA	Yes	ASL
	100-42-5	Styrene	ND	ND	mg/m3		0/3	.00213-.00426	0.00426	NA	1	NC	NA	NA	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/m3		0/3	.00339-.00678	0.00678	NA	0.0081	C	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.0262	.063	mg/m3	SV-02 / 09-07-06	3/3		0.063	NA	0.4	NC	NA	NA	No	BSL

TABLE 2.3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT RESIDENT AND SITE WORKER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/m3		0/3	.00272-.00545	0.00545	NA	2.2	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.0027 (J)	.00402	mg/m3	SV-03 / 09-07-06	2/3	.00268	0.00402	NA	0.00022	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	.0328	.0328	mg/m3	SV-05 / 09-07-06	1/3	.00281-.00561	0.0328	NA	0.7	NC	NA	NA	No	BSL
	95-63-6	Trimethylbenzene (1,2,4-)	.0359	.0359	mg/m3	SV-02 / 09-07-06	1/3	.00246	0.0359	NA	0.006	NC	NA	NA	Yes	ASL
	108-67-8	Trimethylbenzene (1,3,5-)	.00307	.0102	mg/m3	SV-02 / 09-07-06	3/3		0.0102	NA	0.006	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0186	.0664	mg/m3	SV-02 / 09-07-06	3/3		0.0664	NA	7	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.00845	.0243	mg/m3	SV-02 / 09-07-06	3/3		0.0243	NA	7	NC	NA	NA	No	BSL
Gleason Court Lot 125 (Indoor Air - Resident)[7]	67-64-1	Acetone	.00406 (J)	.0108	mg/m3	SV-04 / 09-07-06	3/3		0.0108	NA	0.35	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00108 (J)	.00154 (J)	mg/m3	SV-02 / 09-07-06	2/3	.0016	0.00154	NA	0.0031	C	NA	NA	No	BSL
	78-93-3	Butanone (2-)	ND	ND	mg/m3		0/3	.00147-.00295	0.00295	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/m3		0/3	.00156-.00311	0.00311	NA	0.7	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/m3		0/3	.00314-.00629	0.00629	NA	0.0016	C	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/m3		0/3	.00244-.00488	0.00488	NA	0.0011	C	NA	NA	No	ND, DLASL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/m3		0/3	.003-.00601	0.00601	NA	0.11	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/m3		0/3	.00198-.00396	0.00396	NA	0.035	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	.0047	.0158	mg/m3	SV-02 / 09-07-06	3/3		0.0158	NA	0.022	C	NA	NA	No	BSL
	110-54-3	Hexane (n-)	.00154 (J)	.00523 (J)	mg/m3	SV-02 / 09-07-06	3/3		0.00523	NA	0.2	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/m3		0/3	.00205-.00409	0.00409	NA	0.08	NC	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	.00241 (J)	.039	mg/m3	SV-04 / 09-07-06	3/3		0.039	NA	0.052	C	NA	NA	No	BSL
	91-57-6	Methylnaphthalene (2-)	.00419 (J)	.00419 (J)	mg/m3	SV-02 / 09-07-06	1/3	.008	0.00419	NA	0.07	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.00196 (J)	.0109	mg/m3	SV-02 / 09-07-06	2/3	.002	0.0109	NA	0.003	NC	NA	NA	Yes	ASL
	100-42-5	Styrene	ND	ND	mg/m3		0/3	.00213-.00426	0.00426	NA	1	NC	NA	NA	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/m3		0/3	.00339-.00678	0.00678	NA	0.0081	C	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.00939	.063	mg/m3	SV-02 / 09-07-06	3/3		0.063	NA	0.4	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/m3		0/3	.00272-.00545	0.00545	NA	2.2	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.0027 (J)	.0027 (J)	mg/m3	SV-02 / 09-07-06	1/3	.00268	0.0027	NA	0.00022	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	.00255 (J)	.0328	mg/m3	SV-05 / 09-07-06	2/3	.00561	0.0328	NA	0.7	NC	NA	NA	No	BSL
	95-63-6	Trimethylbenzene (1,2,4-)	.0359	.0359	mg/m3	SV-02 / 09-07-06	1/3	.00246	0.0359	NA	0.006	NC	NA	NA	Yes	ASL
	108-67-8	Trimethylbenzene (1,3,5-)	.00249	.0102	mg/m3	SV-02 / 09-07-06	3/3		0.0102	NA	0.006	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0162	.0664	mg/m3	SV-02 / 09-07-06	3/3		0.0664	NA	7	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.00546	.0243	mg/m3	SV-02 / 09-07-06	3/3		0.0243	NA	7	NC	NA	NA	No	BSL
Off-Site Residential Building 3 (Indoor Air - Resident)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/2	.0052-2.1	2.1	NA	NA		NA	NA	No	ND, NSV [6]
	67-64-1	Acetone	.007 (EB)	.0077 (JEB)	mg/kg	SS-21 / 04-02-01	2/2		0.0077	NA	0.43	NC	NA	NA	No	BSL
	309-00-2	Aldrin	ND	ND	mg/kg		0/1	.00051	0.00051	NA	0.7	C	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	.03	11	mg/kg	SS-21 / 04-02-01	2/2		11	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/1	.00051	0.00051	NA	0.016	C	NA	NA	No	ND, DLBSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/1	.00051	0.00051	NA	0.049	C	NA	NA	No	ND, DLBSL
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	5103-71-9	Chlordane (alpha-)	.0013 (J)	.0013 (J)	mg/kg	SS-21 / 04-02-01	1/1		0.0013	NA	5	C	NA	NA	No	BSL
	5103-74-2	Chlordane (gamma-)	ND	ND	mg/kg		0/1	.00051	0.00051	NA	5	C	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	.033	14	mg/kg	SS-21 / 04-02-01	2/2		14	NA	NA		NA	NA	No	NSV [6]
	72-55-9	DDE (4,4'-)	ND	ND	mg/kg		0/1	.00051	0.00051	NA	560	C	NA	NA	No	ND, DLBSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.21-2.1	2.1	NA	NA		NA	NA	No	ND, NSV [6]

TABLE 2.3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT RESIDENT AND SITE WORKER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.21-2.1	2.1	NA	0.27	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.21-2.1	2.1	NA	0.83	NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	0.0015	NC	NA	NA	No	ND, DLASL
	60-57-1	Dieldrin	ND	ND	mg/kg		0/1	.00051	0.00051	NA	0.098	C	NA	NA	No	ND, DLBSL
	959-98-8	Endosulfan I	ND	ND	mg/kg		0/1	.00051	0.00051	NA	NA		NA	NA	No	ND, NSV [6]
	33213-65-9	Endosulfan II	ND	ND	mg/kg		0/1	.00051	0.00051	NA	NA		NA	NA	No	ND, NSV [6]
	1031-07-8	Endosulfan sulfate	ND	ND	mg/kg		0/1	.00051	0.00051	NA	NA		NA	NA	No	ND, NSV [6]
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	1.2 (J)	1.2 (J)	mg/kg	SS-21 / 04-02-01	1/2	.0052	1.2	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	.00091 (J)	.00091 (J)	mg/kg	SS-21 / 04-02-01	1/1		0.00091	NA	0.00014	C	NA	NA	Yes	ASL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/2	.017-.018	0.018	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.55 (J)	.55 (J)	mg/kg	SS-21 / 04-02-01	1/2	.0052	0.55	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.61 (J)	.61 (J)	mg/kg	SS-21 / 04-02-01	1/2	.0052	0.61	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	.059	24	mg/kg	SS-21 / 04-02-01	2/2		24	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.0017 (J)	.0017 (J)	mg/kg	SS-21 / 04-02-01	1/2	.0019	0.0017	NA	0.041	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	0.013	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m, p-)	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	1.4	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/2	.0019-.0021	0.0021	NA	1.9	NC	NA	NA	No	ND, DLBSL
Off-Site Residential Building 4 (Indoor Air - Resident)	83-32-9	Acenaphthene	.019	.019	mg/kg	SS-65 / 03-26-01	1/2	.0054	0.019	NA	NA		NA	NA	No	NSV [6]
	205-99-2	Benzo(b)fluoranthene	.0065	.37	mg/kg	SS-65 / 03-26-01	2/2		0.37	NA	NA		NA	NA	No	NSV [6]
	218-01-9	Chrysene	.0061	.36	mg/kg	SS-65 / 03-26-01	2/2		0.36	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	0.27	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.22-.24	0.24	NA	0.83	NC	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	.028	.028	mg/kg	SS-65 / 03-26-01	1/2	.0054	0.028	NA	NA		NA	NA	No	NSV [6]
	91-57-6	Methylnaphthalene (2-)	.019	.019	mg/kg	SS-65 / 03-26-01	1/2	.0054	0.019	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.035	.035	mg/kg	SS-65 / 03-26-01	1/2	.0054	0.035	NA	0.057	NC	NA	NA	No	BSL
	129-00-0	Pyrene	.01	.62	mg/kg	SS-65 / 03-26-01	2/2		0.62	NA	NA		NA	NA	No	NSV [6]
East of South Street On-Facility Building 1 (Indoor Air - Site Worker) [7]	67-64-1	Acetone	.0761	.0832	mg/m3	SV-08 / 09-06-06	2/2		0.0832	NA	0.35	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00527	.0129	mg/m3	SV-07 / 09-06-06	2/2		0.0129	NA	0.0031	C	NA	NA	Yes	ASL
	78-93-3	Butanone (2-)	.00237	.0118	mg/m3	SV-08 / 09-06-06	2/2		0.0118	NA	1	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.00289	.016	mg/m3	SV-08 / 09-06-06	2/2		0.016	NA	0.7	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	.00348	.00348	mg/m3	SV-08 / 09-06-06	1/2	.00314	0.00348	NA	0.0016	C	NA	NA	Yes	ASL
	67-66-3	Chloroform	ND	ND	mg/m3		0/2	.00244	0.00244	NA	0.0011	C	NA	NA	No	ND, DLASL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/m3		0/2	.003	0.003	NA	0.11	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/m3		0/2	.00198	0.00198	NA	0.035	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	.00191 (J)	.00191 (J)	mg/m3	SV-08 / 09-06-06	1/2	.00217	0.00191	NA	0.022	C	NA	NA	No	BSL
	110-54-3	Hexane (n-)	.00472	.00487	mg/m3	SV-07 / 09-06-06	2/2		0.00487	NA	0.2	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	.00304	.00304	mg/m3	SV-08 / 09-06-06	1/2	.00205	0.00304	NA	0.08	NC	NA	NA	No	BSL
	75-09-2	Methylene chloride	.00275 (J)	.0972	mg/m3	SV-08 / 09-06-06	2/2		0.0972	NA	0.052	C	NA	NA	Yes	ASL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/m3		0/2	.008	0.008	NA	0.07	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	.00119 (J)	.00119 (J)	mg/m3	SV-07 / 09-06-06	1/2	.002	0.00119	NA	0.003	NC	NA	NA	No	BSL
	100-42-5	Styrene	ND	ND	mg/m3		0/2	.00213	0.00213	NA	1	NC	NA	NA	No	ND, DLBSL
	127-18-4	Tetrachloroethene	.00202 (J)	.00202 (J)	mg/m3	SV-08 / 09-06-06	1/2	.00339	0.00202	NA	0.0081	C	NA	NA	No	BSL
	108-88-3	Toluene	.0052	.00948	mg/m3	SV-08 / 09-06-06	2/2		0.00948	NA	0.4	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/m3		0/2	.00272	0.00272	NA	2.2	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.0166	.0498	mg/m3	SV-07 / 09-06-06	2/2		0.0498	NA	0.00022	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/m3		0/2	.00281	0.00281	NA	0.7	NC	NA	NA	No	ND, DLBSL

TABLE 2.3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT RESIDENT AND SITE WORKER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	95-63-6	Trimethylbenzene (1,2,4-)	ND	ND	mg/m3		0/2	.00246	0.00246	NA	0.006	NC	NA	NA	No	ND, DLBSL
	108-67-8	Trimethylbenzene (1,3,5-)	.00571	.00571	mg/m3	SV-08 / 09-06-06	1/2	.00246	0.00571	NA	0.006	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	.00714	.00714	mg/m3	SV-08 / 09-06-06	1/2	.00434	0.00714	NA	7	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.00517	.00517	mg/m3	SV-08 / 09-06-06	1/2	.00217	0.00517	NA	7	NC	NA	NA	No	BSL
East of South Street On-Facility Building 2 (Indoor Air - Site Worker) [7]	67-64-1	Acetone	.0981	.0988	mg/m3	SV-09 / 09-06-06	2/2		0.0988	NA	0.35	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00115 (J)	.0099	mg/m3	SV-10 / 09-06-06	2/2		0.0099	NA	0.0031	C	NA	NA	Yes	ASL
	78-93-3	Butanone (2-)	.00755	.015	mg/m3	SV-10 / 09-06-06	2/2		0.015	NA	1	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.007	.0105	mg/m3	SV-09 / 09-06-06	2/2		0.0105	NA	0.7	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/m3		0/2	.00314	0.00314	NA	0.0016	C	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/m3		0/2	.00244	0.00244	NA	0.0011	C	NA	NA	No	ND, DLASL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/m3		0/2	.003	0.003	NA	0.11	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/m3		0/2	.00198	0.00198	NA	0.035	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	.003	.003	mg/m3	SV-09 / 09-06-06	1/2	.00217	0.003	NA	0.022	C	NA	NA	No	BSL
	110-54-3	Hexane (n-)	.00165 (J)	.00647	mg/m3	SV-10 / 09-06-06	2/2		0.00647	NA	0.2	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	.00712	.00712	mg/m3	SV-09 / 09-06-06	1/2	.00205	0.00712	NA	0.08	NC	NA	NA	No	BSL
	75-09-2	Methylene chloride	.00242 (J)	.00402	mg/m3	SV-10 / 09-06-06	2/2		0.00402	NA	0.052	C	NA	NA	No	BSL
	91-57-6	Methylnaphthalene (2-)	.0178	.0178	mg/m3	SV-09 / 09-06-06	1/2	.008	0.0178	NA	0.07	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.00069 (J)	.00655	mg/m3	SV-09 / 09-06-06	2/2		0.00655	NA	0.003	NC	NA	NA	Yes	ASL
	100-42-5	Styrene	.00958	.00958	mg/m3	SV-09 / 09-06-06	1/2	.00213	0.00958	NA	1	NC	NA	NA	No	BSL
	127-18-4	Tetrachloroethene	.0247	.0247	mg/m3	SV-10 / 09-06-06	1/2	.00339	0.0247	NA	0.0081	C	NA	NA	Yes	ASL
	108-88-3	Toluene	.00862	.00941	mg/m3	SV-10 / 09-06-06	2/2		0.00941	NA	0.4	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/m3		0/2	.00272	0.00272	NA	2.2	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.0021 (J)	.00423	mg/m3	SV-10 / 09-06-06	2/2		0.00423	NA	0.00022	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	.00304	.00417	mg/m3	SV-09 / 09-06-06	2/2		0.00417	NA	0.7	NC	NA	NA	No	BSL
	95-63-6	Trimethylbenzene (1,2,4-)	.017	.017	mg/m3	SV-09 / 09-06-06	1/2	.00246	0.017	NA	0.006	NC	NA	NA	Yes	ASL
	108-67-8	Trimethylbenzene (1,3,5-)	.0048	.0048	mg/m3	SV-09 / 09-06-06	1/2	.00246	0.0048	NA	0.006	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	.00688	.00688	mg/m3	SV-09 / 09-06-06	1/2	.00434	0.00688	NA	7	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.00188 (J)	.00677	mg/m3	SV-09 / 09-06-06	2/2		0.00677	NA	7	NC	NA	NA	No	BSL
East of South Street On-Facility Building 3 (Indoor Air - Site Worker)	83-32-9	Acenaphthene	.0094	5	mg/kg	SS-20 / 06-12-01	13/30	.0051-2.1	5	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	.007 (EB)	.011 (EB)	mg/kg	SB-17 / S-4-5 / 04-05-01, SB-19 / S-1-2 / 06-08-01	7/18	.0044-.017	0.011	NA	0.43	NC	NA	NA	No	BSL
	309-00-2	Aldrin	ND	ND	mg/kg		0/6	.0001-.00057	0.00057	NA	0.7	C	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/18	.0017-.0021	0.0021	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	.0062 (J)	34	mg/kg	SS-17 / 04-05-01	27/30	.0051-.006	34	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/6	.0001-.00057	0.00057	NA	0.016	C	NA	NA	No	ND, DLBSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/6	.0001-.00057	0.00057	NA	0.049	C	NA	NA	No	ND, DLBSL
	78-93-3	Butanone (2-)	.0039	.0039	mg/kg	SB-25 / S-4-5 / 03-29-01	1/18	.0018-.0021	0.0039	NA	1	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/18	.0017-.0021	0.0021	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	5103-71-9	Chlordane (alpha-)	.00084 (J)	.0013 (J)	mg/kg	SS-21 / 04-02-01, SS-25 / 03-29-01	3/6	.0001-.00011	0.0013	NA	5	C	NA	NA	No	BSL
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0019 (J)	mg/kg	SS-25 / 03-29-01	2/6	.0001-.00051	0.0019	NA	5	C	NA	NA	No	BSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/18	.0017-.0021	0.0021	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	.0068 (J)	25	mg/kg	SS-17 / 04-05-01	27/30	.0051-.006	25	NA	NA		NA	NA	No	NSV [6]
	72-55-9	DDE (4,4'-)	ND	ND	mg/kg		0/6	.0001-.00057	0.00057	NA	560	C	NA	NA	No	ND, DLBSL
	132-64-9	Dibenzofuran	.046 (J)	4 (J)	mg/kg	SS-20 / 06-12-01	9/30	.2-2.1	4	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/30	.2-4.7	4.7	NA	0.27	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/30	.2-4.7	4.7	NA	0.83	NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/18	.0017-.0021	0.0021	NA	0.0015	NC	NA	NA	No	ND, DLASL
	60-57-1	Dieldrin	ND	ND	mg/kg		0/6	.0001-.00057	0.00057	NA	0.098	C	NA	NA	No	ND, DLBSL
	959-98-8	Endosulfan I	ND	ND	mg/kg		0/6	.0001-.00057	0.00057	NA	NA		NA	NA	No	ND, NSV [6]
	33213-65-9	Endosulfan II	ND	ND	mg/kg		0/6	.0001-.00057	0.00057	NA	NA		NA	NA	No	ND, NSV [6]
	1031-07-8	Endosulfan sulfate	.0007 (J)	.0011 (J)	mg/kg	SS-25 / 03-29-01	2/6	.0001-.00051	0.0011	NA	NA		NA	NA	No	NSV [6]

TABLE 2.3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT RESIDENT AND SITE WORKER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/18	.0017-.0021	0.0021	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	.0094	4.6 (J)	mg/kg	SS-20 / 06-12-01	14/30	.0051-.013	4.6	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	.00091 (J)	.00091 (J)	mg/kg	SS-21 / 04-02-01	1/6	.0001-.00057	0.00091	NA	0.00014	C	NA	NA	Yes	ASL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/18	.0045-.027	0.027	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.014	3.5	mg/kg	SS-17 / 04-05-01	13/30	.0051-.42	3.5	NA	2.3	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	.0062	6.4	mg/kg	SS-17 / 04-05-01	15/30	.0051-.42	6.4	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	.0052	40	mg/kg	SS-20 / 06-12-01	28/30	.0051-.006	40	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/18	.0017-.0021	0.0021	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.0009 (J)	.0031	mg/kg	OW-110 / 06-08-01	7/18	.0017-.002	0.0031	NA	0.041	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	.0051 (J)	.0051 (J)	mg/kg	SB-27 / S-2-3 / 06-15-01	1/18	.0017-.0021	0.0051	NA	0.06	NC	NA	NA	No	BSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/18	.0017-.0021	0.0021	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	.001 (J)	.2 (J)	mg/kg	SS-28 / 07-23-01	3/18	.0017-.0021	0.2	NA	0.013	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0031	.0038	mg/kg	OW-110 / 06-08-01	2/18	.0017-.0021	0.0038	NA	1.4	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.0012 (J)	.0014 (J)	mg/kg	OW-110 / 06-08-01	2/18	.0017-.0021	0.0014	NA	1.9	NC	NA	NA	No	BSL
East of South Street On-Facility Building 4 (Indoor Air - Site Worker)	83-32-9	Acenaphthene	.0064	15	mg/kg	SB-14 / S-3-4 / 04-13-01	16/21	.0052-2.1	15	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	.011 (EB)	.11 (J)	mg/kg	UST-2 / S-1-2 / 04-05-01	4/15	.0046-.042	0.11	NA	0.43	NC	NA	NA	No	BSL
	309-00-2	Aldrin	.00084 (J)	.00084 (J)	mg/kg	SB-13A / S-3-4 / 04-13-01	1/6	.00055-.00058	0.00084	NA	0.7	C	NA	NA	No	BSL
	71-43-2	Benzene	.0023 (J)	.036 (J)	mg/kg	UST-1 / S-3-4 / 04-04-01	5/15	.0017-.0022	0.036	NA	0.00014	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.009	89	mg/kg	SB-14 / S-3-4 / 04-13-01	21/21		89	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/6	.00055-.00058	0.00058	NA	0.016	C	NA	NA	No	ND, DLBSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/6	.00055-.00058	0.00058	NA	0.049	C	NA	NA	No	ND, DLBSL
	78-93-3	Butanone (2-)	.0039	.0039	mg/kg	SB-25 / S-4-5 / 03-29-01	1/15	.0018-.0037	0.0039	NA	1	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0041	.0041	mg/kg	UST-2 / S-3-4 / 04-05-01	1/15	.0017-.0037	0.0041	NA	0.0079	NC	NA	NA	No	BSL
	5103-71-9	Chlordane (alpha-)	.00084 (J)	.0013 (J)	mg/kg	SS-25 / 03-29-01	2/6	.00055-.00058	0.0013	NA	5	C	NA	NA	No	BSL
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0019 (J)	mg/kg	SS-25 / 03-29-01	2/6	.00055-.00058	0.0019	NA	5	C	NA	NA	No	BSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/15	.0017-.0037	0.0037	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	.012	71	mg/kg	SB-14 / S-3-4 / 04-13-01	21/21		71	NA	NA		NA	NA	No	NSV [6]
	72-55-9	DDE (4,4'-)	ND	ND	mg/kg		0/6	.00055-.00058	0.00058	NA	560	C	NA	NA	No	ND, DLBSL
	132-64-9	Dibenzofuran	.046 (J)	27	mg/kg	SB-14 / S-3-4 / 04-13-01	10/21	.21-2.1	27	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/21	.21-4.8	4.8	NA	0.27	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/21	.21-4.8	4.8	NA	0.83	NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/15	.0017-.0037	0.0037	NA	0.0015	NC	NA	NA	No	ND, DLASL
	60-57-1	Dieldrin	.00056 (J)	.00059 (J)	mg/kg	OW-105-2 / 04-13-01	2/6	.00055-.00058	0.00059	NA	0.098	C	NA	NA	No	BSL
	959-98-8	Endosulfan I	ND	ND	mg/kg		0/6	.00055-.00058	0.00058	NA	NA		NA	NA	No	ND, NSV [6]
	33213-65-9	Endosulfan II	ND	ND	mg/kg		0/6	.00055-.00058	0.00058	NA	NA		NA	NA	No	ND, NSV [6]
	1031-07-8	Endosulfan sulfate	.0007 (J)	.0011 (J)	mg/kg	SS-25 / 03-29-01	2/6	.00055-.00058	0.0011	NA	NA		NA	NA	No	NSV [6]
	100-41-4	Ethylbenzene	.003 (J)	.016 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	2/15	.0017-.0037	0.016	NA	0.0039	C	NA	NA	Yes	ASL
	86-73-7	Fluorene	.0096	44	mg/kg	SB-14 / S-3-4 / 04-13-01	17/21	.0052-.23	44	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	ND	ND	mg/kg		0/6	.00055-.00058	0.00058	NA	0.00014	C	NA	NA	No	ND, DLASL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/15	.0046-.02	0.02	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.0073	17	mg/kg	SB-14 / S-3-4 / 04-13-01	15/21	.0052-.23	17	NA	2.3	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	.0053	14	mg/kg	SB-14 / S-3-4 / 04-13-01	19/21	.0054	14	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	.019	150	mg/kg	SB-14 / S-3-4 / 04-13-01	21/21		150	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	.049 (J)	.049 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	1/15	.0017-.0037	0.049	NA	1.1	NC	NA	NA	No	BSL
	108-88-3	Toluene	.0011 (J)	.031 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	4/15	.0017-.0037	0.031	NA	0.041	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/15	.0017-.0037	0.0037	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/15	.0017-.0037	0.0037	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	.0098 (J)	.0098 (J)	mg/kg	SB-16 / S-3-4 / 06-06-01	1/15	.0017-.0037	0.0098	NA	0.013	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	.0011 (J)	.21 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	4/15	.0017-.0037	0.21	NA	1.4	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.0013 (J)	.12 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	2/15	.0017-.0037	0.12	NA	1.9	NC	NA	NA	No	BSL

TABLE 2.3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT RESIDENT AND SITE WORKER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
East of South Street On-Facility Building 5 (Indoor Air - Site Worker)	83-32-9	Acenaphthene	.0064	5.3	mg/kg	SS-26 / 03-30-01	12/16	.005-.0054	5.3	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	.011 (EB)	.11 (J)	mg/kg	UST-2 / S-1-2 / 04-05-01	3/13	.0045-.017	0.11	NA	0.43	NC	NA	NA	No	BSL
	309-00-2	Aldrin	ND	ND	mg/kg		0/6	.00051-.00058	0.00058	NA	0.7	C	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	.0023 (J)	.005	mg/kg	UST-2 / S-3-4 / 04-05-01	2/13	.0017-.0022	0.005	NA	0.00014	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0066 (J)	34	mg/kg	SS-17 / 04-05-01	15/16	.0051	34	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/6	.00051-.00058	0.00058	NA	0.016	C	NA	NA	No	ND, DLBSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/6	.00051-.00058	0.00058	NA	0.049	C	NA	NA	No	ND, DLBSL
	78-93-3	Butanone (2-)	.0039	.0039	mg/kg	SB-25 / S-4-5 / 03-29-01	1/13	.0018-.0037	0.0039	NA	1	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0041	.0041	mg/kg	UST-2 / S-3-4 / 04-05-01	1/13	.0017-.0037	0.0041	NA	0.0079	NC	NA	NA	No	BSL
	5103-71-9	Chlordane (alpha-)	.00084 (J)	.0013 (J)	mg/kg	SS-25 / 03-29-01	2/6	.00051-.00058	0.0013	NA	5	C	NA	NA	No	BSL
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0019 (J)	mg/kg	SS-25 / 03-29-01	2/6	.00051-.00058	0.0019	NA	5	C	NA	NA	No	BSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/13	.0017-.0037	0.0037	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	.007 (J)	25	mg/kg	SS-17 / 04-05-01	15/16	.0051	25	NA	NA		NA	NA	No	NSV [6]
	72-55-9	DDE (4,4'-)	ND	ND	mg/kg		0/6	.00051-.00058	0.00058	NA	560	C	NA	NA	No	ND, DLBSL
	132-64-9	Dibenzofuran	.046 (J)	4.2	mg/kg	SS-26 / 03-30-01	8/16	.2-.42	4.2	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/16	.2-2.5	2.5	NA	0.27	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/16	.2-2.5	2.5	NA	0.83	NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/13	.0017-.0037	0.0037	NA	0.0015	NC	NA	NA	No	ND, DLASL
	60-57-1	Dieldrin	ND	ND	mg/kg		0/6	.00051-.00058	0.00058	NA	0.098	C	NA	NA	No	ND, DLBSL
	959-98-8	Endosulfan I	ND	ND	mg/kg		0/6	.00051-.00058	0.00058	NA	NA		NA	NA	No	ND, NSV [6]
	33213-65-9	Endosulfan II	ND	ND	mg/kg		0/6	.00051-.00058	0.00058	NA	NA		NA	NA	No	ND, NSV [6]
	1031-07-8	Endosulfan sulfate	.0007 (J)	.0011 (J)	mg/kg	SS-25 / 03-29-01	2/6	.00051-.00058	0.0011	NA	NA		NA	NA	No	NSV [6]
	100-41-4	Ethylbenzene	.003 (J)	.003 (J)	mg/kg	UST-2 / S-3-4 / 04-05-01	1/13	.0017-.0037	0.003	NA	0.0039	C	NA	NA	No	BSL
	86-73-7	Fluorene	.0061	7.3	mg/kg	SS-26 / 03-30-01	12/16	.005-.0054	7.3	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	ND	ND	mg/kg		0/6	.00051-.00058	0.00058	NA	0.00014	C	NA	NA	No	ND, DLASL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/13	.0045-.02	0.02	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.0073	3.5	mg/kg	SS-17 / 04-05-01	11/16	.005-.0054	3.5	NA	2.3	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	.0053	8.8	mg/kg	UST-2 / S-1-2 / 04-05-01	12/16	.005-.0054	8.8	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	.012 (J)	39	mg/kg	SB-15 / S-2-3 / 04-16-01	15/16	.0051	39	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/13	.0017-.0037	0.0037	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.0011 (J)	.0011 (J)	mg/kg	UST-2 / S-3-4 / 04-05-01	1/13	.0017-.0037	0.0011	NA	0.041	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/13	.0017-.0037	0.0037	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/13	.0017-.0037	0.0037	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	.0015 (J)	.0098 (J)	mg/kg	SB-16 / S-3-4 / 06-06-01	2/13	.0017-.0037	0.0098	NA	0.013	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	.0011 (J)	.0011 (J)	mg/kg	UST-2 / S-3-4 / 04-05-01	1/13	.0017-.0037	0.0011	NA	1.4	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/13	.0017-.0037	0.0037	NA	1.9	NC	NA	NA	No	ND, DLBSL

TABLE 2.3

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT RESIDENT AND SITE WORKER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:
Shaded chemicals are selected as COPCs.
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
C - Screening toxicity value based on cancer effects
NA - Not Applicable/Not Available
ND - Not Detected
NC - Screening toxicity value based on non-cancer effects

(1) Chemicals included in this COPC screening are detected in at least one exposure point and have chemical properties in the Johnson & Ettinger model (USEPA, 2003).

(2) Minimum/Maximum detected concentration data qualifiers:
EB - The chemical was also detected in an associated non-matrix matched Equipment Blank.
J- The result is estimated (uncertain) due to QC exceedance(s).
JEB-The chemical was also detected in an associated non-matrix matched Equipment Blank and the result is estimated (uncertain) due to QC exceedance(s).

(3) Maximum detected concentration, or if never detected, maximum detection limit.

(4) Target soil or soil gas concentrations corresponding to an indoor air cancer risk of 1 x 10^{-6} or non-cancer Hazard Index of 0.1 are used to screen COPCs for the indoor air pathway. Soil screening values are derivied from the Johnson & Ettinger Model (USEPA, 2003) as described in Appendix E1. Shallow soil gas screening values are from: United States Environmental Protection Agency (USEPA) Office of Solid Waste and Emergency Response. 2002. Draft Guidance for Evaluating the Vapor Intrusion Indoor Air Pathway From Groundwater and Soils. Table 2c. The p-xylene target concentration is used for m,p-xylenes.

(5) Rationale for Selection or Deletion:
ASL - Above Screening Level
BSL - Below or Equal to Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below or Equal to Screening Level
ND - Not Detected
NSV - No Screening Value
NTX - No toxicity information available
TX - Toxicity information available

(6) The target soil gas concentration exceeds the maximum possible vapor concentration for these chemicals (USEPA, 2002).

(7) Soil gas data and target shallow soil gas concentrations are used to screen COPCs at this exposure point.

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Lots South of the AOC (Indoor Air - Resident)	83-32-9	Acenaphthene	0.024	0.12	mg/kg	OW-103 / S-1-2 / 03-20-01	6/11	.0063-.23	0.12	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	.098 (J)	.15 (J)	mg/kg	SB-42 / S-1-2 / 07-27-01	3/10	.011-.1	0.15	NA	0.43	NC	NA	NA	No	BSL
	309-00-2	Aldrin	.0097 (J)	.011 (J)	mg/kg	OW-109 / 07-27-01	2/4	.00012-.00013	0.011	NA	0.7	C	NA	NA	No	BSL
	71-43-2	Benzene	.0015 (J)	0.0033	mg/kg	SB-44 / S-1-2 / 07-31-01	3/9	.0021-.0025	0.0033	NA	0.00014	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.054	1.9	mg/kg	SB-44 / S-1-2 / 07-31-01	10/11	.0063	1.9	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	.0034 (J)	.0036 (J)	mg/kg	OW-109 / 07-27-01	2/4	.00012-.00013	0.0036	NA	0.016	C	NA	NA	No	BSL
	58-89-9	BHC (gamma-)	.0042 (J)	.0042 (J)	mg/kg	OW-103 / S-1-2 / 03-20-01	1/4	.00013-.00066	0.0042	NA	0.049	C	NA	NA	No	BSL
	78-93-3	Butanone (2-)	0.016	.058 (J)	mg/kg	SB-43 / S-3-4 / 08-01-01	5/9	.0023-.0025	0.058	NA	1	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0054 (J)	0.033	mg/kg	SB-44 / S-1-2 / 07-31-01	3/9	.0022-.0025	0.033	NA	0.0079	NC	NA	NA	Yes	ASL
	5103-71-9	Chlordane (alpha-)	.0028 (J)	.0034 (J)	mg/kg	SB-42 / S-3-4 / 07-27-01	2/4	.00012-.00013	0.0034	NA	5	C	NA	NA	No	BSL
	5103-74-2	Chlordane (gamma-)	.0035 (J)	.0035 (J)	mg/kg	SB-42 / S-3-4 / 07-27-01	1/4	.00012-.00066	0.0035	NA	5	C	NA	NA	No	BSL
	67-66-3	Chloroform	.0012 (J)	.0012 (J)	mg/kg	OW-109 / 07-27-01	1/9	.0021-.0025	0.0012	NA	0.000054	C	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.066	2.5	mg/kg	SB-44 / S-1-2 / 07-31-01	10/11	.0063	2.5	NA	NA		NA	NA	No	NSV [6]
	72-55-9	DDE (4,4'-)	.0043 (J)	.0043 (J)	mg/kg	SB-42 / S-3-4 / 07-27-01	1/4	.00012-.00066	0.0043	NA	560	C	NA	NA	No	BSL
	132-64-9	Dibenzofuran	.088 (J)	.13 (J)	mg/kg	OW-103 / S-1-2 / 03-20-01	3/11	.23-.26	0.13	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/11	.23-.26	0.26	NA	0.27	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/11	.23-.26	0.26	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	0.0015	NC	NA	NA	No	ND, DLASL
	60-57-1	Dieldrin	.0041 (J)	.0046 (J)	mg/kg	OW-109 / 07-27-01	2/4	.00012-.00013	0.0046	NA	0.098	C	NA	NA	No	BSL
	959-98-8	Endosulfan I	.0025 (J)	.003 (J)	mg/kg	SB-42 / S-3-4 / 07-27-01	2/4	.00012-.00013	0.003	NA	NA		NA	NA	No	NSV [6]
	33213-65-9	Endosulfan II	.01 (J)	.01 (J)	mg/kg	SB-42 / S-3-4 / 07-27-01	1/4	.00012-.00066	0.01	NA	NA		NA	NA	No	NSV [6]
	1031-07-8	Endosulfan sulfate	ND	ND	mg/kg		0/4	.00012-.00066	0.00066	NA	NA		NA	NA	No	ND, NSV [6]
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.021	0.28	mg/kg	SB-44 / S-1-2 / 07-31-01	7/11	.0063-.013	0.28	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	ND	ND	mg/kg		0/4	.00012-.00066	0.00066	NA	0.00014	C	NA	NA	No	ND, DLASL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/9	.0052-.01	0.01	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.0094	0.26	mg/kg	SB-44 / S-1-2 / 07-31-01	10/11	.0063	0.26	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.024	0.34	mg/kg	OW-103 / S-1-2 / 03-20-01, SB-41 / S-1-2 / 03-20-01, SB-44 / S-1-2 / 07-31-01	10/11	.0063	0.34	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.074	4.7	mg/kg	SB-44 / S-1-2 / 07-31-01	10/11	.0063	4.7	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.0016 (J)	0.0094	mg/kg	SB-43 / S-1-2 / 08-01-01	4/10	.0021-.0025	0.0094	NA	0.041	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	.025 (J)	.25 (J)	mg/kg	SB-41D / S-5-6 / 07-27-01	8/10	.0023-.0025	0.25	NA	0.013	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0016 (J)	.0019 (J)	mg/kg	SB-44 / S-1-2 / 07-31-01	2/9	.0022-.0025	0.0019	NA	1.4	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	1.9	NC	NA	NA	No	ND, DLBSL
East of South Street On-Facility SB-09 area (Indoor Air from Soil Gas - Resident and Site Worker) [7]	67-64-1	Acetone	.00406 (J)	0.0988	mg/m3	SV-09 / 09-06-06	11/11		0.0988	NA	0.35	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00108 (J)	0.0129	mg/m3	SV-07 / 09-06-06	8/11	.0016-.016	0.0129	NA	0.0031	C	NA	NA	Yes	ASL
	78-93-3	Butanone (2-)	0.00237	0.015	mg/m3	SV-10 / 09-06-06	5/11	.00147-.0147	0.015	NA	1	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	0.00286	0.016	mg/m3	SV-08 / 09-06-06	5/11	.00156-.0156	0.016	NA	0.7	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	0.00348	0.00348	mg/m3	SV-08 / 09-06-06	1/11	.00314-.0314	0.00348	NA	0.0016	C	NA	NA	Yes	ASL
	67-66-3	Chloroform	.0123 (J)	.0123 (J)	mg/m3	SV-01 / 09-07-06	1/11	.00244-.0244	0.0123	NA	0.0011	C	NA	NA	Yes	ASL
	541-73-1	Dichlorobenzene (1,3-)	.00206 (J)	.00206 (J)	mg/m3	SV-03 / 09-07-06	1/11	.003-.03	0.00206	NA	0.11	NC	NA	NA	No	BSL
	156-59-2	Dichloroethene (cis-1,2-)	0.0388	0.04	mg/m3	SV-01 / 09-07-06	2/11	.00198-.00396	0.04	NA	0.035	NC	NA	NA	Yes	ASL
	100-41-4	Ethylbenzene	.00191 (J)	0.0243	mg/m3	SV-06 / 09-07-06	7/11	.00217-.0217	0.0243	NA	0.022	C	NA	NA	Yes	ASL
	110-54-3	Hexane (n-)	.000994 (J)	0.00779	mg/m3	SV-06 / 09-07-06	9/11	.0352	0.00779	NA	0.2	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	0.00304	0.00712	mg/m3	SV-09 / 09-06-06	2/11	.00205-.0205	0.00712	NA	0.08	NC	NA	NA	No	BSL
	75-09-2	Methylene chloride	.00241 (J)	0.0972	mg/m3	SV-08 / 09-06-06	8/11	.00347-.0347	0.0972	NA	0.052	C	NA	NA	Yes	ASL
	91-57-6	Methylnaphthalene (2-)	.0023 (J)	0.0178	mg/m3	SV-09 / 09-06-06	4/11	.008	0.0178	NA	0.07	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.00069 (J)	0.0109	mg/m3	SV-02 / 09-07-06	9/11	.002	0.0109	NA	0.003	NC	NA	NA	Yes	ASL
	100-42-5	Styrene	0.00958	0.00958	mg/m3	SV-09 / 09-06-06	1/11	.00213-.0213	0.00958	NA	1	NC	NA	NA	No	BSL
	127-18-4	Tetrachloroethene	.00202 (J)	0.0247	mg/m3	SV-10 / 09-06-06	3/11	.00339-.0339	0.0247	NA	0.0081	C	NA	NA	Yes	ASL
	108-88-3	Toluene	0.0052	0.105	mg/m3	SV-06 / 09-07-06	11/11		0.105	NA	0.4	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	.00175 (J)	.00175 (J)	mg/m3	SV-06 / 09-07-06	1/11	.00272-.0272	0.00175	NA	2.2	NC	NA	NA	No	BSL
	79-01-6	Trichloroethene	.0021 (J)	3.86	mg/m3	SV-01 / 09-07-06	9/11	.00268	3.86	NA	0.00022	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	.00255 (J)	0.0328	mg/m3	SV-05 / 09-07-06	5/11	.00281-.0281	0.0328	NA	0.7	NC	NA	NA	No	BSL
	95-63-6	Trimethylbenzene (1,2,4-)	0.017	0.0359	mg/m3	SV-02 / 09-07-06	3/11	.00246-.0246	0.0359	NA	0.006	NC	NA	NA	Yes	ASL
	108-67-8	Trimethylbenzene (1,3,5-)	0.00249	0.0284	mg/m3	SV-01 / 09-07-06	9/11	.00246	0.0284	NA	0.006	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	0.00688	0.0909	mg/m3	SV-06 / 09-07-06	9/11	.00434	0.0909	NA	7	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.00188 (J)	0.0273	mg/m3	SV-06 / 09-07-06	9/11	.00217-.0217	0.0273	NA	7	NC	NA	NA	No	BSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
East of South Street On-Facility non-SB-09 area (Indoor Air from Soil - Resident and Site Worker)	83-32-9	Acenaphthene	0.0064	15	mg/kg	SB-14 / S-3-4 / 04-13-01	20/35	.0051-2.1	15	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	.007 (EB)	.11 (J)	mg/kg	UST-2 / S-1-2 / 04-05-01	8/24	.0046-.042	0.11	NA	0.43	NC	NA	NA	No	BSL
	309-00-2	Aldrin	.00084 (J)	.00084 (J)	mg/kg	SB-13A / S-3-4 / 04-13-01	1/8	.0001-.00058	0.00084	NA	0.7	C	NA	NA	No	BSL
	71-43-2	Benzene	.0023 (J)	.036 (J)	mg/kg	UST-1 / S-3-4 / 04-04-01	5/24	.0017-.0022	0.036	NA	0.00014	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.0077	89	mg/kg	SB-14 / S-3-4 / 04-13-01	33/35	.0051	89	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/8	.0001-.00058	0.00058	NA	0.016	C	NA	NA	No	ND, DLBSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/8	.0001-.00058	0.00058	NA	0.049	C	NA	NA	No	ND, DLBSL
	78-93-3	Butanone (2-)	0.0039	0.0039	mg/kg	SB-25 / S-4-5 / 03-29-01	1/24	.0018-.0037	0.0039	NA	1	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	0.0041	0.0041	mg/kg	UST-2 / S-3-4 / 04-05-01	1/24	.0017-.0037	0.0041	NA	0.0079	NC	NA	NA	No	BSL
	5103-71-9	Chlordane (alpha-)	.00084 (J)	.0013 (J)	mg/kg	SS-21 / 04-02-01, SS-25 / 03-29-01	3/8	.0001-.00058	0.0013	NA	5	C	NA	NA	No	BSL
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0019 (J)	mg/kg	SS-25 / 03-29-01	2/8	.0001-.00058	0.0019	NA	5	C	NA	NA	No	BSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/24	.0017-.0037	0.0037	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.012	71	mg/kg	SB-14 / S-3-4 / 04-13-01	33/35	.0051	71	NA	NA		NA	NA	No	NSV [6]
	72-55-9	DDE (4,4'-)	ND	ND	mg/kg		0/8	.0001-.00058	0.00058	NA	560	C	NA	NA	No	ND, DLBSL
	132-64-9	Dibenzofuran	.046 (J)	27	mg/kg	SB-14 / S-3-4 / 04-13-01	13/35	.2-2.1	27	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/35	.2-4.8	4.8	NA	0.27	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/35	.2-4.8	4.8	NA	0.83	NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/24	.0017-.0037	0.0037	NA	0.0015	NC	NA	NA	No	ND, DLASL
	60-57-1	Dieldrin	.00056 (J)	.00059 (J)	mg/kg	OW-105-2 / 04-13-01	2/8	.0001-.00058	0.00059	NA	0.098	C	NA	NA	No	BSL
	959-98-8	Endosulfan I	ND	ND	mg/kg		0/8	.0001-.00058	0.00058	NA	NA		NA	NA	No	ND, NSV [6]
	33213-65-9	Endosulfan II	ND	ND	mg/kg		0/8	.0001-.00058	0.00058	NA	NA		NA	NA	No	ND, NSV [6]
	1031-07-8	Endosulfan sulfate	.0007 (J)	.0011 (J)	mg/kg	SS-25 / 03-29-01	2/8	.0001-.00058	0.0011	NA	NA		NA	NA	No	NSV [6]
	100-41-4	Ethylbenzene	.003 (J)	.016 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	2/24	.0017-.0037	0.016	NA	0.0039	C	NA	NA	Yes	ASL
	86-73-7	Fluorene	0.0096	44	mg/kg	SB-14 / S-3-4 / 04-13-01	22/35	.0051-.23	44	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	.00091 (J)	.00091 (J)	mg/kg	SS-21 / 04-02-01	1/8	.0001-.00058	0.00091	NA	0.00014	C	NA	NA	Yes	ASL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/24	.0046-.027	0.027	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.0073	17	mg/kg	SB-14 / S-3-4 / 04-13-01	24/35	.0051-.23	17	NA	2.3	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.0053	14	mg/kg	SB-14 / S-3-4 / 04-13-01	29/35	.0051-.0054	14	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.0052	150	mg/kg	SB-14 / S-3-4 / 04-13-01	34/35	.0051	150	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	.049 (J)	.049 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	1/24	.0017-.0037	0.049	NA	1.1	NC	NA	NA	No	BSL
	108-88-3	Toluene	.0011 (J)	.031 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	8/24	.0017-.0037	0.031	NA	0.041	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/24	.0017-.0037	0.0037	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	0.0018	0.0018	mg/kg	SB-11 / S-2-3 / 06-07-01	1/24	.0017-.0037	0.0018	NA	0.000013	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	.0098 (J)	.0098 (J)	mg/kg	SB-16 / S-3-4 / 06-06-01	1/24	.0017-.0037	0.0098	NA	0.013	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	.0011 (J)	.21 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	4/24	.0017-.0037	0.21	NA	1.4	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.0013 (J)	.12 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	2/24	.0017-.0037	0.12	NA	1.9	NC	NA	NA	No	BSL
Lot 283 (Indoor Air - Resident)	83-32-9	Acenaphthene	0.036	0.036	mg/kg	FP-01 / 10-10-01, OW-404 / 10-10-01	2/2		0.036	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	0.43	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.57	0.67	mg/kg	OW-404 / 10-10-01	2/2		0.67	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	.0012 (J)	.0012 (J)	mg/kg	OW-404 / 10-10-01	1/2	.0018	0.0012	NA	0.000054	C	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.88	1	mg/kg	OW-404 / 10-10-01	2/2		1	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	0.27	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0015	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.052	0.058	mg/kg	FP-01 / 10-10-01	2/2		0.058	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/2	.0044-.011	0.011	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.032	0.037	mg/kg	OW-404 / 10-10-01	2/2		0.037	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.075	0.08	mg/kg	OW-404 / 10-10-01	2/2		0.08	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	1.5	1.7	mg/kg	OW-404 / 10-10-01	2/2		1.7	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.041	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.06	NC	NA	NA	No	ND, DLBSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.000013 C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.013 NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.4 NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	1.9 NC	NA	NA	No	ND, DLBSL
Lot 282 (Indoor Air - Resident)	83-32-9	Acenaphthene	0.011	0.011	mg/kg	FP-02 / 10-10-01	1/1		0.011	NA	NA	NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.011	0.011	NA	0.43 NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00014 C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.2	0.2	mg/kg	FP-02 / 10-10-01	1/1		0.2	NA	NA	NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0054	0.0054	NA	1 NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0079 NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000054 C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.24	0.24	mg/kg	FP-02 / 10-10-01	1/1		0.24	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.22	0.22	NA	NA	NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	0.27 NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	0.83 NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0015 NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0039 C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.018	0.018	mg/kg	FP-02 / 10-10-01	1/1		0.018	NA	NA	NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.011	0.011	NA	0.0021 C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.015	0.015	mg/kg	FP-02 / 10-10-01	1/1		0.015	NA	2.3 NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.026	0.026	mg/kg	FP-02 / 10-10-01	1/1		0.026	NA	0.057 NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.35	0.35	mg/kg	FP-02 / 10-10-01	1/1		0.35	NA	NA	NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.1 NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.041 NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.06 NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000013 C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.013 NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.4 NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.9 NC	NA	NA	No	ND, DLBSL
Lot 210 (Indoor Air - Resident)	83-32-9	Acenaphthene	0.022	0.022	mg/kg	FP-03 / 10-10-01	1/1		0.022	NA	NA	NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.43 NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00014 C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.8	0.8	mg/kg	FP-03 / 10-10-01	1/1		0.8	NA	NA	NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0052	0.0052	NA	1 NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0079 NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000054 C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.79	0.79	mg/kg	FP-03 / 10-10-01	1/1		0.79	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.04 (J)	.04 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.04	NA	NA	NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	0.27 NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	0.83 NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0015 NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0039 C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.098	0.098	mg/kg	FP-03 / 10-10-01	1/1		0.098	NA	NA	NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.0021 C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.035	0.035	mg/kg	FP-03 / 10-10-01	1/1		0.035	NA	2.3 NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.056	0.056	mg/kg	FP-03 / 10-10-01	1/1		0.056	NA	0.057 NC	NA	NA	No	BSL
	129-00-0	Pyrene	1.2	1.2	mg/kg	FP-03 / 10-10-01	1/1		1.2	NA	NA	NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.1 NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.041 NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.06 NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000013 C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.013 NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.4 NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.9 NC	NA	NA	No	ND, DLBSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Lot 230 (Indoor Air - Resident)	83-32-9	Acenaphthene	0.017	0.017	mg/kg	FP-04 / 10-10-01	1/1		0.017	NA	NA	NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0081	0.0081	NA	0.43 NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.00014 C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.43	0.43	mg/kg	FP-04 / 10-10-01	1/1		0.43	NA	NA	NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0081	0.0081	NA	1 NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0079 NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.000054 C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.57	0.57	mg/kg	FP-04 / 10-10-01	1/1		0.57	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.19	0.19	NA	NA	NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	.04 (J)	.04 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.04	NA	0.27 NC	NA	NA	No	BSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	0.83 NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0015 NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0039 C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.034	0.034	mg/kg	FP-04 / 10-10-01	1/1		0.034	NA	NA	NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.017	0.017	NA	0.0021 C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.024	0.024	mg/kg	FP-04 / 10-10-01	1/1		0.024	NA	2.3 NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.042	0.042	mg/kg	FP-04 / 10-10-01	1/1		0.042	NA	0.057 NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.81	0.81	mg/kg	FP-04 / 10-10-01	1/1		0.81	NA	NA	NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.1 NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.041 NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.06 NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.000013 C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.013 NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.4 NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.9 NC	NA	NA	No	ND, DLBSL
Lot 257 (Indoor Air - Resident)	83-32-9	Acenaphthene	0.037	0.057	mg/kg	FP-05 / 0-1 / 08-05-03	3/4	.01	0.057	NA	NA	NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.008	0.008	NA	0.43 NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.00014 C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.057	1.1	mg/kg	OW-410 / 08-05-03	4/4		1.1	NA	NA	NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.008	0.008	NA	1 NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0079 NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.000054 C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.046	1.1	mg/kg	FP-05 / 10-10-01	4/4		1.1	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.2	0.2	NA	NA	NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.27 NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.83 NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0015 NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0039 C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.06	0.078	mg/kg	FP-05 / 10-10-01	3/4	.01	0.078	NA	NA	NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.008	0.008	NA	0.0021 C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.02	0.088	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.088	NA	2.3 NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.072	0.1	mg/kg	FP-05 / 10-10-01	3/4	.01	0.1	NA	0.057 NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.086	1.6	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		1.6	NA	NA	NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.1 NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.041 NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.06 NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.000013 C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.013 NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.4 NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	1.9 NC	NA	NA	No	ND, DLBSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Orlando Property (Indoor Air - Resident)	83-32-9	Acenaphthene	0.0059	1.3	mg/kg	FP-06 / 10-10-01	7/15	.0055-.0064	1.3	NA	NA	NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/5	.005-.013	0.013	NA	0.43 NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.00014 C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.014	3.2	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	3.2	NA	NA	NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	1 NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.0079 NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.000054 C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.014	3.4	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	3.4	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.68 (J)	.68 (J)	mg/kg	FP-06 / 10-10-01	1/13	.22-.27	0.68	NA	NA	NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	0.27 NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	0.83 NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.0015 NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.0039 C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.012	0.97	mg/kg	FP-06 / 10-10-01	7/15	.0055-.0064	0.97	NA	NA	NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/5	.005-.0089	0.0089	NA	0.0021 C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.0064	0.31	mg/kg	FP-06 / 10-10-01	8/15	.0055-.0064	0.31	NA	2.3 NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.0067	0.6	mg/kg	FP-06 / 10-10-01	8/15	.0055-.0064	0.6	NA	0.057 NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.016	9.2	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	9.2	NA	NA	NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1.1 NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.041 NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.06 NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.000013 C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.013 NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1.4 NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	1.9 NC	NA	NA	No	ND, DLBSL
Lot 342 (Indoor Air - Resident)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/1	.01	0.01	NA	NA	NA	NA	No	ND, NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0094	0.0094	NA	0.43 NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.00014 C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.15	0.15	mg/kg	FP-08 / 10-10-01	1/1		0.15	NA	NA	NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0094	0.0094	NA	1 NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.0079 NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.000054 C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.18	0.18	mg/kg	FP-08 / 10-10-01	1/1		0.18	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.2	0.2	NA	NA	NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.27 NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.83 NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.0015 NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.0039 C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.013	0.013	mg/kg	FP-08 / 10-10-01	1/1		0.013	NA	NA	NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.01	0.01	NA	0.0021 C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.03	0.03	mg/kg	FP-08 / 10-10-01	1/1		0.03	NA	2.3 NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.05	0.05	mg/kg	FP-08 / 10-10-01	1/1		0.05	NA	0.057 NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.19	0.19	mg/kg	FP-08 / 10-10-01	1/1		0.19	NA	NA	NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1.1 NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.041 NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.06 NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.000013 C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.013 NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1.4 NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	1.9 NC	NA	NA	No	ND, DLBSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Lot 360 (Indoor Air - Resident)	83-32-9	Acenaphthene	.0006 (J)	.032	mg/kg	FP-09 / 10-10-01	15/16	0.01	0.032	NA	NA	NA	NA	No	NSV [6]
	67-64-1	Acetone	.073 (J)	.073 (J)	mg/kg	FP-09 / 10-10-01	1/1		0.073	NA	0.43 NC	NA	NA	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.00014 C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	.0061	.86	mg/kg	FP-09 / 0-1 / 08-05-03	16/16		0.86	NA	NA	NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.01	0.01	NA	1 NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.004	0.004	NA	0.0079 NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.004	0.004	NA	0.000054 C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	.0069	.82	mg/kg	FP-09 / 10-10-01	16/16		0.82	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.099 (J)	.099 (J)	mg/kg	FP-09 / 10-10-01	1/1		0.099	NA	NA	NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.27	0.27	NA	0.27 NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	0.83 NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.0015 NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.0039 C	NA	NA	No	ND, DLASL
	86-73-7	Fluorene	.00075 (J)	.1	mg/kg	FP-09 / 10-10-01	14/16	.0044 -.01	0.1	NA	NA	NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.013	0.013	NA	0.0021 C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.0013 (J)	1.1	mg/kg	FP-09 / 10-10-01	16/16		1.1	NA	2.3 NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.0014 (J)	1.1	mg/kg	FP-09 / 10-10-01	16/16		1.1	NA	0.057 NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	.0076	.99 (J)	mg/kg	FP-09E / 0-1' / 10-13-06	16/16		0.99	NA	NA	NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.004	0.004	NA	1.1 NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.041 NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.06 NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.000013 C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.004	0.004	NA	0.013 NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.004	0.004	NA	1.4 NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.004	0.004	NA	1.9 NC	NA	NA	No	ND, DLBSL
Lot 350 (Indoor Air - Resident)	83-32-9	Acenaphthene	0.014	0.014	mg/kg	FP-10 / 10-10-01	1/1		0.014	NA	NA	NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0069	0.0069	NA	0.43 NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.00014 C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.2	0.2	mg/kg	FP-10 / 10-10-01	1/1		0.2	NA	NA	NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0069	0.0069	NA	1 NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.0079 NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.000054 C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.25	0.25	mg/kg	FP-10 / 10-10-01	1/1		0.25	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.19	0.19	NA	NA	NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	0.27 NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	0.83 NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.0015 NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.0039 C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.019	0.019	mg/kg	FP-10 / 10-10-01	1/1		0.019	NA	NA	NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0069	0.0069	NA	0.0021 C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.034	0.034	mg/kg	FP-10 / 10-10-01	1/1		0.034	NA	2.3 NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.065	0.065	mg/kg	FP-10 / 10-10-01	1/1		0.065	NA	0.057 NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.29	0.29	mg/kg	FP-10 / 10-10-01	1/1		0.29	NA	NA	NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0027	0.0027	NA	1.1 NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.041 NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.06 NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.000013 C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.013 NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	1.4 NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0027	0.0027	NA	1.9 NC	NA	NA	No	ND, DLBSL
Gleason Court Vacant Lot (Indoor Air - Resident)	83-32-9	Acenaphthene	0.019	0.034	mg/kg	SS-64 / 03-23-01	2/4	.0053-.0054	0.034	NA	NA	NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0091	0.0091	NA	0.43 NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.00014 C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.0065	0.37	mg/kg	SS-65 / 03-26-01	4/4		0.37	NA	NA	NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1 NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.0079 NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.000054 C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.0061	0.36	mg/kg	SS-65 / 03-26-01	4/4		0.36	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA	NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	0.27 NC	NA	NA	No	ND, DLBSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.0015	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.028	0.063	mg/kg	SS-64 / 03-23-01	2/4	.0053-.0054	0.063	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0071	0.0071	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.009	0.019	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.019	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.017	0.035	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.035	NA	0.057	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.01	0.63	mg/kg	SS-64 / 03-23-01	4/4		0.63	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.041	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.013	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.4	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	1.9	NC	NA	NA	No	ND, DLBSL
Gleason Court Lot 122 (Indoor Air - Resident)	83-32-9	Acenaphthene	0.011	0.011	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.011	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/3	.0056-.0085	0.0085	NA	0.43	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.019	0.57	mg/kg	OW-105-1 / 04-17-01	5/5		0.57	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.014	0.47	mg/kg	OW-105-1 / 04-17-01	5/5		0.47	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	0.27	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.0015	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.015	0.015	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.015	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/3	.0097-.022	0.022	NA	0.0021	C	NA	NA	Yes	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.014	0.014	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.014	NA	2.3	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.0077	0.022	mg/kg	SS-63 / 04-02-01	2/5	.006-.23	0.022	NA	0.057	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.023	0.67	mg/kg	OW-105-1 / 04-17-01	5/5		0.67	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.041	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	0.0027	0.0027	mg/kg	OW-105-1 / 04-17-01	1/3	.0021-.0022	0.0027	NA	0.013	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1.4	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	1.9	NC	NA	NA	No	ND, DLBSL
Gleason Court Lot 124 (Indoor Air - Resident) [7]	67-64-1	Acetone	.00406 (J)	.00489	mg/m3	SV-03 / 09-07-06	3/3		0.00489	NA	0.35	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00108 (J)	.00212	mg/m3	SV-03 / 09-07-06	3/3		0.00212	NA	0.0031	C	NA	NA	No	BSL
	78-93-3	Butanone (2-)	ND	ND	mg/m3		0/3	.00147-.00295	0.00295	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/m3		0/3	.00156-.00311	0.00311	NA	0.7	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/m3		0/3	.00314-.00629	0.00629	NA	0.0016	C	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/m3		0/3	.00244-.00488	0.00488	NA	0.0011	C	NA	NA	No	ND, DLASL
	541-73-1	Dichlorobenzene (1,3-)	.00206 (J)	.00206 (J)	mg/m3	SV-03 / 09-07-06	1/3	.003-.00601	0.00206	NA	0.11	NC	NA	NA	No	BSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/m3		0/3	.00198-.00396	0.00396	NA	0.035	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	.005	.0158	mg/m3	SV-02 / 09-07-06	3/3		0.0158	NA	0.022	C	NA	NA	No	BSL
	110-54-3	Hexane (n-)	.000994 (J)	.00523 (J)	mg/m3	SV-02 / 09-07-06	3/3		0.00523	NA	0.2	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/m3		0/3	.00205-.00409	0.00409	NA	0.08	NC	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	.00241 (J)	.00452 (J)	mg/m3	SV-02 / 09-07-06	2/3	.00347	0.00452	NA	0.052	C	NA	NA	No	BSL
	91-57-6	Methylnaphthalene (2-)	.00419 (J)	.00419 (J)	mg/m3	SV-02 / 09-07-06	1/3	.008	0.00419	NA	0.07	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.00156 (J)	.0109	mg/m3	SV-02 / 09-07-06	3/3		0.0109	NA	0.003	NC	NA	NA	Yes	ASL
	100-42-5	Styrene	ND	ND	mg/m3		0/3	.00213-.00426	0.00426	NA	1	NC	NA	NA	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/m3		0/3	.00339-.00678	0.00678	NA	0.0081	C	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.0262	.063	mg/m3	SV-02 / 09-07-06	3/3		0.063	NA	0.4	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/m3		0/3	.00272-.00545	0.00545	NA	2.2	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.0027 (J)	.00402	mg/m3	SV-03 / 09-07-06	2/3	.00268	0.00402	NA	0.00022	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	.0328	.0328	mg/m3	SV-05 / 09-07-06	1/3	.00281-.00561	0.0328	NA	0.7	NC	NA	NA	No	BSL
	95-63-6	Trimethylbenzene (1,2,4-)	.0359	.0359	mg/m3	SV-02 / 09-07-06	1/3	.00246	0.0359	NA	0.006	NC	NA	NA	Yes	ASL
	108-67-8	Trimethylbenzene (1,3,5-)	.00307	.0102	mg/m3	SV-02 / 09-07-06	3/3		0.0102	NA	0.006	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0186	.0664	mg/m3	SV-02 / 09-07-06	3/3		0.0664	NA	7	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.00845	.0243	mg/m3	SV-02 / 09-07-06	3/3		0.0243	NA	7	NC	NA	NA	No	BSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Gleason Court Lot 125 (Indoor Air - Resident) [7]	67-64-1	Acetone	.00406 (J)	.0108	mg/m3	SV-04 / 09-07-06	3/3		0.0108	NA	0.35	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00108 (J)	.00154 (J)	mg/m3	SV-02 / 09-07-06	2/3	.0016	0.00154	NA	0.0031	C	NA	NA	No	BSL
	78-93-3	Butanone (2-)	ND	ND	mg/m3		0/3	.00147-.00295	0.00295	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/m3		0/3	.00156-.00311	0.00311	NA	0.7	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/m3		0/3	.00314-.00629	0.00629	NA	0.0016	C	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/m3		0/3	.00244-.00488	0.00488	NA	0.0011	C	NA	NA	No	ND, DLASL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/m3		0/3	.003-.00601	0.00601	NA	0.11	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/m3		0/3	.00198-.00396	0.00396	NA	0.035	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	.0047	.0158	mg/m3	SV-02 / 09-07-06	3/3		0.0158	NA	0.022	C	NA	NA	No	BSL
	110-54-3	Hexane (n-)	.00154 (J)	.00523 (J)	mg/m3	SV-02 / 09-07-06	3/3		0.00523	NA	0.2	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/m3		0/3	.00205-.00409	0.00409	NA	0.08	NC	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	.00241 (J)	.039	mg/m3	SV-04 / 09-07-06	3/3		0.039	NA	0.052	C	NA	NA	No	BSL
	91-57-6	Methylnaphthalene (2-)	.00419 (J)	.00419 (J)	mg/m3	SV-02 / 09-07-06	1/3	.008	0.00419	NA	0.07	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.00196 (J)	.0109	mg/m3	SV-02 / 09-07-06	2/3	.002	0.0109	NA	0.003	NC	NA	NA	Yes	ASL
	100-42-5	Styrene	ND	ND	mg/m3		0/3	.00213-.00426	0.00426	NA	1	NC	NA	NA	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/m3		0/3	.00339-.00678	0.00678	NA	0.0081	C	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.00939	.063	mg/m3	SV-02 / 09-07-06	3/3		0.063	NA	0.4	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/m3		0/3	.00272-.00545	0.00545	NA	2.2	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.0027 (J)	.0027 (J)	mg/m3	SV-02 / 09-07-06	1/3	.00268	0.0027	NA	0.00022	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	.00255 (J)	.0328	mg/m3	SV-05 / 09-07-06	2/3	.00561	0.0328	NA	0.7	NC	NA	NA	No	BSL
	95-63-6	Trimethylbenzene (1,2,4-)	.0359	.0359	mg/m3	SV-02 / 09-07-06	1/3	.00246	0.0359	NA	0.006	NC	NA	NA	Yes	ASL
	108-67-8	Trimethylbenzene (1,3,5-)	.00249	.0102	mg/m3	SV-02 / 09-07-06	3/3		0.0102	NA	0.006	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0162	.0664	mg/m3	SV-02 / 09-07-06	3/3		0.0664	NA	7	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.00546	.0243	mg/m3	SV-02 / 09-07-06	3/3		0.0243	NA	7	NC	NA	NA	No	BSL
Lot 208 (Indoor Air - Resident)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	NA		NA	NA	No	ND, NSV [6]
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.43	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00014	C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.011	0.088	mg/kg	SS-34 / 05-02-01	3/3		0.088	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0079	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000054	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.012	0.09	mg/kg	SS-34 / 05-02-01	3/3		0.09	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	0.27	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	0.83	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0015	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	NA		NA	NA	No	ND, NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	2.3	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	0.014	0.058	mg/kg	SS-35 / 05-02-01	2/3	.0066	0.058	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.017	0.13	mg/kg	SS-34 / 05-02-01	3/3		0.13	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.041	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.06	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	.0045 (J)	.0045 (J)	mg/kg	SB-35 / S-1-2 / 05-02-01	1/1		0.0045	NA	0.013	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.4	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	1.9	NC	NA	NA	No	ND, DLBSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Old Railroad and Former Lower Mill Pond Area (Indoor Air - Resident)	83-32-9	Acenaphthene	0.017	4	mg/kg	SS-05 / 03-19-01	8/14	.0054-.0057	4	NA	NA	NA	NA	No	NSV [6]
	67-64-1	Acetone	.097 (J)	.097 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0051-.0079	0.097	NA	0.43 NC	NA	NA	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.00014 C	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.0076	30	mg/kg	SS-05 / 03-19-01	14/14		30	NA	NA	NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1 NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	.0013 (J)	.0013 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0019-.0021	0.0013	NA	0.0079 NC	NA	NA	No	BSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.000054 C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.007	24	mg/kg	SS-05 / 03-19-01	14/14		24	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.15 (J)	2.8	mg/kg	SS-05 / 03-19-01	5/14	.21-.23	2.8	NA	NA	NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	.054 (J)	.054 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.054	NA	0.27 NC	NA	NA	No	BSL
	106-46-7	Dichlorobenzene (1,4-)	.069 (J)	.069 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.069	NA	0.83 NC	NA	NA	No	BSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.0015 NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.0039 C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.014	4.3	mg/kg	SS-05 / 03-19-01	8/14	.0054-.0057	4.3	NA	NA	NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	.042 (J)	.042 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0055-.016	0.042	NA	0.0021 C	NA	NA	Yes	ASL
	91-57-6	Methylnaphthalene (2-)	0.0062	2.3	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	2.3	NA	2.3 NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.0093	2.2	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	2.2	NA	0.057 NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.014	45	mg/kg	SS-05 / 03-19-01	14/14		45	NA	NA	NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.1 NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.003 (J)	.003 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0019-.0021	0.003	NA	0.041 NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.06 NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.000013 C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.013 NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.4 NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	1.9 NC	NA	NA	No	ND, DLBSL
Vacant Lot 209 (Indoor Air - Resident)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/1	.0062	0.0062	NA	NA	NA	NA	No	ND, NSV [6]
	205-99-2	Benzo(b)fluoranthene	0.033	0.033	mg/kg	SS-36 / 02-21-01	1/1		0.033	NA	NA	NA	NA	No	NSV [6]
	218-01-9	Chrysene	.041 (J)	.041 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.041	NA	NA	NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.25	0.25	NA	NA	NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	0.27 NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	0.83 NC	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/kg		0/1	.0062	0.0062	NA	NA	NA	NA	No	ND, NSV [6]
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg		0/1	.0062	0.0062	NA	2.3 NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	.0094 (J)	.0094 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.0094	NA	0.057 NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.071	0.071	mg/kg	SS-36 / 02-21-01	1/1		0.071	NA	NA	NA	NA	No	NSV [6]

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
West of South Street On-Facility (Indoor Air - Resident and Site Worker)	83-32-9	Acenaphthene	0.003	2 (J)	mg/kg	SB-52 / S-1-2 / 04-18-01	32/48	.003-.22	2	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	.003 (JEB)	.13 (J)	mg/kg	SB-46B / S-1-2 / 07-18-01	8/36	.0045-.043	0.13	NA	0.43	NC	NA	NA	No	BSL
	309-00-2	Aldrin	.0021 (J)	.0025 (J)	mg/kg	OW-106 / 04-24-01	2/6	.00051-.00056	0.0025	NA	0.7	C	NA	NA	No	BSL
	71-43-2	Benzene	.0012 (J)	0.002	mg/kg	UST-5 / S-3-4 / 12-13-00, UST-6 / S-3-4 / 12-13-00	3/36	.0018-.0027	0.002	NA	0.00014	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0066 (J)	6.7	mg/kg	SS-30 / 03-28-01	42/48	.0051-.0065	6.7	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/6	.00051-.0006	0.0006	NA	0.016	C	NA	NA	No	ND, DLBSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/6	.00051-.0006	0.0006	NA	0.049	C	NA	NA	No	ND, DLBSL
	78-93-3	Butanone (2-)	0.0043	.015 (J)	mg/kg	SB-46B / S-1-2 / 07-18-01	6/36	.0018-.006	0.015	NA	1	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0009 (J)	.024 (J)	mg/kg	SB-46B / S-1-2 / 07-18-01	6/36	.0018-.0027	0.024	NA	0.0079	NC	NA	NA	Yes	ASL
	5103-71-9	Chlordane (alpha-)	.0022 (J)	.0022 (J)	mg/kg	SB-46 / S-1-2 / 07-18-01	1/6	.00051-.0006	0.0022	NA	5	C	NA	NA	No	BSL
	5103-74-2	Chlordane (gamma-)	0.0016	0.0016	mg/kg	OW-106 / 04-24-01, SB-49 / S-3-4 / 04-24-01	2/6	.00051-.00056	0.0016	NA	5	C	NA	NA	No	BSL
	67-66-3	Chloroform	.001 (J)	.0015 (J)	mg/kg	SB-52 / S-1-2 / 04-18-01	3/36	.0018-.0027	0.0015	NA	0.000054	C	NA	NA	Yes	ASL
	218-01-9	Chrysene	.007 (J)	7.6	mg/kg	SS-30 / 03-28-01	42/48	.0051-.0065	7.6	NA	NA		NA	NA	No	NSV [6]
	72-55-9	DDE (4,4'-)	.0061 (J)	.0091 (J)	mg/kg	OW-106 / 04-24-01	4/6	.00051-.00052	0.0091	NA	560	C	NA	NA	No	BSL
	132-64-9	Dibenzofuran	.044 (J)	1.6	mg/kg	SB-52 / S-1-2 / 04-18-01	14/48	.1-.86	1.6	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/48	.1-1.1	1.1	NA	0.27	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/48	.1-1.1	1.1	NA	0.83	NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/36	.0018-.0027	0.0027	NA	0.0015	NC	NA	NA	No	ND, DLASL
	60-57-1	Dieldrin	.0044 (J)	.027 (J)	mg/kg	SB-47 / S-1-2 / 07-25-01	2/6	.00051-.00059	0.027	NA	0.098	C	NA	NA	No	BSL
	959-98-8	Endosulfan I	.0029 (J)	.0029 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	1/6	.00051-.0006	0.0029	NA	NA		NA	NA	No	NSV [6]
	33213-65-9	Endosulfan II	.0082 (J)	.0095 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/6	.00051-.00056	0.0095	NA	NA		NA	NA	No	NSV [6]
	1031-07-8	Endosulfan sulfate	.0033 (J)	.004 (J)	mg/kg	SB-46 / S-1-2 / 07-18-01	2/6	.00051-.0006	0.004	NA	NA		NA	NA	No	NSV [6]
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/36	.0018-.0027	0.0027	NA	0.0039	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.006	1.9	mg/kg	SS-30 / 03-28-01	30/48	.003-.22	1.9	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	ND	ND	mg/kg		0/6	.00051-.0006	0.0006	NA	0.00014	C	NA	NA	No	ND, DLASL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/36	.0045-.022	0.022	NA	0.0021	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.0064	8.5	mg/kg	SB-51 / S-5-6 / 12-7-00	31/48	.003-.22	8.5	NA	2.3	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	.0086 (J)	2.5	mg/kg	SS-30 / 03-28-01	37/48	.003-.014	2.5	NA	0.057	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.0066	18	mg/kg	SS-30 / 03-28-01	45/48	.0051-.006	18	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/36	.0018-.0027	0.0027	NA	1.1	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.001 (J)	.013 (J)	mg/kg	UST-6 / S-3-4 / 12-13-00	8/36	.0018-.0027	0.013	NA	0.041	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	.0051 (J)	.0051 (J)	mg/kg	SB-27 / S-2-3 / 06-15-01	1/36	.0018-.0027	0.0051	NA	0.06	NC	NA	NA	No	BSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/36	.0018-.0027	0.0027	NA	0.000013	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	.0015 (J)	.2 (J)	mg/kg	SS-28 / 07-23-01	10/36	.0018-.0027	0.2	NA	0.013	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0019 (J)	.002 (J)	mg/kg	OW-101 / S-1-2 / 12-12-00	2/36	.0018-.0027	0.002	NA	1.4	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.001 (J)	.001 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/36	.0018-.0027	0.001	NA	1.9	NC	NA	NA	No	BSL
Lots South of the AOC (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.024	0.12	mg/kg	OW-103 / S-1-2 / 03-20-01	6/11	.0063-.23	0.12	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	.098 (J)	.15 (J)	mg/kg	SB-42 / S-1-2 / 07-27-01	3/10	.011-.1	0.15	NA	0.087	NC	NA	NA	Yes	ASL
	309-00-2	Aldrin	.0097 (J)	.011 (J)	mg/kg	OW-109 / 07-27-01	2/4	.00012-.00013	0.011	NA	27	C	NA	NA	No	BSL
	71-43-2	Benzene	.0015 (J)	0.0033	mg/kg	SB-44 / S-1-2 / 07-31-01	3/9	.0021-.0025	0.0033	NA	0.00039	NC	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.054	1.9	mg/kg	SB-44 / S-1-2 / 07-31-01	10/11	.0063	1.9	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	.0034 (J)	.0036 (J)	mg/kg	OW-109 / 07-27-01	2/4	.00012-.00013	0.0036	NA	0.72	C	NA	NA	No	BSL
	58-89-9	BHC (gamma-)	.0042 (J)	.0042 (J)	mg/kg	OW-103 / S-1-2 / 03-20-01	1/4	.00013-.00066	0.0042	NA	1.3	C	NA	NA	No	BSL
	78-93-3	Butanone (2-)	0.016	.058 (J)	mg/kg	SB-43 / S-3-4 / 08-01-01	5/9	.0023-.0025	0.058	NA	0.31	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0054 (J)	0.033	mg/kg	SB-44 / S-1-2 / 07-31-01	3/9	.0022-.0025	0.033	NA	0.0019	NC	NA	NA	Yes	ASL
	5103-71-9	Chlordane (alpha-)	.0028 (J)	.0034 (J)	mg/kg	SB-42 / S-3-4 / 07-27-01	2/4	.00012-.00013	0.0034	NA	NA		NA	NA	No	NSV [6]
	5103-74-2	Chlordane (gamma-)	.0035 (J)	.0035 (J)	mg/kg	SB-42 / S-3-4 / 07-27-01	1/4	.00012-.00066	0.0035	NA	NA		NA	NA	No	NSV [6]
	67-66-3	Chloroform	.0012 (J)	.0012 (J)	mg/kg	OW-109 / 07-27-01	1/9	.0021-.0025	0.0012	NA	0.00036	C	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.066	2.5	mg/kg	SB-44 / S-1-2 / 07-31-01	10/11	.0063	2.5	NA	NA		NA	NA	No	NSV [6]

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	72-55-9	DDE (4,4'-)	.0043 (J)	.0043 (J)	mg/kg	SB-42 / S-3-4 / 07-27-01	1/4	.00012-.00066	0.0043	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.088 (J)	.13 (J)	mg/kg	OW-103 / S-1-2 / 03-20-01	3/11	.23-.26	0.13	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/11	.23-.26	0.26	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/11	.23-.26	0.26	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	0.0005	NC	NA	NA	No	ND, DLASL
	60-57-1	Dieldrin	.0041 (J)	.0046 (J)	mg/kg	OW-109 / 07-27-01	2/4	.00012-.00013	0.0046	NA	5.3	C	NA	NA	No	BSL
	959-98-8	Endosulfan I	.0025 (J)	.003 (J)	mg/kg	SB-42 / S-3-4 / 07-27-01	2/4	.00012-.00013	0.003	NA	NA		NA	NA	No	NSV [6]
	33213-65-9	Endosulfan II	.01 (J)	.01 (J)	mg/kg	SB-42 / S-3-4 / 07-27-01	1/4	.00012-.00066	0.01	NA	NA		NA	NA	No	NSV [6]
	1031-07-8	Endosulfan sulfate	ND	ND	mg/kg		0/4	.00012-.00066	0.00066	NA	NA		NA	NA	No	ND, NSV [6]
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.021	0.28	mg/kg	SB-44 / S-1-2 / 07-31-01	7/11	.0063-.013	0.28	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	ND	ND	mg/kg		0/4	.00012-.00066	0.00066	NA	0.0082	C	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/9	.0052-.01	0.01	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.0094	0.26	mg/kg	SB-44 / S-1-2 / 07-31-01	10/11	.0063	0.26	NA	0.047	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.024	0.34	mg/kg	OW-103 / S-1-2 / 03-20-01, SB-41 / S-1-2 / 03-20-01, SB-44 / S-1-2 / 07-31-01	10/11	.0063	0.34	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.074	4.7	mg/kg	SB-44 / S-1-2 / 07-31-01	10/11	.0063	4.7	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.0016 (J)	0.0094	mg/kg	SB-43 / S-1-2 / 08-01-01	4/10	.0021-.0025	0.0094	NA	0.012	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	.025 (J)	.25 (J)	mg/kg	SB-41D / S-5-6 / 07-27-01	8/10	.0023-.0025	0.25	NA	0.0038	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0016 (J)	.0019 (J)	mg/kg	SB-44 / S-1-2 / 07-31-01	2/9	.0022-.0025	0.0019	NA	0.0063	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/9	.0021-.0025	0.0025	NA	0.0078	NC	NA	NA	No	ND, DLBSL
East of South Street On-Facility SB-09 area (Trench Vapor from Soil Gas - Construction Worker) [7]	67-64-1	Acetone	.00406 (J)	.0988	mg/m3	SV-09 / 09-06-06	11/11		0.0988	NA	2.2	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00108 (J)	.0129	mg/m3	SV-07 / 09-06-06	8/11	.0016-.016	0.0129	NA	0.27	NC	NA	NA	No	BSL
	78-93-3	Butanone (2-)	.00237	.015	mg/m3	SV-10 / 09-06-06	5/11	.00147-.0147	0.015	NA	49	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.00286	.016	mg/m3	SV-08 / 09-06-06	5/11	.00156-.0156	0.016	NA	5.4	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	.00348	.00348	mg/m3	SV-08 / 09-06-06	1/11	.00314-.0314	0.00348	NA	0.47	C	NA	NA	No	BSL
	67-66-3	Chloroform	.0123 (J)	.0123 (J)	mg/m3	SV-01 / 09-07-06	1/11	.00244-.0244	0.0123	NA	0.23	C	NA	NA	No	BSL
	541-73-1	Dichlorobenzene (1,3-)	.00206 (J)	.00206 (J)	mg/m3	SV-03 / 09-07-06	1/11	.003-.03	0.00206	NA	1.2	NC	NA	NA	No	BSL
	156-59-2	Dichloroethene (cis-1,2-)	.0388	.04	mg/m3	SV-01 / 09-07-06	2/11	.00198-.00396	0.04	NA	0.38	NC	NA	NA	No	BSL
	100-41-4	Ethylbenzene	.00191 (J)	.0243	mg/m3	SV-06 / 09-07-06	7/11	.00217-.0217	0.0243	NA	10	NC	NA	NA	No	BSL
	110-54-3	Hexane (n-)	.000994 (J)	.00779	mg/m3	SV-06 / 09-07-06	9/11	.0352	0.00779	NA	0.83	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	.00304	.00712	mg/m3	SV-09 / 09-06-06	2/11	.00205-.0205	0.00712	NA	32	NC	NA	NA	No	BSL
	75-09-2	Methylene chloride	.00241 (J)	.0972	mg/m3	SV-08 / 09-06-06	8/11	.00347-.0347	0.0972	NA	11	C	NA	NA	No	BSL
	91-57-6	Methylnaphthalene (2-)	.0023 (J)	.0178	mg/m3	SV-09 / 09-06-06	4/11	.008	0.0178	NA	0.045	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.00069 (J)	.0109	mg/m3	SV-02 / 09-07-06	9/11	.002	0.0109	NA	0.04	NC	NA	NA	No	BSL
	100-42-5	Styrene	.00958	.00958	mg/m3	SV-09 / 09-06-06	1/11	.00213-.0213	0.00958	NA	11	NC	NA	NA	No	BSL
	127-18-4	Tetrachloroethene	.00202 (J)	.0247	mg/m3	SV-10 / 09-06-06	3/11	.00339-.0339	0.0247	NA	1.3	C	NA	NA	No	BSL
	108-88-3	Toluene	.0052	.105	mg/m3	SV-06 / 09-07-06	11/11		0.105	NA	3.6	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	.00175 (J)	.00175 (J)	mg/m3	SV-06 / 09-07-06	1/11	.00272-.0272	0.00175	NA	22	NC	NA	NA	No	BSL
	79-01-6	Trichloroethene	.0021 (J)	3.86	mg/m3	SV-01 / 09-07-06	9/11	.00268	3.86	NA	0.064	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	.00255 (J)	.0328	mg/m3	SV-05 / 09-07-06	5/11	.00281-.0281	0.0328	NA	6.4	NC	NA	NA	No	BSL
	95-63-6	Trimethylbenzene (1,2,4-)	.017	.0359	mg/m3	SV-02 / 09-07-06	3/11	.00246-.0246	0.0359	NA	0.078	NC	NA	NA	No	BSL
	108-67-8	Trimethylbenzene (1,3,5-)	.00249	.0284	mg/m3	SV-01 / 09-07-06	9/11	.00246	0.0284	NA	0.078	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	.00688	.0909	mg/m3	SV-06 / 09-07-06	9/11	.00434	0.0909	NA	1	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.00188 (J)	.0273	mg/m3	SV-06 / 09-07-06	9/11	.00217-.0217	0.0273	NA	0.92	NC	NA	NA	No	BSL
East of South Street On-Facility non-SB-09 area (Trench Vapor from Soil - Construction Worker)	83-32-9	Acenaphthene	.0064	15	mg/kg	SB-14 / S-3-4 / 04-13-01	20/35	.0051-2.1	15	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	.007 (EB)	.11 (J)	mg/kg	UST-2 / S-1-2 / 04-05-01	8/24	.0046-.042	0.11	NA	0.087	NC	NA	NA	Yes	ASL
	309-00-2	Aldrin	.00084 (J)	.00084 (J)	mg/kg	SB-13A / S-3-4 / 04-13-01	1/8	.0001-.00058	0.00084	NA	27	C	NA	NA	No	BSL
	71-43-2	Benzene	.0023 (J)	.036 (J)	mg/kg	UST-1 / S-3-4 / 04-04-01	5/24	.0017-.0022	0.036	NA	0.00039	NC	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0077	89	mg/kg	SB-14 / S-3-4 / 04-13-01	33/35	.0051	89	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/8	.0001-.00058	0.00058	NA	0.72	C	NA	NA	No	ND, DLBSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/8	.0001-.00058	0.00058	NA	1.3	C	NA	NA	No	ND, DLBSL
	78-93-3	Butanone (2-)	.0039	.0039	mg/kg	SB-25 / S-4-5 / 03-29-01	1/24	.0018-.0037	0.0039	NA	0.31	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0041	.0041	mg/kg	UST-2 / S-3-4 / 04-05-01	1/24	.0017-.0037	0.0041	NA	0.0019	NC	NA	NA	Yes	ASL
	5103-71-9	Chlordane (alpha-)	.00084 (J)	.0013 (J)	mg/kg	SS-21 / 04-02-01, SS-25 / 03-29-01	3/8	.0001-.00058	0.0013	NA	NA		NA	NA	No	NSV [6]
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0019 (J)	mg/kg	SS-25 / 03-29-01	2/8	.0001-.00058	0.0019	NA	NA		NA	NA	No	NSV [6]
	67-66-3	Chloroform	ND	ND	mg/kg		0/24	.0017-.0037	0.0037	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	.012	71	mg/kg	SB-14 / S-3-4 / 04-13-01	33/35	.0051	71	NA	NA		NA	NA	No	NSV [6]
	72-55-9	DDE (4,4'-)	ND	ND	mg/kg		0/8	.0001-.00058	0.00058	NA	NA		NA	NA	No	ND, NSV [6]
	132-64-9	Dibenzofuran	.046 (J)	27	mg/kg	SB-14 / S-3-4 / 04-13-01	13/35	.2-2.1	27	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/35	.2-4.8	4.8	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/35	.2-4.8	4.8	NA	0.3	NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/24	.0017-.0037	0.0037	NA	0.0005	NC	NA	NA	No	ND, DLASL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	60-57-1	Dieldrin	.00056 (J)	.00059 (J)	mg/kg	OW-105-2 / 04-13-01	2/8	.0001-.00058	0.00059	NA	5.3	C	NA	NA	No	BSL
	959-98-8	Endosulfan I	ND	ND	mg/kg		0/8	.0001-.00058	0.00058	NA	NA		NA	NA	No	ND, NSV [6]
	33213-65-9	Endosulfan II	ND	ND	mg/kg		0/8	.0001-.00058	0.00058	NA	NA		NA	NA	No	ND, NSV [6]
	1031-07-8	Endosulfan sulfate	.0007 (J)	.0011 (J)	mg/kg	SS-25 / 03-29-01	2/8	.0001-.00058	0.0011	NA	NA		NA	NA	No	NSV [6]
	100-41-4	Ethylbenzene	.003 (J)	.016 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	2/24	.0017-.0037	0.016	NA	0.037	C	NA	NA	No	BSL
	86-73-7	Fluorene	.0096	44	mg/kg	SB-14 / S-3-4 / 04-13-01	22/35	.0051-.23	44	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	.00091 (J)	.00091 (J)	mg/kg	SS-21 / 04-02-01	1/8	.0001-.00058	0.00091	NA	0.0082	C	NA	NA	No	BSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/24	.0046-.027	0.027	NA	0.015	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.0073	17	mg/kg	SB-14 / S-3-4 / 04-13-01	24/35	.0051-.23	17	NA	0.047	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	.0053	14	mg/kg	SB-14 / S-3-4 / 04-13-01	29/35	.0051-.0054	14	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	.0052	150	mg/kg	SB-14 / S-3-4 / 04-13-01	34/35	.0051	150	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	.049 (J)	.049 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	1/24	.0017-.0037	0.049	NA	0.37	NC	NA	NA	No	BSL
	108-88-3	Toluene	.0011 (J)	.031 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	8/24	.0017-.0037	0.031	NA	0.012	NC	NA	NA	Yes	ASL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/24	.0017-.0037	0.0037	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.0018	.0018	mg/kg	SB-11 / S-2-3 / 06-07-01	1/24	.0017-.0037	0.0018	NA	0.00012	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	.0098 (J)	.0098 (J)	mg/kg	SB-16 / S-3-4 / 06-06-01	1/24	.0017-.0037	0.0098	NA	0.0038	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0011 (J)	.21 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	4/24	.0017-.0037	0.21	NA	0.0063	NC	NA	NA	Yes	ASL
	95-47-6	Xylene (o-)	.0013 (J)	.12 (J)	mg/kg	SB-14 / S-3-4 / 04-13-01	2/24	.0017-.0037	0.12	NA	0.0078	NC	NA	NA	Yes	ASL
Lot 283 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.036	0.036	mg/kg	FP-01 / 10-10-01, OW-404 / 10-10-01	2/2		0.036	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.57	0.67	mg/kg	OW-404 / 10-10-01	2/2		0.67	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/2	.0044-.0047	0.0047	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0019	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	.0012 (J)	.0012 (J)	mg/kg	OW-404 / 10-10-01	1/2	.0018	0.0012	NA	0.00036	C	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.88	1	mg/kg	OW-404 / 10-10-01	2/2		1	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/2	.22	0.22	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/2	.22	0.22	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/2	.22	0.22	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.052	0.058	mg/kg	FP-01 / 10-10-01	2/2		0.058	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/2	.0044-.011	0.011	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.032	0.037	mg/kg	OW-404 / 10-10-01	2/2		0.037	NA	0.047	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.075	0.08	mg/kg	OW-404 / 10-10-01	2/2		0.08	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	1.5	1.7	mg/kg	OW-404 / 10-10-01	2/2		1.7	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0038	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/2	.0018-.0019	0.0019	NA	0.0078	NC	NA	NA	No	ND, DLBSL
Lot 282 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.011	0.011	mg/kg	FP-02 / 10-10-01	1/1		0.011	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.011	0.011	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.2	0.2	mg/kg	FP-02 / 10-10-01	1/1		0.2	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0054	0.0054	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0019	NC	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.24	0.24	mg/kg	FP-02 / 10-10-01	1/1		0.24	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.22	0.22	NA	NA		NA	NA	No	ND, NSV [6]

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.22	0.22	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.22	0.22	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.018	0.018	mg/kg	FP-02 / 10-10-01	1/1		0.018	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.011	0.011	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.015	0.015	mg/kg	FP-02 / 10-10-01	1/1		0.015	NA	0.047	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.026	0.026	mg/kg	FP-02 / 10-10-01	1/1		0.026	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.35	0.35	mg/kg	FP-02 / 10-10-01	1/1		0.35	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0038	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0078	NC	NA	NA	No	ND, DLBSL
Lot 210 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.022	0.022	mg/kg	FP-03 / 10-10-01	1/1		0.022	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.8	0.8	mg/kg	FP-03 / 10-10-01	1/1		0.8	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0019	NC	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.79	0.79	mg/kg	FP-03 / 10-10-01	1/1		0.79	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.04 (J)	.04 (J)	mg/kg	FP-03 / 10-10-01	1/1		0.04	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.23	0.23	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.23	0.23	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.098	0.098	mg/kg	FP-03 / 10-10-01	1/1		0.098	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.035	0.035	mg/kg	FP-03 / 10-10-01	1/1		0.035	NA	0.047	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.056	0.056	mg/kg	FP-03 / 10-10-01	1/1		0.056	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	1.2	1.2	mg/kg	FP-03 / 10-10-01	1/1		1.2	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0038	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0078	NC	NA	NA	No	ND, DLBSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Lot 230 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.017	0.017	mg/kg	FP-04 / 10-10-01	1/1		0.017	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0081	0.0081	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.43	0.43	mg/kg	FP-04 / 10-10-01	1/1		0.43	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0081	0.0081	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0019	NC	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.57	0.57	mg/kg	FP-04 / 10-10-01	1/1		0.57	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	.04 (J)	.04 (J)	mg/kg	FP-04 / 10-10-01	1/1		0.04	NA	0.098	NC	NA	NA	No	BSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.034	0.034	mg/kg	FP-04 / 10-10-01	1/1		0.034	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.017	0.017	NA	0.015	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.024	0.024	mg/kg	FP-04 / 10-10-01	1/1		0.024	NA	0.047	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.042	0.042	mg/kg	FP-04 / 10-10-01	1/1		0.042	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.81	0.81	mg/kg	FP-04 / 10-10-01	1/1		0.81	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0038	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0078	NC	NA	NA	No	ND, DLBSL
Lot 257 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.037	0.057	mg/kg	FP-05 / 0-1 / 08-05-03	3/4	.01	0.057	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.008	0.008	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.057	1.1	mg/kg	OW-410 / 08-05-03	4/4		1.1	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.008	0.008	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0019	NC	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.046	1.1	mg/kg	FP-05 / 10-10-01	4/4		1.1	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.06	0.078	mg/kg	FP-05 / 10-10-01	3/4	.01	0.078	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.008	0.008	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.02	0.088	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		0.088	NA	0.047	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.072	0.1	mg/kg	FP-05 / 10-10-01	3/4	.01	0.1	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.086	1.6	mg/kg	FP-05 / 0-1 / 08-05-03	4/4		1.6	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0038	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0032	0.0032	NA	0.0078	NC	NA	NA	No	ND, DLBSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Lot 342 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/1	.01	0.01	NA	34	NC	NA	NA	No	ND, DLBSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0094	0.0094	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.15	0.15	mg/kg	FP-08 / 10-10-01	1/1		0.15	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0094	0.0094	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.0019	NC	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.18	0.18	mg/kg	FP-08 / 10-10-01	1/1		0.18	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.2	0.2	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.2	0.2	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.013	0.013	mg/kg	FP-08 / 10-10-01	1/1		0.013	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.01	0.01	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.03	0.03	mg/kg	FP-08 / 10-10-01	1/1		0.03	NA	0.047	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.05	0.05	mg/kg	FP-08 / 10-10-01	1/1		0.05	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.19	0.19	mg/kg	FP-08 / 10-10-01	1/1		0.19	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.0038	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0037	0.0037	NA	0.0078	NC	NA	NA	No	ND, DLBSL
Lot 360 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	.0006 (J)	.032	mg/kg	FP-09 / 10-10-01	15/16	.01	0.032	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	.073 (J)	.073 (J)	mg/kg	FP-09 / 10-10-01	1/1		0.073	NA	0.087	NC	NA	NA	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	.0061	.86	mg/kg	FP-09 / 0-1 / 08-05-03	16/16		0.86	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.01	0.01	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.004	0.004	NA	0.0019	NC	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.004	0.004	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	.0069	.82	mg/kg	FP-09 / 10-10-01	16/16		0.82	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.099 (J)	.099 (J)	mg/kg	FP-09 / 10-10-01	1/1		0.099	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.27	0.27	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.27	0.27	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	.00075 (J)	.1	mg/kg	FP-09 / 10-10-01	14/16	.0044 -.01	0.1	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.013	0.013	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.0013 (J)	1.1	mg/kg	FP-09 / 10-10-01	16/16		1.1	NA	0.047	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	.0014 (J)	1.1	mg/kg	FP-09 / 10-10-01	16/16		1.1	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	.0076	.99 (J)	mg/kg	FP-09E / 0-1' / 10-13-06	16/16		0.99	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.004	0.004	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.004	0.004	NA	0.0038	NC	NA	NA	No	ND, DLASL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.004	0.004	NA	0.0078	NC	NA	NA	No	ND, DLBSL
Lot 350 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.014	0.014	mg/kg	FP-10 / 10-10-01	1/1		0.014	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0069	0.0069	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.2	0.2	mg/kg	FP-10 / 10-10-01	1/1		0.2	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0069	0.0069	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.0019	NC	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.25	0.25	mg/kg	FP-10 / 10-10-01	1/1		0.25	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.19	0.19	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.19	0.19	NA	0.098	NC	NA	NA	No	ND, DLASL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.19	0.19	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.019	0.019	mg/kg	FP-10 / 10-10-01	1/1		0.019	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0069	0.0069	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.034	0.034	mg/kg	FP-10 / 10-10-01	1/1		0.034	NA	0.047	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.065	0.065	mg/kg	FP-10 / 10-10-01	1/1		0.065	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.29	0.29	mg/kg	FP-10 / 10-10-01	1/1		0.29	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0027	0.0027	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.0038	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0028	0.0028	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0027	0.0027	NA	0.0078	NC	NA	NA	No	ND, DLBSL
Gleason Court Vacant Lot (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.019	0.034	mg/kg	SS-64 / 03-23-01	2/4	.0053-.0054	0.034	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0091	0.0091	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.0065	0.37	mg/kg	SS-65 / 03-26-01	4/4		0.37	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.0019	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.0061	0.36	mg/kg	SS-65 / 03-26-01	4/4		0.36	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/4	.21-.26	0.26	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.028	0.063	mg/kg	SS-64 / 03-23-01	2/4	.0053-.0054	0.063	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0071	0.0071	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.009	0.019	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.019	NA	0.047	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.017	0.035	mg/kg	SS-65 / 03-26-01	2/4	.0053-.0054	0.035	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.01	0.63	mg/kg	SS-64 / 03-23-01	4/4		0.63	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.0038	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0019	0.0019	NA	0.0078	NC	NA	NA	No	ND, DLBSL
Gleason Court Lot 122 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.011	0.011	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.011	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/3	.0056-.0085	0.0085	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.019	0.57	mg/kg	OW-105-1 / 04-17-01	5/5		0.57	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.0019	NC	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.014	0.47	mg/kg	OW-105-1 / 04-17-01	5/5		0.47	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/5	.23-.24	0.24	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.015	0.015	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.015	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/3	.0097-.022	0.022	NA	0.015	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.014	0.014	mg/kg	SS-63 / 04-02-01	1/5	.006-.23	0.014	NA	0.047	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.0077	0.022	mg/kg	SS-63 / 04-02-01	2/5	.006-.23	0.022	NA	0.024	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.023	0.67	mg/kg	OW-105-1 / 04-17-01	5/5		0.67	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.00012	C	NA	NA	No	ND, DLASL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	75-69-4	Trichlorofluoromethane	0.0027	0.0027	mg/kg	OW-105-1 / 04-17-01	1/3	.0021-.0022	0.0027	NA	0.0038	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/3	.0021-.0022	0.0022	NA	0.0078	NC	NA	NA	No	ND, DLBSL
Gleason Court Lot 124 (Trench Vapor - Construction Worker) [7]	67-64-1	Acetone	.00406 (J)	0.00489	mg/m3	SV-03 / 09-07-06	3/3		0.00489	NA	2.2	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00108 (J)	0.00212	mg/m3	SV-03 / 09-07-06	3/3		0.00212	NA	0.27	NC	NA	NA	No	BSL
	78-93-3	Butanone (2-)	ND	ND	mg/m3		0/3	.00147-.00295	0.00295	NA	49	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/m3		0/3	.00156-.00311	0.00311	NA	5.4	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/m3		0/3	.00314-.00629	0.00629	NA	0.47	C	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/m3		0/3	.00244-.00488	0.00488	NA	0.23	C	NA	NA	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	.00206 (J)	.00206 (J)	mg/m3	SV-03 / 09-07-06	1/3	.003-.00601	0.00206	NA	1.2	NC	NA	NA	No	BSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/m3		0/3	.00198-.00396	0.00396	NA	0.38	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	0.005	0.0158	mg/m3	SV-02 / 09-07-06	3/3		0.0158	NA	10	NC	NA	NA	No	BSL
	110-54-3	Hexane (n-)	.000994 (J)	.00523 (J)	mg/m3	SV-02 / 09-07-06	3/3		0.00523	NA	0.83	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/m3		0/3	.00205-.00409	0.00409	NA	32	NC	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	.00241 (J)	.00452 (J)	mg/m3	SV-02 / 09-07-06	2/3	.00347	0.00452	NA	11	C	NA	NA	No	BSL
	91-57-6	Methylnaphthalene (2-)	.00419 (J)	.00419 (J)	mg/m3	SV-02 / 09-07-06	1/3	.008	0.00419	NA	0.045	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.00156 (J)	0.0109	mg/m3	SV-02 / 09-07-06	3/3		0.0109	NA	0.04	NC	NA	NA	No	BSL
	100-42-5	Styrene	ND	ND	mg/m3		0/3	.00213-.00426	0.00426	NA	11	NC	NA	NA	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/m3		0/3	.00339-.00678	0.00678	NA	1.3	C	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	0.0262	0.063	mg/m3	SV-02 / 09-07-06	3/3		0.063	NA	3.6	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/m3		0/3	.00272-.00545	0.00545	NA	22	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.0027 (J)	0.00402	mg/m3	SV-03 / 09-07-06	2/3	.00268	0.00402	NA	0.064	C	NA	NA	No	BSL
	75-69-4	Trichlorofluoromethane	0.0328	0.0328	mg/m3	SV-05 / 09-07-06	1/3	.00281-.00561	0.0328	NA	6.4	NC	NA	NA	No	BSL
	95-63-6	Trimethylbenzene (1,2,4-)	0.0359	0.0359	mg/m3	SV-02 / 09-07-06	1/3	.00246	0.0359	NA	0.078	NC	NA	NA	No	BSL
	108-67-8	Trimethylbenzene (1,3,5-)	0.00307	0.0102	mg/m3	SV-02 / 09-07-06	3/3		0.0102	NA	0.078	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	0.0186	0.0664	mg/m3	SV-02 / 09-07-06	3/3		0.0664	NA	1	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	0.00845	0.0243	mg/m3	SV-02 / 09-07-06	3/3		0.0243	NA	0.92	NC	NA	NA	No	BSL
Gleason Court Lot 125 (Trench Vapor - Construction Worker) [7]	67-64-1	Acetone	.00406 (J)	.0108	mg/m3	SV-04 / 09-07-06	3/3		0.0108	NA	2.2	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00108 (J)	.00154 (J)	mg/m3	SV-02 / 09-07-06	2/3	.0016	0.00154	NA	0.27	NC	NA	NA	No	BSL
	78-93-3	Butanone (2-)	ND	ND	mg/m3		0/3	.00147-.00295	0.00295	NA	49	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/m3		0/3	.00156-.00311	0.00311	NA	5.4	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/m3		0/3	.00314-.00629	0.00629	NA	0.47	C	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/m3		0/3	.00244-.00488	0.00488	NA	0.23	C	NA	NA	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/m3		0/3	.003-.00601	0.00601	NA	1.2	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/m3		0/3	.00198-.00396	0.00396	NA	0.38	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	.0047	.0158	mg/m3	SV-02 / 09-07-06	3/3		0.0158	NA	10	NC	NA	NA	No	BSL
	110-54-3	Hexane (n-)	.00154 (J)	.00523 (J)	mg/m3	SV-02 / 09-07-06	3/3		0.00523	NA	0.83	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/m3		0/3	.00205-.00409	0.00409	NA	32	NC	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	.00241 (J)	.039	mg/m3	SV-04 / 09-07-06	3/3		0.039	NA	11	C	NA	NA	No	BSL
	91-57-6	Methylnaphthalene (2-)	.00419 (J)	.00419 (J)	mg/m3	SV-02 / 09-07-06	1/3	.008	0.00419	NA	0.045	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.00196 (J)	.0109	mg/m3	SV-02 / 09-07-06	2/3	.002	0.0109	NA	0.04	NC	NA	NA	No	BSL
	100-42-5	Styrene	ND	ND	mg/m3		0/3	.00213-.00426	0.00426	NA	11	NC	NA	NA	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/m3		0/3	.00339-.00678	0.00678	NA	1.3	C	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	0.00939	0.063	mg/m3	SV-02 / 09-07-06	3/3		0.063	NA	3.6	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/m3		0/3	.00272-.00545	0.00545	NA	22	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.0027 (J)	.0027 (J)	mg/m3	SV-02 / 09-07-06	1/3	.00268	0.0027	NA	0.064	C	NA	NA	No	BSL
	75-69-4	Trichlorofluoromethane	.00255 (J)	.0328	mg/m3	SV-05 / 09-07-06	2/3	.00561	0.0328	NA	6.4	NC	NA	NA	No	BSL
	95-63-6	Trimethylbenzene (1,2,4-)	.0359	.0359	mg/m3	SV-02 / 09-07-06	1/3	.00246	0.0359	NA	0.078	NC	NA	NA	No	BSL
	108-67-8	Trimethylbenzene (1,3,5-)	.00249	.0102	mg/m3	SV-02 / 09-07-06	3/3		0.0102	NA	0.078	NC	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	.0162	.0664	mg/m3	SV-02 / 09-07-06	3/3		0.0664	NA	1	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.00546	.0243	mg/m3	SV-02 / 09-07-06	3/3		0.0243	NA	0.92	NC	NA	NA	No	BSL
Lot 208 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	34	NC	NA	NA	No	ND, DLBSL
	67-64-1	Acetone	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.011	0.088	mg/kg	SS-34 / 05-02-01	3/3		0.088	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0019	NC	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.012	0.09	mg/kg	SS-34 / 05-02-01	3/3		0.09	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/3	.24-.26	0.26	NA	0.3	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	NA		NA	NA	No	ND, NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/1	.0052	0.0052	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg		0/3	.006-.0066	0.0066	NA	0.047	NC	NA	NA	No	ND, DLBSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	91-20-3	Naphthalene	0.014	0.058	mg/kg	SS-35 / 05-02-01	2/3	.0066	0.058	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.017	0.13	mg/kg	SS-34 / 05-02-01	3/3		0.13	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	.0045 (J)	.0045 (J)	mg/kg	SB-35 / S-1-2 / 05-02-01	1/1		0.0045	NA	0.0038	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/1	.0021	0.0021	NA	0.0078	NC	NA	NA	No	ND, DLBSL
Vacant Lot 209 (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	ND	ND	mg/kg		0/1	.0062	0.0062	NA	34	NC	NA	NA	No	ND, DLBSL
	205-99-2	Benzo(b)fluoranthene	0.033	0.033	mg/kg	SS-36 / 02-21-01	1/1		0.033	NA	NA		NA	NA	No	NSV [6]
	218-01-9	Chrysene	.041 (J)	.041 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.041	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/1	.25	0.25	NA	NA		NA	NA	No	ND, NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/1	.25	0.25	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/1	.25	0.25	NA	0.3	NC	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/kg		0/1	.0062	0.0062	NA	NA		NA	NA	No	ND, NSV [6]
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg		0/1	.0062	0.0062	NA	0.047	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	.0094 (J)	.0094 (J)	mg/kg	SS-36 / 02-21-01	1/1		0.0094	NA	0.024	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.071	0.071	mg/kg	SS-36 / 02-21-01	1/1		0.071	NA	NA		NA	NA	No	NSV [6]

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Old Railroad and Former Lower Mill Pond Area (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.017	4	mg/kg	SS-05 / 03-19-01	8/14	.0054-.0057	4	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	.097 (J)	.097 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0051-.0079	0.097	NA	0.087	NC	NA	NA	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.0076	30	mg/kg	SS-05 / 03-19-01	14/14		30	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	.0013 (J)	.0013 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0019-.0021	0.0013	NA	0.0019	NC	NA	NA	No	BSL
	67-66-3	Chloroform	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.007	24	mg/kg	SS-05 / 03-19-01	14/14		24	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.15 (J)	2.8	mg/kg	SS-05 / 03-19-01	5/14	.21-.23	2.8	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	.054 (J)	.054 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.054	NA	0.098	NC	NA	NA	No	BSL
	106-46-7	Dichlorobenzene (1,4-)	.069 (J)	.069 (J)	mg/kg	SS-02 / 04-26-01	1/14	.21-.28	0.069	NA	0.3	NC	NA	NA	No	BSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.014	4.3	mg/kg	SS-05 / 03-19-01	8/14	.0054-.0057	4.3	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	.042 (J)	.042 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0055-.016	0.042	NA	0.015	C	NA	NA	Yes	ASL
	91-57-6	Methylnaphthalene (2-)	0.0062	2.3	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	2.3	NA	0.047	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.0093	2.2	mg/kg	SS-05 / 03-19-01	9/14	.0054-.0057	2.2	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.014	45	mg/kg	SS-05 / 03-19-01	14/14		45	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.003 (J)	.003 (J)	mg/kg	SS-04 / 03-21-01	1/3	.0019-.0021	0.003	NA	0.012	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.0038	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/3	.0019-.0025	0.0025	NA	0.0078	NC	NA	NA	No	ND, DLBSL
Orlando Property (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.0059	1.3	mg/kg	FP-06 / 10-10-01	7/15	.0055-.0064	1.3	NA	34	NC	NA	NA	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/5	.005-.013	0.013	NA	0.087	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.00039	NC	NA	NA	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	0.014	3.2	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	3.2	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/5	.002-.0053	0.0053	NA	0.31	NC	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.0019	NC	NA	NA	No	ND, DLASL
	67-66-3	Chloroform	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.00036	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.014	3.4	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	3.4	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.68 (J)	.68 (J)	mg/kg	FP-06 / 10-10-01	1/13	.22-.27	0.68	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/13	.22-.97	0.97	NA	0.3	NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.0005	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.012	0.97	mg/kg	FP-06 / 10-10-01	7/15	.0055-.0064	0.97	NA	NA		NA	NA	No	NSV [6]
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/5	.005-.0089	0.0089	NA	0.015	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.0064	0.31	mg/kg	FP-06 / 10-10-01	8/15	.0055-.0064	0.31	NA	0.047	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.0067	0.6	mg/kg	FP-06 / 10-10-01	8/15	.0055-.0064	0.6	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.016	9.2	mg/kg	FP-06 / 10-10-01	13/15	.0055-.0056	9.2	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.012	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.019	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.0038	NC	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.0063	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/5	.002-.0022	0.0022	NA	0.0078	NC	NA	NA	No	ND, DLBSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
West of South Street On-Facility	83-32-9	Acenaphthene	0.003	2 (J)	mg/kg	SB-52 / S-1-2 / 04-18-01	32/48	.003-.22	2	NA	34	NC	NA	NA	No	BSL
(Trench Vapor - Construction Worker)	67-64-1	Acetone	.003 (JEB)	.13 (J)	mg/kg	SB-46B / S-1-2 / 07-18-01	8/36	.0045-.043	0.13	NA	0.087	NC	NA	NA	Yes	ASL
	309-00-2	Aldrin	.0021 (J)	.0025 (J)	mg/kg	OW-106 / 04-24-01	2/6	.00051-.00056	0.0025	NA	27	C	NA	NA	No	BSL
	71-43-2	Benzene	.0012 (J)	.002 (J)	mg/kg	UST-5 / S-3-4 / 12-13-00, UST-6 / S-3-4 / 12-13-00	3/36	.0018-.0027	0.002	NA	0.00039	NC	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.0066 (J)	6.7	mg/kg	SS-30 / 03-28-01	42/48	.0051-.0065	6.7	NA	NA		NA	NA	No	NSV [6]
	319-84-6	BHC (alpha-)	ND	ND	mg/kg		0/6	.00051-.0006	0.0006	NA	0.72	C	NA	NA	No	ND, DLBSL
	58-89-9	BHC (gamma-)	ND	ND	mg/kg		0/6	.00051-.0006	0.0006	NA	1.3	C	NA	NA	No	ND, DLBSL
	78-93-3	Butanone (2-)	.0043 (J)	.015 (J)	mg/kg	SB-46B / S-1-2 / 07-18-01	6/36	.0018-.006	0.015	NA	0.31	NC	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0009 (J)	.024 (J)	mg/kg	SB-46B / S-1-2 / 07-18-01	6/36	.0018-.0027	0.024	NA	0.0019	NC	NA	NA	Yes	ASL
	5103-71-9	Chlordane (alpha-)	.0022 (J)	.0022 (J)	mg/kg	SB-46 / S-1-2 / 07-18-01	1/6	.00051-.0006	0.0022	NA	NA		NA	NA	No	NSV [6]
	5103-74-2	Chlordane (gamma-)	.0016 (J)	.0016 (J)	mg/kg	OW-106 / 04-24-01, SB-49 / S-3-4 / 04-24-01	2/6	.00051-.00056	0.0016	NA	NA		NA	NA	No	NSV [6]
	67-66-3	Chloroform	.001 (J)	.0015 (J)	mg/kg	SB-52 / S-1-2 / 04-18-01	3/36	.0018-.0027	0.0015	NA	0.00036	C	NA	NA	Yes	ASL
	218-01-9	Chrysene	.007 (J)	7.6	mg/kg	SS-30 / 03-28-01	42/48	.0051-.0065	7.6	NA	NA		NA	NA	No	NSV [6]
	72-55-9	DDE (4,4'-)	.0061 (J)	.0091 (J)	mg/kg	OW-106 / 04-24-01	4/6	.00051-.00052	0.0091	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.044 (J)	1.6	mg/kg	SB-52 / S-1-2 / 04-18-01	14/48	.1-.86	1.6	NA	NA		NA	NA	No	NSV [6]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/48	.1-1.1	1.1	NA	0.098	NC	NA	NA	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/48	.1-1.1	1.1	NA	0.3	NC	NA	NA	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/36	.0018-.0027	0.0027	NA	0.0005	NC	NA	NA	No	ND, DLASL
	60-57-1	Dieldrin	.0044 (J)	.027 (J)	mg/kg	SB-47 / S-1-2 / 07-25-01	2/6	.00051-.00059	0.027	NA	5.3	C	NA	NA	No	BSL
	959-98-8	Endosulfan I	.0029 (J)	.0029 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	1/6	.00051-.0006	0.0029	NA	NA		NA	NA	No	NSV [6]
	33213-65-9	Endosulfan II	.0082 (J)	.0095 (J)	mg/kg	SB-49 / S-3-4 / 04-24-01	2/6	.00051-.00056	0.0095	NA	NA		NA	NA	No	NSV [6]
	1031-07-8	Endosulfan sulfate	.0033 (J)	.004 (J)	mg/kg	SB-46 / S-1-2 / 07-18-01	2/6	.00051-.0006	0.004	NA	NA		NA	NA	No	NSV [6]
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/36	.0018-.0027	0.0027	NA	0.037	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.006	1.9	mg/kg	SS-30 / 03-28-01	30/48	.003-.22	1.9	NA	NA		NA	NA	No	NSV [6]
	76-44-8	Heptachlor	ND	ND	mg/kg		0/6	.00051-.0006	0.0006	NA	0.0082	C	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/36	.0045-.022	0.022	NA	0.015	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.0064	8.5	mg/kg	SB-51 / S-5-6 / 12-7-00	31/48	.003-.22	8.5	NA	0.047	NC	NA	NA	Yes	ASL
	91-20-3	Naphthalene	.0086 (J)	2.5	mg/kg	SS-30 / 03-28-01	37/48	.003-.014	2.5	NA	0.024	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.0066	18	mg/kg	SS-30 / 03-28-01	45/48	.0051-.006	18	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/kg		0/36	.0018-.0027	0.0027	NA	0.37	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.001 (J)	.013 (J)	mg/kg	UST-6 / S-3-4 / 12-13-00	8/36	.0018-.0027	0.013	NA	0.012	NC	NA	NA	Yes	ASL
	71-55-6	Trichloroethane (1,1,1-)	.0051 (J)	.0051 (J)	mg/kg	SB-27 / S-2-3 / 06-15-01	1/36	.0018-.0027	0.0051	NA	0.019	NC	NA	NA	No	BSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/36	.0018-.0027	0.0027	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	.0015 (J)	.2 (J)	mg/kg	SS-28 / 07-23-01	10/36	.0018-.0027	0.2	NA	0.0038	NC	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0019 (J)	.002 (J)	mg/kg	OW-101 / S-1-2 / 12-12-00	2/36	.0018-.0027	0.002	NA	0.0063	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.001 (J)	.001 (J)	mg/kg	SB-50 / S-1-2 / 04-24-01	1/36	.0018-.0027	0.001	NA	0.0078	NC	NA	NA	No	BSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:
Shaded chemicals are selected as COPCs
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
NA - Not Applicable/Not Available
ND - Not Detected
C - Screening toxicity value based on cancer effects
NC - Screening toxicity value based on non-cancer effects

(1) Chemicals included in this COPC screening are detected in at least one soil exposure point and have chemical properties in the Johnson & Ettinger model (USEPA, 2003).

(2) Minimum/Maximum detected concentration data qualifiers:
EB - The chemical was also detected in an associated non-matrix matched Equipment Blank.
J- The result is estimated (uncertain) due to QC exceedance(s).
JEB-The chemical was also detected in an associated non-matrix matched Equipment Blank and the result is estimated (uncertain) due to QC exceedance(s).

(3) Maximum detected concentration, or if never detected, maximum detection limit.

(4) Target soil or soil gas concentrations corresponding to an indoor air or trench vapor cancer risk of 1×10^{-6} or a non-cancer Hazard Index of 0.1 are used to screen COPCs for the air pathways. Soil and soil gas screening values are derived from the Johnson & Ettinger model as described in Appendix E1 for indoor air and Appendix E2 for trench vapor. Shallow soil gas screening values corresponding to target indoor air concentrations are from: United States Environmental Protection Agency (USEPA) Office of Solid Waste and Emergency Response. 2002. Draft Guidance for Evaluating the Vapor Intrusion Indoor Air Pathway From Groundwater and Soils. Table 2c. The p-xylene target concentration is used for m,p-xylenes.

(5) Rationale for Selection or Deletion:
ASL - Above Screening Level
BSL - Below Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below Screening Level
ND - Not Detected
NSV - No Screening Value
NTX - No toxicity information available
TX - Toxicity information available

(6) The target soil gas concentration exceeds the maximum possible vapor concentration for these chemicals (USEPA, 2002).

(7) Soil gas data and target shallow soil gas concentrations are used to screen COPCs at this exposure point.

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Off-site groundwater west of Neponset River	83-32-9	Acenaphthene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.037	NC	0.02	MCP Method 1 GW-1	No	ND, DLBSL
	208-96-8	Acenaphthylene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.037	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	67-64-1	Acetone	ND	ND	mg/L		0/3	.002	0.002	NA	0.55	NC	3	MCP Method 1 GW-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	0.22	0.41	mg/L	SH-24R / 11-06-03	2/3	.1	0.41	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.18	NC	2	MCP Method 1 GW-1	No	ND, DLBSL
	7440-36-0	Antimony	ND	ND	mg/L		0/3	.001	0.001	NA	0.0015	NC	0.006	MCL	No	ND, DLBSL
	7440-38-2	Arsenic	.00015 (JB)	.00063 (J)	mg/L	SH-24R / 11-06-03	3/3		0.00063	NA	4.5E-05	C	0.01	MCL	Yes	ASL
	7440-39-3	Barium	0.003	0.072	mg/L	WP-03 / 11-05-03	3/3		0.072	NA	0.26	NC	2	MCP Method 1 GW-1	No	BSL
	56-55-3	Benz(a)anthracene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	9.2E-05	C	0.001	MCP Method 1 GW-1	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/L		0/3	.00015	0.00015	NA	0.00035	C	0.005	MCL	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	ND	ND	mg/L		0/3	.000003-.0000098	0.0000098	NA	9.2E-06	C	0.0002	MCL	No	ND, DLASL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	9.2E-05	C	0.001	MCP Method 1 GW-1	No	ND, DLBSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.018	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.00092	C	0.001	MCP Method 1 GW-1	No	ND, DLBSL
	65-85-0	Benzoic acid	ND	ND	mg/L		0/3	.001-.0011	0.0011	NA	15	NC	NA	NA	No	ND, DLBSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/L		0/3	.001	0.001	NA	0.0073	NC	0.004	MCL	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.00001	C	0.03	MCP Method 1 GW-1	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.00027	C	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	mg/L		0/3	.0004-.0019	0.0019	NA	0.0048	C	0.006	MCL	No	ND, DLBSL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/3	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/3	.00006	0.00006	NA	0.00018	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/L		0/3	.002	0.002	NA	0.0085	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/L		0/3	.00078	0.00078	NA	0.00087	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/3	.002	0.002	NA	0.7	NC	0.35	MCP Method 1 GW-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.73	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	ND	ND	mg/L		0/3	.001	0.001	NA	0.0018	NC	0.005	MCL	No	ND, DLBSL
	7440-70-2	Calcium [7]	8.4 (B)	13	mg/L	SH-24S / 11-06-03	3/3		13	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.0034	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/3	.002	0.002	NA	0.1	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/3	.00033	0.00033	NA	0.00017	C	0.005	MCL	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.015	NC	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/3	.002	0.002	NA	0.011	NC	0.1	MCL	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/L		0/3	.002	0.002	NA	0.0046	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/2	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	.00012 (J)	.00012 (J)	mg/L	SH-24S / 11-06-03	1/3	.00011	0.00012	NA	0.00017	C	0.005	MCP Method 1 GW-1	No	BSL
	74-87-3	Chloromethane	ND	ND	mg/L		0/3	.002	0.0002	NA	0.016	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.049	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.003	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	ND	ND	mg/L		0/3	.001	0.001	NA	0.011	NC	0.05	MCP Method 1 GW-1	No	ND, DLBSL
	218-01-9	Chrysene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.0092	C	0.002	MCP Method 1 GW-1	No	ND, DLBSL
	7440-48-4	Cobalt [6]	.0013 (B)	.0013 (B)	mg/L	WP-03 / 11-05-03	1/3	.001	0.0013	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	ND	ND	mg/L		0/3	.0012-.003	0.003	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/3	.005	0.005	NA	0.00062	NC	0.2	MCL	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	mg/L		0/3	.0000022-.0000027	0.0000027	NA	9.2E-06	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.0012	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/3	.00009	0.00009	NA	0.00013	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.037	NC	0.6	MCL	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.018	NC	0.6	MCP Method 1 GW-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.0005	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.00015	C	0.08	MCP Method 1 GW-1	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/3	.002	0.002	NA	0.081	NC	0.07	MCP Method 1 GW-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/3	.00017	0.00017	NA	0.00012	C	0.005	MCL	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/3	.0003	0.0003	NA	0.034	NC	0.007	MCL	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/3	.002	0.002	NA	0.0061	NC	0.07	MCL	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/3	.002	0.002	NA	0.012	NC	0.1	MCL	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.011	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/3	.00014	0.00014	NA	0.00016	C	0.005	MCL	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/3	.00014	0.00014	NA	0.0004	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/3	.0001	0.0001	NA	0.0004	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	2.9	NC	6	MCP Method 1 GW-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.073	NC	0.1	MCP Method 1 GW-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	36	NC	50	MCP Method 1 GW-1	No	ND, DLBSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.36	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/3	.00052-.00054	0.00054	NA	0.00036	NC	NA	NA	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/3	.001-.0011	0.0011	NA	0.0073	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.0073	NC	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.0036	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.15	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/3	.002	0.002	NA	0.13	NC	0.7	MCL	No	ND, DLBSL
	206-44-0	Fluoranthene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.15	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.024	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	4.2E-05	C	0.001	MCL	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.00086	C	0.0006	MCP Method 1 GW-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.022	NC	0.05	MCL	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.0036	NC	0.008	MCP Method 1 GW-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/3	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	9.2E-05	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	7439-89-6	Iron [8]	0.11	0.4	mg/L	SH-24R / 11-06-03	3/3		0.4	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.071	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	ND	ND	mg/L		0/3	.001	0.001	NA	NA		0.015	MCL	No	ND, DLBSL
	7439-95-4	Magnesium [7]	2.9 (B)	4.3	mg/L	SH-24S / 11-06-03	3/3		4.3	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	0.013	0.13	mg/L	WP-03 / 11-05-03	3/3		0.13	NA	0.088	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	ND	ND	mg/L		0/3	.0002	0.0002	NA	0.0011	NC	0.002	MCL	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/3	.002	0.002	NA	0.2	NC	0.35	MCP Method 1 GW-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/3	.00025	0.00025	NA	0.0043	C	0.005	MCL	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.00062	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.18	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.018	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/3	.002	0.002	NA	0.011	C	0.07	MCP Method 1 GW-1	No	ND, DLBSL
	91-20-3	Naphthalene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.00062	NC	0.02	MCP Method 1 GW-1	No	ND, DLBSL
	7440-02-0	Nickel	ND	ND	mg/L		0/3	.01	0.01	NA	0.073	NC	0.1	MCP Method 1 GW-1	No	ND, DLBSL
	Nitrate	Nitrate	0.24	1.3	mg/L	SH-24S / 11-06-03	3/3		1.3	NA	10	NC	10	MCL	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.011	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.0011	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/3	.00052-.00054	0.00054	NA	0.0032	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.00034	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/3	.001-.0011	0.0011	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	9.6E-06	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.014	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/3	.001-.0011	0.0011	NA	0.00056	C	NA	NA	No	ND, DLASL
	85-01-8	Phenanthrene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.018	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	108-95-2	Phenol	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	1.1	NC	4	MCP Method 1 GW-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	0.73	2 (B)	mg/L	WP-03 / 11-05-03	3/3		2	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	ND	ND	mg/L		0/3	.000052-.000054	0.000054	NA	0.018	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	7782-49-2	Selenium	ND	ND	mg/L		0/3	.001	0.001	NA	0.018	NC	0.05	MCL	No	ND, DLBSL
	7440-22-4	Silver	ND	ND	mg/L		0/3	.001	0.001	NA	0.018	NC	0.04	MCP Method 1 GW-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	6.5	22	mg/L	SH-24S / 11-06-03	3/3		22	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/L		0/3	.002	0.002	NA	0.16	NC	0.1	MCL	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/3	.00009	0.00009	NA	5.5E-05	C	0.002	MCP Method 1 GW-1	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/3	.00023	0.00023	NA	0.0001	C	0.005	MCL	No	ND, DLASL
	7440-28-0	Thallium	ND	ND	mg/L		0/3	.00008	0.00008	NA	0.00024	NC	0.002	MCL	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/3	.002	0.002	NA	0.072	NC	1	MCL	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.00072	NC	0.07	MCL	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/3	.002	0.002	NA	0.32	NC	0.2	MCL	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/3	.0001	0.0001	NA	0.0002	C	0.005	MCL	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/3	.00018	0.00018	NA	2.8E-05	C	0.005	MCL	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/3	.002	0.002	NA	0.13	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.36	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/3	.00026-.00027	0.00027	NA	0.00036	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	7440-62-2	Vanadium	0.0015	0.0015	mg/L	SH-24R / 11-06-03	1/3	.001	0.0015	NA	0.0036	NC	0.05	MCP Method 1 GW-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/3	.002	0.002	NA	0.041	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/3	.00032	0.00032	NA	0.00002	C	0.002	MCL	No	ND, DLASL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/L		0/3	.002	0.002	NA	0.021	NC	10	MCL	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/3	.002	0.002	NA	0.021	NC	10	MCL	No	ND, DLBSL
	7440-66-6	Zinc	ND	ND	mg/L		0/3	.01	0.01	NA	1.1	NC	2	MCP Method 1 GW-1	No	ND, DLBSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Off-site groundwater east of Neponset River (SH-27)	83-32-9	Acenaphthene	ND	ND	mg/L		0/4	.00005-.000053	0.000053	NA	0.037	NC	0.02	MCP Method 1 GW-1	No	ND, DLBSL
	208-96-8	Acenaphthylene	ND	ND	mg/L		0/4	.00005-.000053	0.000053	NA	0.037	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	67-64-1	Acetone	ND	ND	mg/L		0/4	0.005	0.005	NA	0.55	NC	3	MCP Method 1 GW-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	0.1	.77 (J)	mg/L	OW-209 / 11-19-03	4/4		0.77	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	ND	ND	mg/L		0/4	.00005-.000053	0.000053	NA	0.18	NC	2	MCP Method 1 GW-1	No	ND, DLBSL
	7440-36-0	Antimony	0.0022	0.0022	mg/L	SH-27D / 11-19-03	1/4	0.001	0.0022	NA	0.0015	NC	0.006	MCL	Yes	ASL
	7440-38-2	Arsenic	.0004 (J)	.0016 (J)	mg/L	OW-209 / 11-19-03, SH-27D / 11-19-03	4/4		0.0016	NA	4.5E-05	C	0.01	MCL	Yes	ASL
	7440-39-3	Barium	0.0075	0.082	mg/L	SH-27S / 11-21-03	4/4		0.082	NA	0.26	NC	2	MCP Method 1 GW-1	No	BSL
	56-55-3	Benz(a)anthracene	ND	ND	mg/L		0/4	.00005-.000053	0.000053	NA	9.2E-05	C	0.001	MCP Method 1 GW-1	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/L		0/4	0.00015	0.00015	NA	0.00035	C	0.005	MCL	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.0000096 (J)	.000014 (J)	mg/L	SH-27S / 11-21-03	2/4	0.000003	0.000014	NA	9.2E-06	C	0.0002	MCL	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/4	.00005-.000053	0.000053	NA	9.2E-05	C	0.001	MCP Method 1 GW-1	No	ND, DLBSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	mg/L		0/4	.00005-.000053	0.000053	NA	0.018	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	mg/L		0/4	.00005-.000053	0.000053	NA	0.00092	C	0.001	MCP Method 1 GW-1	No	ND, DLBSL
	65-85-0	Benzoic acid	.00035 (J)	.00037 (J)	mg/L	SH-27S / 11-21-03	2/4	0.001	0.00037	NA	15	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/L		0/4	0.001	0.001	NA	0.0073	NC	0.004	MCL	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.00001	C	0.03	MCP Method 1 GW-1	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.00027	C	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	mg/L		0/4	.00026-.00087	0.00087	NA	0.0048	C	0.006	MCL	No	ND, DLBSL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/4	0.002	0.002	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/4	0.00006	0.00006	NA	0.00018	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/L		0/4	0.002	0.002	NA	0.0085	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/L		0/4	0.00078	0.00078	NA	0.00087	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/4	0.002	0.002	NA	0.7	NC	0.35	MCP Method 1 GW-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.73	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	ND	ND	mg/L		0/4	0.001	0.001	NA	0.0018	NC	0.005	MCL	No	ND, DLBSL
	7440-70-2	Calcium [7]	27	58	mg/L	SH-27R / 11-20-03	4/4		58	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.0034	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/4	0.002	0.002	NA	0.1	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/4	0.00033	0.00033	NA	0.00017	C	0.005	MCL	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.015	NC	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/4	0.002	0.002	NA	0.011	NC	0.1	MCL	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/L		0/4	0.002	0.002	NA	0.0046	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/4	0.002	0.002	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/L		0/4	0.00011	0.00011	NA	0.00017	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/L		0/4	0.0002	0.0002	NA	0.016	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.049	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.003	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	ND	ND	mg/L		0/4	0.001	0.001	NA	0.011	NC	0.05	MCP Method 1 GW-1	No	ND, DLBSL
	218-01-9	Chrysene	ND	ND	mg/L		0/4	.00005-.000053	0.000053	NA	0.0092	C	0.002	MCP Method 1 GW-1	No	ND, DLBSL
	7440-48-4	Cobalt [6]	0.0015	0.0017	mg/L	SH-27R / 11-20-03	3/4	0.001	0.0017	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	ND	ND	mg/L		0/4	.0016-.0048	0.0048	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/4	0.005	0.005	NA	0.00062	NC	0.2	MCL	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	.0000047 (J)	.0000081 (J)	mg/L	SH-27D / 11-19-03	2/4	.0000021-.0000022	0.0000081	NA	9.2E-06	C	0.0005	MCP Method 1 GW-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.0012	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/4	0.00009	0.00009	NA	0.00013	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.037	NC	0.6	MCL	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.018	NC	0.6	MCP Method 1 GW-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.0005	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.00015	C	0.08	MCP Method 1 GW-1	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/4	0.002	0.002	NA	0.081	NC	0.07	MCP Method 1 GW-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/4	0.00017	0.00017	NA	0.00012	C	0.005	MCL	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	.00081 (J)	.0013 (J)	mg/L	SH-27R / 11-20-03	3/4	0.0003	0.0013	NA	0.034	NC	0.007	MCL	No	BSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/4	0.002	0.002	NA	0.0061	NC	0.07	MCL	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/4	0.002	0.002	NA	0.012	NC	0.1	MCL	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.011	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/4	0.00014	0.00014	NA	0.00016	C	0.005	MCL	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/4	0.00014	0.00014	NA	0.0004	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/4	0.0001	0.0001	NA	0.0004	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	2.9	NC	6	MCP Method 1 GW-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.073	NC	0.1	MCP Method 1 GW-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	.00019 (J)	.00019 (J)	mg/L	SH-27R / 11-20-03	1/4	.00025-.00026	0.00019	NA	36	NC	50	MCP Method 1 GW-1	No	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/4	.00025-.0014	0.0014	NA	0.36	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/4	.0005-.00053	0.00053	NA	0.00036	NC	NA	NA	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/4	0.001	0.001	NA	0.0073	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.0073	NC	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	.00018 (J)	.00018 (J)	mg/L	SH-27R / 11-20-03	1/4	.00025-.00026	0.00018	NA	0.0036	NC	NA	NA	No	BSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.15	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/4	0.002	0.002	NA	0.13	NC	0.7	MCL	No	ND, DLBSL
	206-44-0	Fluoranthene	ND	ND	mg/L		0/4	.0005-.00053	0.000053	NA	0.15	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/L		0/4	.0005-.00053	0.000053	NA	0.024	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	4.2E-05	C	0.001	MCL	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.00086	C	0.0006	MCP Method 1 GW-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.022	NC	0.05	MCL	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.0036	NC	0.008	MCP Method 1 GW-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/4	0.002	0.002	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	mg/L		0/4	.0005-.00053	0.000053	NA	9.2E-05	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	7439-89-6	Iron [8]	0.11	1 (J)	mg/L	OW-209 / 11-19-03	4/4		1	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.071	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	0.0012	0.0012	mg/L	SH-27S / 11-21-03	1/4	0.001	0.0012	NA	NA		0.015	MCL	No	BSL
	7439-95-4	Magnesium [7]	5.7	24	mg/L	SH-27R / 11-20-03	4/4		24	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	0.17	0.42	mg/L	SH-27R / 11-20-03	4/4		0.42	NA	0.088	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	ND	ND	mg/L		0/4	0.0002	0.0002	NA	0.0011	NC	0.002	MCL	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/4	0.002	0.002	NA	0.2	NC	0.35	MCP Method 1 GW-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/4	0.00025	0.00025	NA	0.0043	C	0.005	MCL	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.00006	0.00006	mg/L	SH-27R / 11-20-03	1/4	.00005-.000053	0.00006	NA	0.00062	NC	0.01	MCP Method 1 GW-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.18	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.018	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/4	0.002	0.002	NA	0.011	C	0.07	MCP Method 1 GW-1	No	ND, DLBSL
	91-20-3	Naphthalene	0.000053	0.000053	mg/L	SH-27R / 11-20-03	1/4	.00005-.000053	0.000053	NA	0.00062	NC	0.02	MCP Method 1 GW-1	No	BSL
	7440-02-0	Nickel	ND	ND	mg/L		0/4	0.01	0.01	NA	0.073	NC	0.1	MCP Method 1 GW-1	No	ND, DLBSL
	Nitrate	Nitrate	0.29	1.1	mg/L	SH-27S / 11-21-03	4/4		1.1	NA	10	NC	10	MCL	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.011	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.0011	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/4	.00005-.000053	0.00053	NA	0.0032	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.00034	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-) [9]	.0001 (J)	.0001 (J)	mg/L	SH-27R / 11-20-03	1/4	0.001	0.0001	NA	NA		NA	NA	Yes	TX
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	9.6E-06	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.014	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/4	0.001	0.001	NA	0.00056	C	NA	NA	No	ND, DLASL
	85-01-8	Phenanthrene	ND	ND	mg/L		0/4	.00005-.000053	0.000053	NA	0.018	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	108-95-2	Phenol	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	1.1	NC	4	MCP Method 1 GW-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	1.6	4.2	mg/L	SH-27S / 11-21-03	4/4		4.2	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	ND	ND	mg/L		0/4	.00005-.000053	0.000053	NA	0.018	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	7782-49-2	Selenium	ND	ND	mg/L		0/4	0.001	0.001	NA	0.018	NC	0.05	MCL	No	ND, DLBSL
	7440-22-4	Silver	ND	ND	mg/L		0/4	0.001	0.001	NA	0.018	NC	0.04	MCP Method 1 GW-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	26	72	mg/L	SH-27S / 11-21-03	4/4		72	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/L		0/4	0.002	0.002	NA	0.16	NC	0.1	MCL	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/4	0.00009	0.00009	NA	5.5E-05	C	0.002	MCP Method 1 GW-1	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/4	0.00023	0.00023	NA	0.0001	C	0.005	MCL	No	ND, DLASL
	7440-28-0	Thallium	ND	ND	mg/L		0/4	0.00008	0.00008	NA	0.00024	NC	0.002	MCL	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/4	0.002	0.002	NA	0.072	NC	1	MCL	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.00072	NC	0.07	MCL	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	.001 (J)	.0012 (J)	mg/L	SH-27R / 11-20-03	3/4	0.002	0.0012	NA	0.32	NC	0.2	MCL	No	BSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/4	0.0001	0.0001	NA	0.0002	C	0.005	MCL	No	ND, DLBSL
	79-01-6	Trichloroethene	0.0022	0.0051	mg/L	SH-27R / 11-20-03	3/4	0.00018	0.0051	NA	2.8E-05	C	0.005	MCL	Yes	ASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/4	0.002	0.002	NA	0.13	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.36	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/4	.00025-.00026	0.00026	NA	0.00036	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	7440-62-2	Vanadium	0.0012	0.0048	mg/L	OW-209 / 11-19-03	4/4		0.0048	NA	0.0036	NC	0.05	MCP Method 1 GW-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/4		0.002	NA	0.041	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/4		0.00032	NA	0.00002	C	0.002	MCL	No	ND, DLASL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/L		0/4		0.002	NA	0.021	NC	10	MCL	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/4		0.002	NA	0.021	NC	10	MCL	No	ND, DLBSL
	7440-66-6	Zinc	ND	ND	mg/L		0/4		0.01	NA	1.1	NC	2	MCP Method 1 GW-1	No	ND, DLBSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Off-site groundwater east of Neponset River (SH-28)	83-32-9	Acenaphthene	ND	ND	mg/L		0/3		0.000054	NA	0.037	NC	0.02	MCP Method 1 GW-1	No	ND, DLBSL
	208-96-8	Acenaphthylene	ND	ND	mg/L		0/3		0.000054	NA	0.037	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	67-64-1	Acetone	ND	ND	mg/L		0/3		0.002	NA	0.55	NC	3	MCP Method 1 GW-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	0.51	0.82	mg/L	SH-28D / 11-06-03	2/3		0.82	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	ND	ND	mg/L		0/3		0.000054	NA	0.18	NC	2	MCP Method 1 GW-1	No	ND, DLBSL
	7440-36-0	Antimony	ND	ND	mg/L		0/3		0.001	NA	0.0015	NC	0.006	MCL	No	ND, DLBSL
	7440-38-2	Arsenic	.00036 (J)	.00092 (J)	mg/L	SH-28R / 11-07-03	3/3		0.00092	NA	4.5E-05	C	0.01	MCL	Yes	ASL
	7440-39-3	Barium	0.0059	0.029	mg/L	SH-28S / 11-06-03	3/3		0.029	NA	0.26	NC	2	MCP Method 1 GW-1	No	BSL
	56-55-3	Benz(a)anthracene	ND	ND	mg/L		0/3		0.000054	NA	9.2E-05	C	0.001	MCP Method 1 GW-1	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/L		0/3		0.00015	NA	0.00035	C	0.005	MCL	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	ND	ND	mg/L		0/3		0.0000032	NA	9.2E-06	C	0.0002	MCL	No	ND, DLBSL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/3		0.000054	NA	9.2E-05	C	0.001	MCP Method 1 GW-1	No	ND, DLBSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	mg/L		0/3		0.000054	NA	0.018	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	mg/L		0/3		0.000054	NA	0.00092	C	0.001	MCP Method 1 GW-1	No	ND, DLBSL
	65-85-0	Benzoic acid	ND	ND	mg/L		0/3		0.0011	NA	15	NC	NA	NA	No	ND, DLBSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/3		0.00027	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/L		0/3		0.001	NA	0.0073	NC	0.004	MCL	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/3		0.00027	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/3		0.00027	NA	0.00001	C	0.03	MCP Method 1 GW-1	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/3		0.00027	NA	0.00027	C	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	mg/L		0/3		0.00038	NA	0.0048	C	0.006	MCL	No	ND, DLBSL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/3		0.002	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/3		0.00006	NA	0.00018	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/L		0/3		0.002	NA	0.0085	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/L		0/3		0.00078	NA	0.00087	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/3		0.00027	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/3		0.002	NA	0.7	NC	0.35	MCP Method 1 GW-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/3		0.00027	NA	0.73	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	ND	ND	mg/L		0/3		0.001	NA	0.0018	NC	0.005	MCL	No	ND, DLBSL
	7440-70-2	Calcium [7]	12	20	mg/L	SH-28D / 11-06-03	3/3		20	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/L		0/3		0.00027	NA	0.0034	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/3		0.002	NA	0.1	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/3		0.00033	NA	0.00017	C	0.005	MCL	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/3		0.00027	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/3		0.00027	NA	0.015	NC	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/3		0.002	NA	0.011	NC	0.1	MCL	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/L		0/3		0.002	NA	0.0046	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/3		0.002	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/L		0/3		0.00011	NA	0.00017	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/L		0/3		0.0002	NA	0.016	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/3		0.00027	NA	0.049	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/3		0.00027	NA	0.003	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/3		0.00027	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	0.0014	0.0014	mg/L	SH-28D / 11-06-03	1/3		0.0014	NA	0.011	NC	0.05	MCP Method 1 GW-1	No	BSL
	218-01-9	Chrysene	ND	ND	mg/L		0/3		0.000054	NA	0.0092	C	0.002	MCP Method 1 GW-1	No	ND, DLBSL
	7440-48-4	Cobalt [6]	0.0019	0.0019	mg/L	SH-28S / 11-06-03	1/3		0.0019	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	ND	ND	mg/L		0/3		0.0022	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/3		0.005	NA	0.00062	NC	0.2	MCL	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	mg/L		0/3		0.0000023	NA	9.2E-06	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/3		0.00027	NA	0.0012	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/3		0.00009	NA	0.00013	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/3		0.00027	NA	0.037	NC	0.6	MCL	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/3		0.00027	NA	0.018	NC	0.6	MCP Method 1 GW-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/3		0.00027	NA	0.0005	C	0.005	MCP Method 1 GW-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/3		0.00027	NA	0.00015	C	0.08	MCP Method 1 GW-1	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/3		0.002	NA	0.081	NC	0.07	MCP Method 1 GW-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/3		0.00017	NA	0.00012	C	0.005	MCL	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/3		0.0003	NA	0.034	NC	0.007	MCL	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/3		0.002	NA	0.0061	NC	0.07	MCL	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/3		0.002	NA	0.012	NC	0.1	MCL	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/3		0.00027	NA	0.011	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/3		0.00014	NA	0.00016	C	0.005	MCL	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/3		0.00014	NA	0.0004	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/3		0.0001	NA	0.0004	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/3		0.00027	NA	2.9	NC	6	MCP Method 1 GW-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/L		0/3		0.00027	NA	0.073	NC	0.1	MCP Method 1 GW-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	.00017 (J)	0.00042	mg/L	SH-28D / 11-06-03	2/3		0.00042	NA	36	NC	50	MCP Method 1 GW-1	No	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/3	.00027-.0003	0.0003	NA	0.36	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/3	0.00054	0.00054	NA	0.00036	NC	NA	NA	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/3	0.0011	0.0011	NA	0.0073	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.0073	NC	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.0036	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.15	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/3	0.002	0.002	NA	0.13	NC	0.7	MCL	No	ND, DLBSL
	206-44-0	Fluoranthene	ND	ND	mg/L		0/3	0.000054	0.000054	NA	0.15	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/L		0/3	0.000054	0.000054	NA	0.024	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/3	0.00027	0.00027	NA	4.2E-05	C	0.001	MCL	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.00086	C	0.0006	MCP Method 1 GW-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.022	NC	0.05	MCL	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.0036	NC	0.008	MCP Method 1 GW-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/3	0.002	0.002	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	mg/L		0/3	0.000054	0.000054	NA	9.2E-05	C	0.0005	MCP Method 1 GW-1	No	ND, DLBSL
	7439-89-6	Iron [8]	0.12	1.2	mg/L	SH-28D / 11-06-03	3/3		1.2	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.071	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	ND	ND	mg/L		0/3	0.001	0.001	NA	NA		0.015	MCL	No	ND, DLBSL
	7439-95-4	Magnesium [7]	3.8	10	mg/L	SH-28D / 11-06-03	3/3		10	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	0.019	0.76	mg/L	SH-28S / 11-06-03	3/3		0.76	NA	0.088	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	ND	ND	mg/L		0/3	0.0002	0.0002	NA	0.0011	NC	0.002	MCL	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/3	0.002	0.002	NA	0.2	NC	0.35	MCP Method 1 GW-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/3	0.00025	0.00025	NA	0.0043	C	0.005	MCL	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/L		0/3	0.000054	0.000054	NA	0.00062	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.18	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.018	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/3	0.002	0.002	NA	0.011	C	0.07	MCP Method 1 GW-1	No	ND, DLBSL
	91-20-3	Naphthalene	ND	ND	mg/L		0/3	0.000054	0.000054	NA	0.00062	NC	0.02	MCP Method 1 GW-1	No	ND, DLBSL
	7440-02-0	Nickel	ND	ND	mg/L		0/3	0.01	0.01	NA	0.073	NC	0.1	MCP Method 1 GW-1	No	ND, DLBSL
	Nitrate	Nitrate	0.65	2.4	mg/L	SH-28D / 11-06-03	3/3		2.4	NA	10	NC	10	MCL	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.011	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.0011	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/3	0.00054	0.00054	NA	0.0032	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.00034	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/3	0.0011	0.0011	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	9.6E-06	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.014	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/3	0.0011	0.0011	NA	0.00056	C	NA	NA	No	ND, DLASL
	85-01-8	Phenanthrene	ND	ND	mg/L		0/3	0.000054	0.000054	NA	0.018	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	108-95-2	Phenol	ND	ND	mg/L		0/3	0.00027	0.00027	NA	1.1	NC	4	MCP Method 1 GW-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	0.78	3	mg/L	SH-28S / 11-06-03	3/3		3	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	ND	ND	mg/L		0/3	0.000054	0.000054	NA	0.018	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	7782-49-2	Selenium	ND	ND	mg/L		0/3	0.001	0.001	NA	0.018	NC	0.05	MCL	No	ND, DLBSL
	7440-22-4	Silver	ND	ND	mg/L		0/3	0.001	0.001	NA	0.018	NC	0.04	MCP Method 1 GW-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	7.8	40	mg/L	SH-28S / 11-06-03	3/3		40	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/L		0/3	0.002	0.002	NA	0.16	NC	0.1	MCL	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/3	0.00009	0.00009	NA	5.5E-05	C	0.002	MCP Method 1 GW-1	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/3	0.00023	0.00023	NA	0.0001	C	0.005	MCL	No	ND, DLASL
	7440-28-0	Thallium	ND	ND	mg/L		0/3	0.00008	0.00008	NA	0.00024	NC	0.002	MCL	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/3	0.002	0.002	NA	0.072	NC	1	MCL	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.00072	NC	0.07	MCL	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/3	0.002	0.002	NA	0.32	NC	0.2	MCL	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/3	0.0001	0.0001	NA	0.0002	C	0.005	MCL	No	ND, DLBSL
	79-01-6	Trichloroethene	.00043 (J)	.00043 (J)	mg/L	SH-28R / 11-07-03	1/3	0.00018	0.00043	NA	2.8E-05	C	0.005	MCL	Yes	ASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/3	0.002	0.002	NA	0.13	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.36	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/3	0.00027	0.00027	NA	0.00036	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	7440-62-2	Vanadium	0.0012	0.0019	mg/L	SH-28D / 11-06-03	2/3	0.001	0.0019	NA	0.0036	NC	0.05	MCP Method 1 GW-1	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/3	0.002	0.002	NA	0.041	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/3	0.00032	0.00032	NA	0.00002	C	0.002	MCL	No	ND, DLASL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/L		0/3	0.002	0.002	NA	0.021	NC	10	MCL	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/3	0.002	0.002	NA	0.021	NC	10	MCL	No	ND, DLBSL
	7440-66-6	Zinc	0.017	0.017	mg/L	SH-28S / 11-06-03	1/3	0.01	0.017	NA	1.1	NC	2	MCP Method 1 GW-1	No	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
Off-facility groundwater Lot 208 / Lot 209	83-32-9	Acenaphthene	0.00046	0.0062	mg/L	SH-15S / 10-28-03	6/10	.000052-.000053	0.0062	NA	0.037	NC	0.02	MCP Method 1 GW-1	No	BSL
	208-96-8	Acenaphthylene	0.00007	0.002	mg/L	SH-15S / 09-10-01	6/10	.000052-.000053	0.002	NA	0.037	NC	0.3	MCP Method 1 GW-1	No	BSL
	67-64-1	Acetone	.0075 (J)	.0075 (J)	mg/L	SH-26S / 10-28-03	1/10	.002-.025	0.0075	NA	0.55	NC	3	MCP Method 1 GW-1	No	BSL
	7429-90-5	Aluminum [6]	.270 (J)	15	mg/L	SH-26S / 10-28-03	7/10	.1-.5	15	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	0.0002	0.00084	mg/L	SH-15S / 09-10-01	5/10	.000052-.000057	0.00084	NA	0.18	NC	2	MCP Method 1 GW-1	No	BSL
	7440-36-0	Antimony	0.0012	0.0014	mg/L	WP-07 / 10-27-03	2/10	.001-.0111	0.0014	NA	0.0015	NC	0.006	MCL	No	BSL
	7440-38-2	Arsenic	.00013 (J)	0.059	mg/L	WP-07 / 10-27-03	9/10	0.00029	0.059	NA	4.5E-05	C	0.01	MCL	Yes	ASL
	7440-39-3	Barium	0.013	0.18	mg/L	SH-15S / 05-20-02	8/10	.001-.015	0.18	NA	0.26	NC	2	MCP Method 1 GW-1	No	BSL
	56-55-3	Benz(a)anthracene	0.000067	0.000071	mg/L	SH-15S / 09-10-01	2/10	.000052-.00021	0.000071	NA	9.2E-05	C	0.001	MCP Method 1 GW-1	No	BSL
	71-43-2	Benzene	.00019 (J)	.0076 (J)	mg/L	SH-15S / 09-10-01	6/10	.00015-.00025	0.0076	NA	0.00035	C	0.005	MCL	Yes	ASL
	50-32-8	Benzo(a)pyrene	.0000042 (J)	.000077 (J)	mg/L	WP-07 / 10-27-03	7/10	.0000018-.0000031	0.000077	NA	9.2E-06	C	0.0002	MCL	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/10	.00005-.00021	0.00021	NA	9.2E-05	C	0.001	MCP Method 1 GW-1	No	ND, DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	mg/L		0/10	.00005-.00021	0.00021	NA	0.018	NC	0.3	MCP Method 1 GW-1	No	ND, DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	mg/L		0/10	.00005-.00021	0.00021	NA	0.00092	C	0.001	MCP Method 1 GW-1	No	ND, DLBSL
	65-85-0	Benzoic acid	.0011 (J)	.0021 (J)	mg/L	SH-26S / 10-28-03	2/6	.0011-.0056	0.0021	NA	15	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/8	.0027-.0056	0.0056	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/L		0/10	.00056-.0011	0.0011	NA	0.0073	NC	0.004	MCL	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/8	.00027-.001	0.001	NA	0.00001	C	0.03	MCP Method 1 GW-1	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/8	.00027-.001	0.001	NA	0.00027	C	0.03	MCP Method 1 GW-1	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.0038	0.0038	mg/L	SH-15D / 09-10-01	1/10	.00027-.0038	0.0038	NA	0.0048	C	0.006	MCL	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/10	.002-.01	0.01	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/10	.00006-.0012	0.0012	NA	0.00018	C	0.005	MCP Method 1 GW-1	No	ND, DLASL
	75-25-2	Bromoform	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.0085	C	0.005	MCP Method 1 GW-1	No	ND, DLASL
	74-83-9	Bromomethane	ND	ND	mg/L		0/10	.00016-.0077	0.0077	NA	0.00087	NC	0.01	MCP Method 1 GW-1	No	ND, DLASL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.7	NC	0.35	MCP Method 1 GW-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.73	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	ND	ND	mg/L		0/10	.00011-.0011	0.0011	NA	0.0018	NC	0.005	MCL	No	ND, DLBSL
	7440-70-2	Calcium [7]	2.6 (B)	56	mg/L	SH-15S / 05-20-02	9/10	11	56	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	0.00064	.0007 (J)	mg/L	SH-15S / 09-10-01	3/10	.00027-.0021	0.0007	NA	0.0034	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.1	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/10	.00033-.0036	0.0036	NA	0.00017	C	0.005	MCL	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.015	NC	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/10	.002-.010	0.01	NA	0.011	NC	0.1	MCL	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/L		0/10	.002-.010	0.01	NA	0.0046	C	NA	NA	No	ND, DLASL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/10	.002-.010	0.01	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/L		0/10	.00011-.0016	0.0016	NA	0.00017	C	0.005	MCP Method 1 GW-1	No	ND, DLASL
	74-87-3	Chloromethane	ND	ND	mg/L		0/10	.0002-.004	0.004	NA	0.016	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.049	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.003	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	.0011 (B)	0.03	mg/L	SH-26S / 10-28-03	8/10	0.001	0.03	NA	0.011	NC	0.05	MCP Method 1 GW-1	Yes	ASL
	218-01-9	Chrysene	0.000057	0.000065	mg/L	SH-15S / 09-10-01	2/10	.000052-.00021	0.000065	NA	0.0092	C	0.002	MCP Method 1 GW-1	No	BSL
	7440-48-4	Cobalt [6]	0.00091	0.01	mg/L	SH-26S / 10-28-03	5/10	.001-.0014	0.01	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	0.0019	0.12	mg/L	WP-07 / 10-27-03	6/10	.0011-.0147	0.12	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/8	0.005	0.005	NA	0.00062	NC	0.2	MCL	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	.0000033 (J)	.000025 (J)	mg/L	WP-07 / 10-27-03	5/10	.0000022-.0000091	0.000025	NA	9.2E-06	C	0.0005	MCP Method 1 GW-1	Yes	ASL
	132-64-9	Dibenzofuran	.00036 (J)	.00072 (J)	mg/L	SH-15S / 09-10-01	3/8	.00027-.0022	0.00072	NA	0.0012	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/10	.00009-.001	0.001	NA	0.00013	C	0.005	MCP Method 1 GW-1	No	ND, DLASL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.037	NC	0.6	MCL	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/8	.00027-.001	0.001	NA	0.018	NC	0.6	MCP Method 1 GW-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/8	.00027-.001	0.001	NA	0.0005	C	0.005	MCP Method 1 GW-1	No	ND, DLASL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/8	.00027-.0044	0.0044	NA	0.00015	C	0.08	MCP Method 1 GW-1	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.081	NC	0.07	MCP Method 1 GW-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/10	.0001-.0014	0.0014	NA	0.00012	C	0.005	MCL	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/10	.00019-.0022	0.0022	NA	0.034	NC	0.007	MCL	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.0061	NC	0.07	MCL	No	ND, DLASL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.012	NC	0.1	MCL	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.011	NC	0.01	MCP Method 1 GW-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/10	.00014-.0012	0.0012	NA	0.00016	C	0.005	MCL	No	ND, DLASL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/10	.00014-.0012	0.0012	NA	0.0004	C	0.0005	MCP Method 1 GW-1	No	ND, DLASL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/10	.0001-.0012	0.0012	NA	0.0004	C	0.0005	MCP Method 1 GW-1	No	ND, DLASL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	2.9	NC	6	MCP Method 1 GW-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	.0005 (J)	.0011 (J)	mg/L	SH-15S / 09-10-01	2/8	.00027-.0056	0.0011	NA	0.073	NC	0.1	MCP Method 1 GW-1	No	BSL
	131-11-3	Dimethylphthalate	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	36	NC	50	MCP Method 1 GW-1	No	ND, DLBSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.36	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/8	.00053-.0056	0.0056	NA	0.00036	NC	NA	NA	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/8	.0011-.0056	0.0056	NA	0.0073	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.0073	NC	0.03	MCP Method 1 GW-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.0036	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	.0003 (J)	.0003 (J)	mg/L	WP-07 / 10-27-03	1/8	.00027-.0022	0.0003	NA	0.15	NC	NA	NA	No	BSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.13	NC	0.7	MCL	No	ND, DLBSL
	206-44-0	Fluoranthene	0.00028	0.0011	mg/L	SH-26S / 10-28-03	5/10	.000052-.000057	0.0011	NA	0.15	NC	0.3	MCP Method 1 GW-1	No	BSL
	86-73-7	Fluorene	0.00027	0.0039	mg/L	SH-15S / 10-28-03	6/10	.000052-.000053	0.0039	NA	0.024	NC	0.3	MCP Method 1 GW-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/8	.00027-.001	0.001	NA	4.2E-05	C	0.001	MCL	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/8	.00027-.001	0.001	NA	0.00086	C	0.0006	MCP Method 1 GW-1	No	ND, DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/8	.00027-.0053	0.0053	NA	0.022	NC	0.05	MCL	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.0036	NC	0.008	MCP Method 1 GW-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/10	.002-.025	0.025	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	mg/L		0/10	.00005-.00021	0.00021	NA	9.2E-05	C	0.0005	MCP Method 1 GW-1	No	ND, DLASL
	7439-89-6	Iron [8]	.14 (B)	14	mg/L	SH-26S / 10-28-03	9/10	0.616	14	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.071	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	0.0011	0.17	mg/L	WP-07 / 10-27-03	6/10	.00055-.0011	0.17	NA	NA		0.015	MCL	Yes	ASL
	7439-95-4	Magnesium [7]	. 58 (J)	5.18	mg/L	SH-15D / 09-10-01	6/10	.224-4.9	5.18	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	0.022	0.62	mg/L	SH-26S / 10-28-03	9/10	0.11	0.62	NA	0.088	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	ND	ND	mg/L		0/10	0.0002	0.0002	NA	0.0011	NC	0.002	MCL	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.2	NC	0.35	MCP Method 1 GW-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/10	.0002-.0078	0.0078	NA	0.0043	C	0.005	MCL	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.0012	0.021	mg/L	SH-15S / 09-10-01	6/10	.000052-.000053	0.021	NA	0.00062	NC	0.01	MCP Method 1 GW-1	Yes	ASL
	95-48-7	Methylphenol (2-)	.00043 (J)	.0006 (J)	mg/L	SH-15S / 09-10-01	2/8	.00027-.0022	0.0006	NA	0.18	NC	NA	NA	No	BSL
	106-44-5	Methylphenol (4-)	.00059 (J)	0.00061	mg/L	WP-07 / 10-27-03	2/8	.00027-.0022	0.00061	NA	0.018	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.011	C	0.07	MCP Method 1 GW-1	No	ND, DLBSL
	91-20-3	Naphthalene	0.0031	0.059	mg/L	SH-15S / 09-10-01	6/10	.000052-.000053	0.059	NA	0.00062	NC	0.02	MCP Method 1 GW-1	Yes	ASL
	7440-02-0	Nickel	.0023 (J)	0.024	mg/L	SH-26S / 10-28-03	5/10	.0022-.01	0.024	NA	0.073	NC	0.1	MCP Method 1 GW-1	No	BSL
	Nitrate	Nitrate	.36 (B)	2.3	mg/L	WP-05 / 11-07-03	6/10	.05-.10	2.3	NA	10	NC	10	MCL	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/8	.00027-.001	0.001	NA	0.011	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.0011	NC	NA	NA	No	ND, DLASL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/8	.00053-.0022	0.0022	NA	0.0032	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/8	.00027-.001	0.001	NA	0.00034	NC	NA	NA	No	ND, DLASL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/8	.0011-.0042	0.0042	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/8	.00027-.001	0.001	NA	9.6E-06	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.014	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/8	.00059-.0042	0.0042	NA	0.00056	C	NA	NA	No	ND, DLASL
	85-01-8	Phenanthrene	0.00047	0.0068	mg/L	SH-26S / 10-28-03	6/10	.000052-.000053	0.0068	NA	0.018	NC	0.3	MCP Method 1 GW-1	No	BSL
	108-95-2	Phenol	.00067 (J)	.00067 (J)	mg/L	SH-15S / 09-10-01	1/8	.00027-.0022	0.00067	NA	1.1	NC	4	MCP Method 1 GW-1	No	BSL
	7440-09-7	Potassium [7]	.79 (B)	3.2	mg/L	SH-15S / 05-20-02	8/10	.83-.95	3.2	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	0.00045	0.0019	mg/L	SH-26S / 10-28-03	5/10	.000052-.000057	0.0019	NA	0.018	NC	0.2	MCP Method 1 GW-1	No	BSL
	7782-49-2	Selenium	0.0013	0.0022	mg/L	SH-26S / 10-28-03	5/10	.001-.0011	0.0022	NA	0.018	NC	0.05	MCL	No	BSL
	7440-22-4	Silver	ND	ND	mg/L		0/10	.001-.0011	0.0011	NA	0.018	NC	0.04	MCP Method 1 GW-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	14.3	419	mg/L	SH-15S / 09-10-01	9/10	14	419	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.16	NC	0.1	MCL	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/10	.00009-.0016	0.0016	NA	5.5E-05	C	0.002	MCP Method 1 GW-1	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/10	.00015-.0016	0.0016	NA	0.0001	C	0.005	MCL	No	ND, DLASL
	7440-28-0	Thallium	.00011 (J)	.0002 (J)	mg/L	SH-15S / 05-20-02	3/10	.000075-.00032	0.0002	NA	0.00024	NC	0.002	MCL	No	BSL
	108-88-3	Toluene	.0078 (J)	.0078 (J)	mg/L	SH-15S / 09-10-01	1/10	.002-.01	0.0078	NA	0.072	NC	1	MCL	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.00072	NC	0.07	MCL	No	ND, DLASL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.32	NC	0.2	MCL	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/10	000.1-.0013	0.0013	NA	0.0002	C	0.005	MCL	No	ND, DLASL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/10	.00018-.0013	0.0013	NA	2.8E-05	C	0.005	MCL	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.13	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.36	NC	0.2	MCP Method 1 GW-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/8	.00027-.0022	0.0022	NA	0.00036	NC	0.01	MCP Method 1 GW-1	No	ND, DLASL
	7440-62-2	Vanadium	0.0015	0.22	mg/L	WP-07 / 10-27-03	7/10	.001-.0111	0.22	NA	0.0036	NC	0.05	MCP Method 1 GW-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/10	.002-.025	0.025	NA	0.041	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/10	.00032-.0038	0.0038	NA	0.00002	C	0.002	MCL	No	ND, DLASL
	108-38-3 106-42-3	Xylene (m,p-)	.0054 (J)	.0054 (J)	mg/L	SH-15S / 09-10-01	1/10	.002-.01	0.0054	NA	0.021	NC	10	MCL	No	BSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/10	.002-.01	0.01	NA	0.021	NC	10	MCL	No	ND, DLBSL
	7440-66-6	Zinc	.018 (B)	0.063	mg/L	SH-26S / 10-28-03	3/10	.01-.0848	0.063	NA	1.1	NC	2	MCP Method 1 GW-1	No	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
On-Site Groundwater	83-32-9	Acenaphthene	0.000057	0.099	mg/L	SH-01R / 09-13-01	62/124	.00005-.000057	0.099	NA	0.037	NC	0.02	MCP Method 1 GW-1	Yes	ASL
	208-96-8	Acenaphthylene	0.000051	0.098	mg/L	SH-01R / 09-13-01	43/124	.00005-.00041	0.098	NA	0.037	NC	0.3	MCP Method 1 GW-1	Yes	ASL
	67-64-1	Acetone	.0011 (J)	.2 (J)	mg/L	SH-01D / 05-22-02	25/123	.002-1	0.2	NA	0.55	NC	3	MCP Method 1 GW-1	No	BSL
	7429-90-5	Aluminum [6]	0.013	58 (J)	mg/L	SH-01D / 10-29-03	86/124	.011-12	58	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	0.000053	0.027	mg/L	SH-01R / 09-13-01	39/124	.00005-.021	0.027	NA	0.18	NC	2	MCP Method 1 GW-1	No	BSL
	7440-36-0	Antimony	0.0011	.042 (J)	mg/L	SH-01D / 05-22-02, SH-07D / 10-30-03	31/124	.001-.05	0.042	NA	0.0015	NC	0.006	MCL	Yes	ASL
	7440-38-2	Arsenic	.00014 (J, JB)	.812 (J)	mg/L	SH-01D / 09-12-01	111/124	.000046-.0084	0.812	NA	4.5E-05	C	0.01	MCL	Yes	ASL
	7440-39-3	Barium	0.0055	0.27	mg/L	SH-11S / 11-03-03, WP-04 / 11-07-03	109/124	.0056-.12	0.27	NA	0.26	NC	2	MCP Method 1 GW-1	Yes	ASL
	56-55-3	Benz(a)anthracene	0.000053	0.0011	mg/L	SH-06D / 10-29-03	18/124	.00005-.021	0.0011	NA	9.2E-05	C	0.001	MCP Method 1 GW-1	Yes	ASL
	71-43-2	Benzene	.00039 (J)	.81 (J)	mg/L	SH-01D / 09-12-01	48/124	.00015-.0012	0.81	NA	0.00035	C	0.005	MCL	Yes	ASL
	50-32-8	Benzo(a)pyrene	.0000019 (J)	.0027 (J)	mg/L	SH-01R / 09-13-01	45/124	.0000017-.0012	0.0027	NA	9.2E-06	C	0.0002	MCL	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.000084	0.00059	mg/L	SH-21S / 05-16-02	12/124	.00005-.021	0.00059	NA	9.2E-05	C	0.001	MCP Method 1 GW-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.000056	0.00045	mg/L	SH-21S / 05-16-02	10/124	.00005-.021	0.00045	NA	0.018	NC	0.3	MCP Method 1 GW-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.000052	0.00057	mg/L	SH-21S / 05-16-02	11/124	.00005-.021	0.00057	NA	0.00092	C	0.001	MCP Method 1 GW-1	No	BSL
	65-85-0	Benzoic acid	.00025 (J)	.079 (J)	mg/L	SH-01D / 09-12-01	13/39	.001-.0082	0.079	NA	15	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/92	.00025-.21	0.21	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	0.002	0.002	mg/L	WP-04 / 11-07-03	1/124	.00056-.025	0.002	NA	0.0073	NC	0.004	MCL	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/94	.00025-.061	0.061	NA	0.00001	C	0.03	MCP Method 1 GW-1	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/94	.00025-.061	0.061	NA	0.00027	C	0.03	MCP Method 1 GW-1	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	.00068 (J)	.11 (J)	mg/L	SH-14S / 11-04-03	10/124	.00037-.21	0.11	NA	0.0048	C	0.006	MCL	Yes	ASL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/123	.002-.1	0.1	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/123	.00006-.11	0.11	NA	0.00018	C	0.005	MCP Method 1 GW-1	No	ND, DLASL
	75-25-2	Bromoform	ND	ND	mg/L		0/123	.002-.1	0.1	NA	0.0085	C	0.005	MCP Method 1 GW-1	No	ND, DLASL
	74-83-9	Bromomethane	ND	ND	mg/L		0/123	.00016-.077	0.077	NA	0.00087	NC	0.01	MCP Method 1 GW-1	No	ND, DLASL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	0.0029	0.026	mg/L	SH-01S / 10-28-03	6/123	.002-.1	0.026	NA	0.7	NC	0.35	MCP Method 1 GW-1	No	BSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.73	NC	NA	NA	No	ND, DLBSL
	EPH C11-22	C11-C22 Aromatics	0.094	0.099	mg/L	OW-202-2 / 09-07-01	2/14	.085-.092	0.099	NA	NA		0.2	MCP Method 1 GW-1	No	BSL
	EPH C19-36	C19-C36 Aliphatics	ND	ND	mg/L		0/14	.040-.043	0.043	NA	NA		5	MCP Method 1 GW-1	No	ND, BSL
	VPH C5-8	C5-C8 Aliphatics	ND	ND	mg/L		0/14	0.24	0.24	NA	NA		0.4	MCP Method 1 GW-1	No	ND, BSL
	VPH C9-10	C9-C10 Aromatics	.20 (J)	.2 (J)	mg/L	OW-202-2 / 09-07-01, SH-07S / 09-07-01	2/14	0.07	0.2	NA	NA		0.2	MCP Method 1 GW-1	No	BSL
	VPH C9-12	C9-C12 Aliphatics	.11 (J)	0.36	mg/L	OW-202-2 / 09-07-01	3/14	0.1	0.36	NA	NA		4	MCP Method 1 GW-1	No	BSL
	EPH C9-18	C9-C18 Aliphatics	ND	ND	mg/L		0/14	.030-.033	0.033	NA	NA		4	MCP Method 1 GW-1	No	ND, BSL
	7440-43-9	Cadmium	0.00013	0.0028	mg/L	SH-11S / 11-03-03	7/124	.00011-.025	0.0028	NA	0.0018	NC	0.005	MCL	Yes	ASL
	7440-70-2	Calcium [7]	0.65	630	mg/L	SH-02D / 10-30-03	104/124	.556-500	630	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.00016 (J)	.022 (J)	mg/L	SH-01R / 05-22-02	19/124	.00025-.21	0.022	NA	0.0034	C	NA	NA	Yes	ASL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/123	.002-.1	0.1	NA	0.1	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/123	.00033-.036	0.036	NA	0.00017	C	0.005	MCL	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/92	.00025-.21	0.21	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.015	NC	0.03	MCP Method 1 GW-1	No	ND, DLASL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/123	.002-.1	0.1	NA	0.011	NC	0.1	MCL	No	ND, DLASL
	75-00-3	Chloroethane	ND	ND	mg/L		0/123	.002-.1	0.1	NA	0.0046	C	NA	NA	No	ND, DLASL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/111	.002-.1	0.1	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	.00048 (J)	.00048 (J)	mg/L	SH-21S / 05-16-02	1/123	.00011-.31	0.00048	NA	0.00017	C	0.005	MCP Method 1 GW-1	Yes	ASL
	74-87-3	Chloromethane	.00093 (J)	.00093 (J)	mg/L	SH-08D / 05-20-02	1/123	.0002-.04	0.00093	NA	0.016	NC	NA	NA	No	BSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.049	NC	NA	NA	No	ND, DLASL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/92	.00025-.21	0.21	NA	0.003	NC	0.01	MCP Method 1 GW-1	No	ND, DLASL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	0.0011	0.13	mg/L	WP-04 / 11-07-03	88/124	.001-.025	0.13	NA	0.011	NC	0.05	MCP Method 1 GW-1	Yes	ASL
	218-01-9	Chrysene	0.000053	0.0012	mg/L	SH-06D / 10-29-03	19/124	.00005-.021	0.0012	NA	0.0092	C	0.002	MCP Method 1 GW-1	No	BSL
	7440-48-4	Cobalt [6]	0.0007	0.17	mg/L	SH-02D / 10-30-03	78/124	.00013-.025	0.17	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	0.0011	.467 (J)	mg/L	SH-01D / 09-12-01	69/124	.00056-.011	0.467	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	0.0068	0.0068	mg/L	SH-10S / 09-10-01, SH-14D / 09-10-01	2/83	.005-.025	0.0068	NA	0.00062	NC	0.2	MCL	Yes	ASL
	53-70-3	Dibenz(a,h)anthracene	.0000024 (J)	.00085 (J)	mg/L	SH-01R / 09-13-01	29/124	.0000021-.0009	0.00085	NA	9.2E-06	C	0.0005	MCP Method 1 GW-1	Yes	ASL
	132-64-9	Dibenzofuran	.00016 (J)	.0012 (J)	mg/L	OW-208 / 05-21-02	7/94	.00025-.21	0.0012	NA	0.0012	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/123	.00009-.032	0.032	NA	0.00013	C	0.005	MCP Method 1 GW-1	No	ND, DLASL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.037	NC	0.6	MCL	No	ND, DLASL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/94	.00025-.061	0.061	NA	0.018	NC	0.6	MCP Method 1 GW-1	No	ND, DLASL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/94	.00025-.061	0.061	NA	0.0005	C	0.005	MCP Method 1 GW-1	No	ND, DLASL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/92	.00025-.083	0.083	NA	0.00015	C	0.08	MCP Method 1 GW-1	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/123	.002-.1	0.1	NA	0.081	NC	0.07	MCP Method 1 GW-1	No	ND, DLASL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/123	.0001-.014	0.014	NA	0.00012	C	0.005	MCL	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/123	.00019-.022	0.022	NA	0.034	NC	0.007	MCL	No	ND, DLASL
	156-59-2	Dichloroethene (cis-1,2-)	.0012 (J)	.0012 (J)	mg/L	SH-08D / 05-20-02	1/123	.002-.1	0.0012	NA	0.0061	NC	0.07	MCL	No	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source [4]	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/123	.002-.1	0.1	NA	0.012	NC	0.1	MCL	No	ND, DLASL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/92	.00025-.21	0.21	NA	0.011	NC	0.01	MCP Method 1 GW-1	No	ND, DLASL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/123	.00014-.012	0.012	NA	0.00016	C	0.005	MCL	No	ND, DLASL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/123	.00014-.012	0.012	NA	0.0004	C	0.0005	MCP Method 1 GW-1	No	ND, DLASL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/123	.0001-.012	0.012	NA	0.0004	C	0.0005	MCP Method 1 GW-1	No	ND, DLASL
	84-66-2	Diethylphthalate	.00013 (J)	.00013 (J)	mg/L	SH-17D / 11-20-03	1/94	.00025-.21	0.00013	NA	2.9	NC	6	MCP Method 1 GW-1	No	BSL
	105-67-9	Dimethylphenol (2,4-)	.00086 (J)	.065 (J)	mg/L	SH-01R / 09-13-01	14/92	.00025-.011	0.065	NA	0.073	NC	0.1	MCP Method 1 GW-1	No	BSL
	131-11-3	Dimethylphthalate	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	36	NC	50	MCP Method 1 GW-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.36	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/92	.0005-.52	0.52	NA	0.00036	NC	NA	NA	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	.003 (J)	.003 (J)	mg/L	SH-07S / 09-07-01	1/92	.001-.21	0.003	NA	0.0073	NC	0.2	MCP Method 1 GW-1	No	BSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.0073	NC	0.03	MCP Method 1 GW-1	No	ND, DLASL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.0036	NC	NA	NA	No	ND, DLASL
	117-84-0	Di-n-octylphthalate	.00016 (J)	.00034 (J)	mg/L	WP-04 / 11-07-03	3/94	.00025-.21	0.00034	NA	0.15	NC	NA	NA	No	BSL
	100-41-4	Ethylbenzene	.0017 (J)	.4 (J)	mg/L	SH-01D / 05-22-02	25/124	.002-.04	0.4	NA	0.13	NC	0.7	MCL	Yes	ASL
	206-44-0	Fluoranthene	0.000059	0.018	mg/L	SH-01R / 09-13-01	37/124	.00005-.021	0.018	NA	0.15	NC	0.3	MCP Method 1 GW-1	No	BSL
	86-73-7	Fluorene	0.000087	0.065	mg/L	SH-01R / 09-13-01	55/124	.00005-.021	0.065	NA	0.024	NC	0.3	MCP Method 1 GW-1	Yes	ASL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/94	.00025-.061	0.061	NA	4.2E-05	C	0.001	MCL	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/94	.00025-.061	0.061	NA	0.00086	C	0.0006	MCP Method 1 GW-1	No	ND, DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/94	.00025-.52	0.52	NA	0.022	NC	0.05	MCL	No	ND, DLASL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.0036	NC	0.008	MCP Method 1 GW-1	No	ND, DLASL
	591-78-6	Hexanone (2-)	.0015 (J)	0.33	mg/L	SH-01R / 09-13-01	10/124	.002-.25	0.33	NA	NA		NA	NA	No	NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	0.000057	0.00045	mg/L	SH-21S / 05-16-02	9/124	.00005-.021	0.00045	NA	9.2E-05	C	0.0005	MCP Method 1 GW-1	Yes	ASL
	7439-89-6	Iron [8]	0.0795	47	mg/L	SH-12S / 11-03-03	113/124	.050-50	47	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.071	C	NA	NA	No	ND, DLASL
	7439-92-1	Lead	0.00036	0.575	mg/L	SH-06S / 09-06-01	69/124	.00011-.025	0.575	NA	NA		0.015	MCL	Yes	ASL
	7439-95-4	Magnesium [7]	.14 (J)	330 (J)	mg/L	SH-02D / 10-30-03	90/124	.0556-250	330	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	0.011	9.1	mg/L	SH-02D / 10-30-03	105/124	.0014-.25	9.1	NA	0.088	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	0.0002	0.0019	mg/L	SH-01D / 09-12-01	10/124	.0002-.001	0.0019	NA	0.0011	NC	0.002	MCL	Yes	ASL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/123	.002-.1	0.1	NA	0.2	NC	0.35	MCP Method 1 GW-1	No	ND, DLBSL
	75-09-2	Methylene chloride	.014 (J)	.014 (J)	mg/L	SH-01R / 09-13-01	1/123	.0002-.078	0.014	NA	0.0043	C	0.005	MCL	Yes	ASL
	91-57-6	Methylnaphthalene (2-)	0.000069	0.62	mg/L	SH-01R / 09-13-01	51/124	.00005-.000057	0.62	NA	0.00062	NC	0.01	MCP Method 1 GW-1	Yes	ASL
	95-48-7	Methylphenol (2-)	.00012 (J)	0.014	mg/L	SH-02D / 05-23-02	5/92	.00025-.21	0.014	NA	0.18	NC	NA	NA	No	BSL
	106-44-5	Methylphenol (4-)	.0001 (J)	0.094	mg/L	SH-03S / 09-11-01	20/92	.00025-.011	0.094	NA	0.018	NC	NA	NA	Yes	ASL
	1634-04-4	Methyl-tert Butyl Ether	0.005	0.04	mg/L	SH-09S / 09-07-01	5/123	.002-.1	0.04	NA	0.011	C	0.07	MCP Method 1 GW-1	Yes	ASL
	91-20-3	Naphthalene	0.000055	3.3	mg/L	SH-01R / 05-22-02	62/124	.00005-.000057	3.3	NA	0.00062	NC	0.02	MCP Method 1 GW-1	Yes	ASL
	7440-02-0	Nickel	0.0007	1	mg/L	SH-02D / 10-30-03	84/124	.0011-.22	1	NA	0.073	NC	0.1	MCP Method 1 GW-1	Yes	ASL
	Nitrate	Nitrate	.20 (B)	6.9 (B)	mg/L	SH-11S / 11-03-03	72/123	.05-1	6.9	NA	10	NC	10	MCL	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/94	.00025-.061	0.061	NA	0.011	NC	NA	NA	No	ND, DLASL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.0011	NC	NA	NA	No	ND, DLASL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/94	.0005-.21	0.21	NA	0.0032	C	NA	NA	No	ND, DLASL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/94	.00025-.061	0.061	NA	0.00034	NC	NA	NA	No	ND, DLASL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/92	.00025-.21	0.21	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/92	.001-.21	0.21	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/94	.00025-.061	0.061	NA	9.6E-06	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.014	C	NA	NA	No	ND, DLASL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/92	.00059-.061	0.061	NA	0.00056	C	NA	NA	No	ND, DLASL
	85-01-8	Phenanthrene	0.000055	0.12	mg/L	SH-01R / 09-13-01	54/124	.00005-.021	0.12	NA	0.18	NC	0.3	MCP Method 1 GW-1	No	BSL
	108-95-2	Phenol	.0015 (J)	0.014	mg/L	SH-02D / 05-23-02	6/92	.00025-.21	0.014	NA	1.1	NC	4	MCP Method 1 GW-1	No	BSL
	7440-09-7	Potassium [7]	0.29	240 (J)	mg/L	SH-01D / 10-29-03	92/124	.334-25	240	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	0.000055	0.026	mg/L	SH-01R / 09-13-01	50/124	.00005-.021	0.026	NA	0.018	NC	0.2	MCP Method 1 GW-1	Yes	ASL
	7782-49-2	Selenium	.0011 (J)	.025 (J)	mg/L	SH-02D / 05-23-02	66/124	.001-.025	0.025	NA	0.018	NC	0.05	MCL	Yes	ASL
	7440-22-4	Silver	0.00013	.0064 (J)	mg/L	SH-01D / 05-22-02	9/124	.00011-.025	0.0064	NA	0.018	NC	0.04	MCP Method 1 GW-1	No	BSL
	7440-23-5	Sodium [7]	3.68	45000	mg/L	SH-01D / 10-29-03	113/124	8-110	45000	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	.0062 (J)	.32 (J)	mg/L	SH-01R / 05-22-02	11/124	.002-.04	0.32	NA	0.16	NC	0.1	MCL	Yes	ASL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/122	.00009-.016	0.016	NA	5.5E-05	C	0.002	MCP Method 1 GW-1	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/123	.00015-.016	0.016	NA	0.0001	C	0.005	MCL	No	ND, DLASL
	7440-28-0	Thallium	.000082 (J)	.00044 (J)	mg/L	SH-18D / 09-04-01	18/124	.000075-.0038	0.00044	NA	0.00024	NC	0.002	MCL	Yes	ASL
	108-88-3	Toluene	.0016 (J)	1.2 (J)	mg/L	SH-01D / 09-12-01	34/124	.002-.040	1.2	NA	0.072	NC	1	MCL	Yes	ASL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/94	.00025-.21	0.21	NA	0.00072	NC	0.07	MCL	No	ND, DLASL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/123	.002-.1	0.1	NA	0.32	NC	0.2	MCL	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/123	.0001-.013	0.013	NA	0.0002	C	0.005	MCL	No	ND, DLASL
	79-01-6	Trichloroethene	.00031 (J)	0.0032	mg/L	SH-05D / 11-04-03	15/123	.00018-.013	0.0032	NA	2.8E-05	C	0.005	MCL	Yes	ASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/123	.002-.1	0.1	NA	0.13	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/92	.00025-.21	0.21	NA	0.36	NC	0.2	MCP Method 1 GW-1	No	ND, DLASL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/92	.00025-.21	0.21	NA	0.00036	NC	0.01	MCP Method 1 GW-1	No	ND, DLASL
	7440-62-2	Vanadium	0.0011	3.75 (J)	mg/L	SH-01D / 09-12-01	75/124	.001-.0111	3.75	NA	0.0036	NC	0.05	MCP Method 1 GW-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/122	.002-.25	0.25	NA	0.041	NC	NA	NA	No	ND, DLASL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/123	.00032-.038	0.038	NA	0.00002	C	0.002	MCL	No	ND, DLASL
	95-47-6	Xylene (o-)	.0013 (J)	.26 (J)	mg/L	SH-01R / 05-22-02	31/124	.002-.1	0.26	NA	0.021	NC	10	MCL	Yes	ASL
	108-38-3 106-42-3	Xylenes (m-,p-)	.0011 (J)	.56 (J)	mg/L	SH-01R / 05-22-02	37/124	.002-.04	0.56	NA	0.021	NC	10	MCL	Yes	ASL
	7440-66-6	Zinc	.010 (JB)	7.7 (J)	mg/L	SH-11S / 11-03-03	31/124	.01-.61	7.7	NA	1.1	NC	2	MCP Method 1 GW-1	Yes	ASL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE RESIDENT
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:
Shaded chemicals are selected as COPCs.
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
C - Screening toxicity value based on cancer effects
MCL - Maximum Contaminant Level
MCP - Massachusetts Contingency Plan
NA - Not Available/Not Applicable
NC - Screening toxicity value based on non-cancer effects
ND - Not Detected

(1) Minimum/Maximum detected concentration data qualifiers:
J- The result is estimated (uncertain) due to QC exceedance(s).
B- The chemical was also detected in an associated non-matrix matched Blank.

(2) Maximum detected concentration, or if never detected, maximum detection limit.

(3) United States Environmental Protection Agency (USEPA) Region IX. 2004. Region IX Preliminary Remediation Goal Table. PRGs for tap water are used. Non-cancer PRGs are adjusted to account for a Hazard Index of 0.1.
The PRG for acenaphthene is used for acenaphthylene.
The PRG for pyrene is used for benzo (g,h,i)perylene.
The PRG for chromium VI is used for chromium.
The PRG for hydrogen cyanide is used for cyanide.
The PRG for 1,3-dichloropropene is used for cis- and trans-1,3-dichloropropene.
The PRG for naphthalene is used for 2-methylnaphthalene.
The PRG for pyrene is used for phenanthrene.
The PRG for xylenes (total) is used for m,p-xylene and o-xylene.

(4) The lower of the MCL and MCP Method 1 GW-1 Standard is used as the ARAR/TBC value.
MCLs are from: United States Environmental Protection Agency (USEPA), Office of Water. 2004 Edition of the Drinking Water Standards and Health Advisories. EPA 822-R-04-005. Winter 2004.
http://www.epa.gov/waterscience/drinking/standards/dwstandards.pdf
GW-1 standards are from: Massachusetts Department of Environmental Protection (MADEP). 2003. Massachusetts Contingency Plan. 310 CMR 40.00. Commonwealth of Massachusetts: Office of the Secretary of State. MCP Table 1 - Method 1 GW-1 Groundwater Standards.
The GW-1 Standard for chromium (VI) is used for chromium.
The GW-1 Standard for cis-1,2-dichloroethene is used for 1,2-dichloroethene (total).
The GW-1 Standard for 1,3-dichloropropene is used for cis- and trans-1,3-dichloropropene.
The MCL for xylenes (total) is used for m,p-xylenes and o-xylenes.
The MCL for arsenic will become enforceable on 1/23/06. The MCL is included in the table but not used for screening purposes since the PRG is lower.

(5) Rationale for Selection or Deletion:
ASL - Above Screening Level
BSL - Below (or Equal to) Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below (or Equal to) Screening Level
ND - Not Detected
NSV - No Screening Value
NUT - Nutrient
NTX - No Toxicity Information
TX - Toxicity Information available

(6) USEPA Region I does not endorse quantitative evaluation of risk for these chemicals (personal communication, USEPA Region 1 risk assessor, Sarah Levinson, 2004 and Region 1 Risk Update, September, 1999). These chemicals will not be evaluated.

(7) USEPA Region I does not quantitatively evaluate these chemicals for human effects since they are considered essential nutrients and present little hazard to humans. These chemicals, if detected, will be evaluated qualitatively.

(8) USEPA Region I does not endorse quantitative evaluation of risk for these chemicals (Region 1 Risk Update, September 1999). These chemicals, if detected, will be evaluated qualitatively.

(9) This chemical is retained as a COPC because it has no screening value but toxicity information is available. It will be evaluated in the uncertainty section of the report if deemed necessary.

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Construction Worker-Dermal Contact)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
East of South Street On-Facility	83-32-9	Acenaphthene	0.000092	0.0028	mg/L	SH-21S / 09-06-01	6/10	.000052-.000053	0.0028	NA	0.037	NC	NA	NA	No	BSL
	208-96-8	Acenaphthylene	0.000054	0.0003	mg/L	SH-21S / 05-16-02	4/10	.000051-.000053	0.0003	NA	0.037	NC	NA	NA	No	BSL
	67-64-1	Acetone	.0011 (J)	.0024 (J)	mg/L	OW-205 / 05-21-02	3/10	.005-.02	0.0024	NA	0.55	NC	NA	NA	No	BSL
	7429-90-5	Aluminum [5]	0.023	0.59	mg/L	SH-21S / 05-16-02	5/10	.0556	0.59	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	0.000055	0.00061	mg/L	SH-21S / 05-16-02	4/10	.000051-.000053	0.00061	NA	0.18	NC	NA	NA	No	BSL
	7440-36-0	Antimony	ND	ND	mg/L		0/10	.0011-.0111	0.0111	NA	0.0015	NC	NA	NA	No	ND, DLASL
	7440-38-2	Arsenic	.00036 (J)	0.0051	mg/L	SH-20S / 09-05-01	9/10	.00057	0.0051	NA	0.000045	C	NA	NA	Yes	ASL
	7440-39-3	Barium	0.034	0.085	mg/L	SH-20S / 05-17-02	10/10		0.085	NA	0.26	NC	NA	NA	No	BSL
	56-55-3	Benz(a)anthracene	0.0003	0.00083	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00083	NA	0.000092	C	NA	NA	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/L		0/10	.00022-.00025	0.00025	NA	0.00035	C	NA	NA	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	0.00025	0.00087	mg/L	SH-21S / 05-16-02	2/10	.0000017-.000003	0.00087	NA	0.0000092	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.00022	0.00059	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00059	NA	0.000092	C	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.00013	0.00045	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00045	NA	0.018	NC	NA	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.00015	0.00057	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00057	NA	0.00092	C	NA	NA	No	BSL
	65-85-0	Benzoic acid	ND	ND	mg/L		0/2	.0051-.0052	0.0052	NA	15	NC	NA	NA	No	ND, DLBSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/10	.002-.0054	0.0054	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/L		0/10	.00056-.0011	0.0011	NA	0.0073	NC	NA	NA	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.00001	C	NA	NA	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.00027	C	NA	NA	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	mg/L		0/10	.00059-.0011	0.0011	NA	0.0048	C	NA	NA	No	ND, DLBSL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/10	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/10	.00022-.00023	0.00023	NA	0.00018	C	NA	NA	No	ND, DLASL
	75-25-2	Bromoform	ND	ND	mg/L		0/10	.002	0.002	NA	0.0085	C	NA	NA	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/L		0/10	.00016-.0011	0.0011	NA	0.00087	NC	NA	NA	No	ND, DLASL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.7	NC	NA	NA	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.73	NC	NA	NA	No	ND, DLBSL
	EPH C11-22	C11-C22 Aromatic	ND	ND	mg/L		0/6	.085-.089	0.089	NA	0.2		NA	NA	No	ND, DLBSL
	EPH C19-36	C19-C36 Aliphatic	ND	ND	mg/L		0/6	.04-.042	0.042	NA	5		NA	NA	No	ND, DLBSL
	VPH C5-8	C5-C8 Aliphatic	ND	ND	mg/L		0/6	.24	0.24	NA	0.4		NA	NA	No	ND, DLBSL
	VPH C9-10	C9-C10 Aromatic	ND	ND	mg/L		0/6	.07	0.07	NA	0.2		NA	NA	No	ND, DLBSL
	VPH C9-12	C9-C12 Aliphatic	ND	ND	mg/L		0/6	.1	0.1	NA	4		NA	NA	No	ND, DLBSL
	EPH C9-18	C9-C18 Aliphatic	ND	ND	mg/L		0/6	.03-.032	0.032	NA	4		NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	0.00024	0.00025	mg/L	SH-19S / 05-21-02	2/10	.00011-.0011	0.00025	NA	0.0018	NC	NA	NA	No	BSL
	7440-70-2	Calcium [6]	16	40	mg/L	OW-205 / 05-21-02, SH-19S / 05-21-02	10/10		40	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.0034	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/10	.002	0.002	NA	0.1	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/10	.00045-.00053	0.00053	NA	0.00017	C	NA	NA	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.015	NC	NA	NA	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/10	.002	0.002	NA	0.011	NC	NA	NA	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/L		0/10	.002	0.002	NA	0.0046	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/9	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	.00048 (J)	.00048 (J)	mg/L	SH-21S / 05-16-02	1/10	.00022-.00059	0.00048	NA	0.00017	C	NA	NA	Yes	ASL
	74-87-3	Chloromethane	ND	ND	mg/L		0/10	.00029-.00057	0.00057	NA	0.016	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.049	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.003	NC	NA	NA	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	0.0011	.0172 (J)	mg/L	SH-19S / 09-05-01	4/10	.0011	0.0172	NA	0.011	NC	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.00025	0.00064	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00064	NA	0.0092	C	NA	NA	No	BSL
	7440-48-4	Cobalt [5]	.0011 (J)	.006 (J)	mg/L	SH-19S / 05-21-02	6/10	.00035-.0011	0.006	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [5]	0.022	0.024	mg/L	SH-19S / 05-21-02	2/10	.00086-.0037	0.024	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/10	.005	0.005	NA	0.00062	NC	NA	NA	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	0.000032	0.00015	mg/L	SH-21S / 05-16-02	2/10	.0000026-.0000045	0.00015	NA	0.0000092	C	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	.00076 (J)	.00076 (J)	mg/L	SH-21S / 09-06-01	1/10	.002-.0022	0.00076	NA	0.0012	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/10	.00015-.0002	0.0002	NA	0.00013	C	NA	NA	No	ND, DLASL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.037	NC	NA	NA	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.018	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.0005	C	NA	NA	No	ND, DLASL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/10	.00059-.0043	0.0043	NA	0.00015	C	NA	NA	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.081	NC	NA	NA	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/10	.00018-.00029	0.00029	NA	0.00012	C	NA	NA	No	ND, DLASL

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Construction Worker-Dermal Contact)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/10	.00019-.00043	0.00043	NA	0.034	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.0061	NC	NA	NA	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.012	NC	NA	NA	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.011	NC	NA	NA	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/10	.00015-.00024	0.00024	NA	0.00016	C	NA	NA	No	ND, DLASL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/10	.00022-.00023	0.00023	NA	0.0004	C	NA	NA	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/10	.00021-.00023	0.00023	NA	0.0004	C	NA	NA	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	2.9	NC	NA	NA	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/L		0/10	.002-.0054	0.0054	NA	0.073	NC	NA	NA	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	36	NC	NA	NA	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.36	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/10	.005-.0054	0.0054	NA	0.00036	NC	NA	NA	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/10	.002-.0054	0.0054	NA	0.0073	NC	NA	NA	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.0073	NC	NA	NA	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.0036	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.15	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/10	.002	0.002	NA	0.13	NC	NA	NA	No	ND, DLBSL
	206-44-0	Fluoranthene	0.00088	0.0015	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.0015	NA	0.15	NC	NA	NA	No	BSL
	86-73-7	Fluorene	0.000088	0.0021	mg/L	SH-21S / 09-06-01	6/10	.000052-.000053	0.0021	NA	0.024	NC	NA	NA	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.000042	C	NA	NA	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.00086	C	NA	NA	No	ND, DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/10	.002-.0053	0.0053	NA	0.022	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.0036	NC	NA	NA	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/10	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	0.00012	0.00045	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00045	NA	0.000092	C	NA	NA	Yes	ASL
	7439-89-6	Iron [7]	0.0795	13.1	mg/L	OW-201 / 09-05-01	10/10		13.1	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.071	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	ND	ND	mg/L		0/10	.00014-.003	0.003	NA	0.015		NA	NA	No	ND, DLBSL
	7439-95-4	Magnesium [6]	5.2	14	mg/L	OW-205 / 05-21-02, SH-19S / 05-21-02	10/10		14	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	0.209	0.42	mg/L	SH-19S / 05-21-02	7/10	.0063-.012	0.42	NA	0.088	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	ND	ND	mg/L		0/10	.0002	0.0002	NA	0.0011	NC	NA	NA	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.2	NC	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/10	.0002-.00023	0.00023	NA	0.0043	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.00017	0.0004	mg/L	SH-21S / 09-06-01	2/10	.00005-.000053	0.0004	NA	0.00062	NC	NA	NA	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.18	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.018	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	0.005	0.005	mg/L	SH-21S / 05-16-02	1/10	.002	0.005	NA	0.011	C	NA	NA	No	BSL
	91-20-3	Naphthalene	0.00047	0.0011	mg/L	SH-21S / 09-06-01	2/10	.00005-.000053	0.0011	NA	0.00062	NC	NA	NA	Yes	ASL
	7440-02-0	Nickel	0.0011	0.017	mg/L	SH-19S / 05-21-02	10/10		0.017	NA	0.073	NC	NA	NA	No	BSL
	nitrate	Nitrate	0.53	3.7	mg/L	SH-21S / 05-16-02	8/10	.1	3.7	NA	10	NC	NA	NA	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.011	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.0011	NC	NA	NA	No	ND, DLASL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.0032	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.00034	NC	NA	NA	No	ND, DLASL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.0000096	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.014	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/10	.00059-.001	0.001	NA	0.00056	C	NA	NA	No	ND, DLASL
	85-01-8	Phenanthrene	0.0015	0.0029	mg/L	SH-21S / 09-06-01	2/10	.00005-.000053	0.0029	NA	0.018	NC	NA	NA	No	BSL
	108-95-2	Phenol	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-09-7	Potassium [6]	1.6	5.2	mg/L	SH-19S / 05-21-02	10/10		5.2	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	0.00016	0.0014	mg/L	SH-21S / 05-16-02	3/10	.00005-.000053	0.0014	NA	0.018	NC	NA	NA	No	BSL
	7782-49-2	Selenium	0.0012	0.0025	mg/L	SH-19S / 05-21-02	5/10	.0011	0.0025	NA	0.018	NC	NA	NA	No	BSL
	7440-22-4	Silver	ND	ND	mg/L		0/10	.00011-.0011	0.0011	NA	0.018	NC	NA	NA	No	ND, DLBSL
	7440-23-5	Sodium [6]	30.4	51	mg/L	OW-205 / 05-21-02, SH-19S / 05-21-02	10/10		51	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/L		0/10	.002	0.002	NA	0.16	NC	NA	NA	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/10	.00012-.00016	0.00016	NA	0.000055	C	NA	NA	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/10	.00021-.00032	0.00032	NA	0.0001	C	NA	NA	No	ND, DLASL
	7440-28-0	Thallium	.00019 (J)	.00035 (J)	mg/L	SH-19S / 09-05-01	7/10	.00032	0.00035	NA	0.00024	NC	NA	NA	Yes	ASL
	108-88-3	Toluene	ND	ND	mg/L		0/10	.002	0.002	NA	0.072	NC	NA	NA	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.00072	NC	NA	NA	No	ND, DLASL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.32	NC	NA	NA	No	ND, DLBSL

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Construction Worker-Dermal Contact)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/10	.00024-.00026	0.00026	NA	0.0002	C	NA	NA	No	ND, DLASL
	79-01-6	Trichloroethene	.00031 (J)	.00043 (J)	mg/L	SH-22S / 09-05-01	2/10	.00026	0.00043	NA	0.000028	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/10	.002	0.002	NA	0.13	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.36	NC	NA	NA	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.00036	NC	NA	NA	No	ND, DLASL
	7440-62-2	Vanadium	0.0035	0.0035	mg/L	SH-21S / 05-16-02	1/10	.0011-.0111	0.0035	NA	0.0036	NC	NA	NA	No	BSL
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/10	.002-.005	0.005	NA	0.041	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/10	.00058-.00075	0.00075	NA	0.00002	C	NA	NA	No	ND, DLASL
	108-38-3	Xylene (m,p-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL
	7440-66-6	Zinc	0.17	0.17	mg/L	OW-205 / 05-21-02, SH-19S / 05-21-02	2/10	.011-.0729	0.17	NA	1.1	NC	NA	NA	No	BSL
Old Railroad and Former Lower Mill Pond Area	83-32-9	Acenaphthene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.037	NC	NA	NA	No	ND, DLBSL
	208-96-8	Acenaphthylene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.037	NC	NA	NA	No	ND, DLBSL
	67-64-1	Acetone	ND	ND	mg/L		0/1	.002	0.002	NA	0.55	NC	NA	NA	No	ND, DLBSL
	7429-90-5	Aluminum [5]	ND	ND	mg/L		0/1	.1	0.1	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.18	NC	NA	NA	No	ND, DLBSL
	7440-36-0	Antimony	ND	ND	mg/L		0/1	.001	0.001	NA	0.0015	NC	NA	NA	No	ND, DLBSL
	7440-38-2	Arsenic	.00092 (J)	.00092 (J)	mg/L	WP-02 / 11-04-03	1/1		0.00092	NA	0.000045	C	NA	NA	Yes	ASL
	7440-39-3	Barium	0.069	0.069	mg/L	WP-02 / 11-04-03	1/1		0.069	NA	0.26	NC	NA	NA	No	BSL
	56-55-3	Benz(a)anthracene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.000092	C	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/L		0/1	.00015	0.00015	NA	0.00035	C	NA	NA	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	ND	ND	mg/L		0/1	.000003	0.000003	NA	0.0000092	C	NA	NA	No	ND, DLBSL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.000092	C	NA	NA	No	ND, DLBSL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.018	NC	NA	NA	No	ND, DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.00092	C	NA	NA	No	ND, DLBSL
	65-85-0	Benzoic acid	ND	ND	mg/L		0/1	.001	0.001	NA	15	NC	NA	NA	No	ND, DLBSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/1	.00026	0.00026	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/L		0/1	.001	0.001	NA	0.0073	NC	NA	NA	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/1	.00026	0.00026	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.00001	C	NA	NA	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.00027	C	NA	NA	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	mg/L		0/1	.00045	0.00045	NA	0.0048	C	NA	NA	No	ND, DLBSL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/1	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/1	.00006	0.00006	NA	0.00018	C	NA	NA	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/L		0/1	.002	0.002	NA	0.0085	C	NA	NA	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/L		0/1	.00078	0.00078	NA	0.00087	NC	NA	NA	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.7	NC	NA	NA	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.73	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	ND	ND	mg/L		0/1	.001	0.001	NA	0.0018	NC	NA	NA	No	ND, DLBSL
	7440-70-2	Calcium [6]	26	26	mg/L	WP-02 / 11-04-03	1/1		26	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.0034	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/1	.002	0.002	NA	0.1	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/1	.00033	0.00033	NA	0.00017	C	NA	NA	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.015	NC	NA	NA	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/1	.002	0.002	NA	0.011	NC	NA	NA	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/L		0/1	.002	0.002	NA	0.0046	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/1	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/L		0/1	.00011	0.00011	NA	0.00017	C	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.049	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.003	NC	NA	NA	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	0.021	0.021	mg/L	WP-02 / 11-04-03	1/1		0.021	NA	0.011	NC	NA	NA	Yes	ASL
	218-01-9	Chrysene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.0092	C	NA	NA	No	ND, DLBSL
	7440-48-4	Cobalt [5]	0.0011	0.0011	mg/L	WP-02 / 11-04-03	1/1		0.0011	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [5]	ND	ND	mg/L		0/1	.0018	0.0018	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/1	.005	0.005	NA	0.00062	NC	NA	NA	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	mg/L		0/1	.0000022	0.0000022	NA	0.0000092	C	NA	NA	No	ND, DLBSL
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.0012	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/1	.00009	0.00009	NA	0.00013	C	NA	NA	No	ND, DLBSL

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Construction Worker-Dermal Contact)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.037	NC	NA	NA	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.018	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.0005	C	NA	NA	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.00015	C	NA	NA	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.081	NC	NA	NA	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/1	.00017	0.00017	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/1	.0003	0.0003	NA	0.034	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.0061	NC	NA	NA	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.012	NC	NA	NA	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.011	NC	NA	NA	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/1	.00014	0.00014	NA	0.00016	C	NA	NA	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/1	.00014	0.00014	NA	0.0004	C	NA	NA	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/1	.0001	0.0001	NA	0.0004	C	NA	NA	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/1	.00026	0.00026	NA	2.9	NC	NA	NA	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.073	NC	NA	NA	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/L		0/1	.00026	0.00026	NA	36	NC	NA	NA	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.36	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/1	.00052	0.00052	NA	0.00036	NC	NA	NA	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/1	.001	0.001	NA	0.0073	NC	NA	NA	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.0073	NC	NA	NA	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.0036	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.15	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/1	.002	0.002	NA	0.13	NC	NA	NA	No	ND, DLBSL
	206-44-0	Fluoranthene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.15	NC	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.024	NC	NA	NA	No	ND, DLBSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.000042	C	NA	NA	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.00086	C	NA	NA	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.022	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.0036	NC	NA	NA	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/1	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.000092	C	NA	NA	No	ND, DLBSL
	7439-89-6	Iron [7]	2.3	2.3	mg/L	WP-02 / 11-04-03	1/1		2.3	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.071	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	ND	ND	mg/L		0/1	.001	0.001	NA	0.015		NA	NA	No	ND, DLBSL
	7439-95-4	Magnesium [6]	5	5	mg/L	WP-02 / 11-04-03	1/1		5	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	0.73	0.73	mg/L	WP-02 / 11-04-03	1/1		0.73	NA	0.088	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	ND	ND	mg/L		0/1	.0002	0.0002	NA	0.0011	NC	NA	NA	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.2	NC	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/1	.00025	0.00025	NA	0.0043	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.00062	NC	NA	NA	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.18	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.018	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/1	.002	0.002	NA	0.011	C	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.00062	NC	NA	NA	No	ND, DLBSL
	7440-02-0	Nickel	0.015	0.015	mg/L	WP-02 / 11-04-03	1/1		0.015	NA	0.073	NC	NA	NA	No	BSL
	Nitrate	Nitrate	0.2	0.2	mg/L	WP-02 / 11-04-03	1/1		0.2	NA	10	NC	NA	NA	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.011	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.0011	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/1	.00052	0.00052	NA	0.0032	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.00034	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/1	.001	0.001	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.0000096	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.014	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/1	.001	0.001	NA	0.00056	C	NA	NA	No	ND, DLASL
	85-01-8	Phenanthrene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.018	NC	NA	NA	No	ND, DLBSL
	108-95-2	Phenol	ND	ND	mg/L		0/1	.00026	0.00026	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-09-7	Potassium [6]	2.5	2.5	mg/L	WP-02 / 11-04-03	1/1		2.5	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.018	NC	NA	NA	No	ND, DLBSL
	7782-49-2	Selenium	ND	ND	mg/L		0/1	.001	0.001	NA	0.018	NC	NA	NA	No	ND, DLBSL
	7440-22-4	Silver	ND	ND	mg/L		0/1	.001	0.001	NA	0.018	NC	NA	NA	No	ND, DLBSL
	7440-23-5	Sodium [6]	92	92	mg/L	WP-02 / 11-04-03	1/1		92	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/L		0/1	.002	0.002	NA	0.16	NC	NA	NA	No	ND, DLBSL

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Construction Worker-Dermal Contact)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/1	.00009	0.00009	NA	0.000055	C	NA	NA	Yes	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/1	.00023	0.00023	NA	0.0001	C	NA	NA	Yes	ND, DLASL
	7440-28-0	Thallium	ND	ND	mg/L		0/1	.00008	0.00008	NA	0.00024	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/1	.002	0.002	NA	0.072	NC	NA	NA	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.00072	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.32	NC	NA	NA	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/1	.0001	0.0001	NA	0.0002	C	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.36	NC	NA	NA	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.00036	NC	NA	NA	No	ND, DLBSL
	7440-62-2	Vanadium	0.0017	0.0017	mg/L	WP-02 / 11-04-03	1/1		0.0017	NA	0.0036	NC	NA	NA	No	BSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/1	.00032	0.00032	NA	0.00002	C	NA	NA	Yes	ND, DLASL
	7440-66-6	Zinc	ND	ND	mg/L		0/1	.01	0.01	NA	1.1	NC	NA	NA	No	ND, DLBSL
West of South Street On-Facility	83-32-9	Acenaphthene	0.00014	0.02	mg/L	SH-04S / 09-11-01	10/20	.00005-.000057	0.02	NA	0.037	NC	NA	NA	No	BSL
	208-96-8	Acenaphthylene	0.00035	0.0092	mg/L	SH-04S / 09-11-01	9/20	.00005-.000057	0.0092	NA	0.037	NC	NA	NA	No	BSL
	67-64-1	Acetone	.022 (J)	.025 (J)	mg/L	SH-05S / 05-21-02	2/20	.002-.1	0.025	NA	0.55	NC	NA	NA	No	BSL
	7429-90-5	Aluminum [5]	0.014	6.1	mg/L	WP-04 / 11-07-03	15/20	.05-.5	6.1	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	0.000077	0.0046	mg/L	SH-04S / 09-11-01	10/20	.00005-.000057	0.0046	NA	0.18	NC	NA	NA	No	BSL
	7440-36-0	Antimony	0.0011	0.0054	mg/L	WP-04 / 11-07-03	5/20	.001-.0111	0.0054	NA	0.0015	NC	NA	NA	Yes	ASL
	7440-38-2	Arsenic	.00013 (J)	0.0614	mg/L	SH-04S / 09-11-01	19/20	.00032	0.0614	NA	0.000045	C	NA	NA	Yes	ASL
	7440-39-3	Barium	0.0077	0.27	mg/L	WP-04 / 11-07-03	19/20	.0091	0.27	NA	0.26	NC	NA	NA	Yes	ASL
	56-55-3	Benz(a)anthracene	0.000093	0.00075	mg/L	SH-04S / 09-11-01	7/20	.00005-.001	0.00075	NA	0.000092	C	NA	NA	Yes	ASL
	71-43-2	Benzene	.0015 (J)	0.043	mg/L	SH-04S / 09-11-01	9/20	.00015-.00025	0.043	NA	0.00035	C	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	.000002 (J)	.00049 (J)	mg/L	SH-04S / 09-11-01	13/20	.0000018-.00001	0.00049	NA	0.0000092	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.000095	0.00013	mg/L	OW-208 / 05-21-02	3/20	.00005-.001	0.00013	NA	0.000092	C	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.000056	0.000056	mg/L	WP-04 / 11-07-03	1/20	.00005-.001	0.000056	NA	0.018	NC	NA	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.00012	0.00014	mg/L	OW-208 / 05-21-02	2/20	.00005-.001	0.00014	NA	0.00092	C	NA	NA	No	BSL
	65-85-0	Benzoic acid	.00025 (J)	.0037 (J)	mg/L	SH-04S / 05-20-02	2/7	.0011-.005	0.0037	NA	15	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	0.002	0.002	mg/L	WP-04 / 11-07-03	1/20	.00056-.0011	0.002	NA	0.0073	NC	NA	NA	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/15	.00026-.006	0.006	NA	0.00001	C	NA	NA	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/15	.00026-.006	0.006	NA	0.00027	C	NA	NA	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	.00094 (J)	.11 (J)	mg/L	SH-14S / 11-04-03	2/20	.00027-.01	0.11	NA	0.0048	C	NA	NA	Yes	ASL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/20	.002-.02	0.02	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/20	.00006-.0092	0.0092	NA	0.00018	C	NA	NA	No	ND, DLASL
	75-25-2	Bromoform	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.0085	C	NA	NA	No	ND, DLASL
	74-83-9	Bromomethane	ND	ND	mg/L		0/20	.00016-.0077	0.0077	NA	0.00087	NC	NA	NA	No	ND, DLASL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.7	NC	NA	NA	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.73	NC	NA	NA	No	ND, DLBSL
	EPH C11-22	C11-C22 Aromatic	ND	ND	mg/L		0/2	.085	0.085	NA	0.2		NA	NA	No	ND, DLBSL
	EPH C19-36	C19-C36 Aliphatic	ND	ND	mg/L		0/2	.04	0.04	NA	5		NA	NA	No	ND, DLBSL
	VPH C5-8	C5-C8 Aliphatic	ND	ND	mg/L		0/2	.24	0.24	NA	0.4		NA	NA	No	ND, DLBSL
	VPH C9-10	C9-C10 Aromatic	ND	ND	mg/L		0/2	.07	0.07	NA	0.2		NA	NA	No	ND, DLBSL
	VPH C9-12	C9-C12 Aliphatic	ND	ND	mg/L		0/2	.1	0.1	NA	4		NA	NA	No	ND, DLBSL
	EPH C9-18	C9-C18 Aliphatic	ND	ND	mg/L		0/2	.03	0.03	NA	4		NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	ND	ND	mg/L		0/20	.00011-.0011	0.0011	NA	0.0018	NC	NA	NA	No	ND, DLBSL
	7440-70-2	Calcium [6]	3.2	50	mg/L	SH-14S / 11-04-03	16/20	1.2-6.85	50	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.0011 (J)	.0014 (J)	mg/L	SH-04S / 05-20-02	3/20	.00026-.01	0.0014	NA	0.0034	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.1	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/20	.00033-.0053	0.0053	NA	0.00017	C	NA	NA	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.015	NC	NA	NA	No	ND, DLASL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.011	NC	NA	NA	No	ND, DLASL
	75-00-3	Chloroethane	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.0046	C	NA	NA	No	ND, DLASL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/17	.002-.02	0.02	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/L		0/20	.00011-.028	0.028	NA	0.00017	C	NA	NA	No	ND, DLASL
	74-87-3	Chloromethane	ND	ND	mg/L		0/20	.0002-.004	0.004	NA	0.016	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.049	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.003	NC	NA	NA	No	ND, DLASL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	0.0012	0.13	mg/L	WP-04 / 11-07-03	16/20	.001-.0011	0.13	NA	0.011	NC	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.0001	0.00075	mg/L	SH-04S / 09-11-01	7/20	.00005-.001	0.00075	NA	0.0092	C	NA	NA	No	BSL

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Construction Worker-Dermal Contact)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	7440-48-4	Cobalt [5]	0.00087	0.0096	mg/L	WP-04 / 11-07-03	13/20	.00026-.0011	0.0096	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [5]	0.0014	0.05	mg/L	WP-04 / 11-07-03	14/20	.0011-.011	0.05	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/12	.005	0.005	NA	0.00062	NC	NA	NA	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	.0000024 (J)	.00011 (J)	mg/L	SH-04S / 09-11-01	9/20	.0000022-.000044	0.00011	NA	0.0000092	C	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	.0011 (J)	.0012 (J)	mg/L	OW-208 / 05-21-02	2/15	.00026-.02	0.0012	NA	0.0012	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/20	.00009-.0028	0.0028	NA	0.00013	C	NA	NA	No	ND, DLASL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.037	NC	NA	NA	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/15	.00026-.006	0.006	NA	0.018	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/15	.00026-.006	0.006	NA	0.0005	C	NA	NA	No	ND, DLASL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/15	.00026-.006	0.006	NA	0.00015	C	NA	NA	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.081	NC	NA	NA	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/20	.00017-.0029	0.0029	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/20	.00019-.0022	0.0022	NA	0.034	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.0061	NC	NA	NA	No	ND, DLASL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.012	NC	NA	NA	No	ND, DLASL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.011	NC	NA	NA	No	ND, DLASL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/20	.00014-.0024	0.0024	NA	0.00016	C	NA	NA	No	ND, DLASL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/20	.00014-.0022	0.0022	NA	0.0004	C	NA	NA	No	ND, DLASL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/20	.0001-.0023	0.0023	NA	0.0004	C	NA	NA	No	ND, DLASL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	2.9	NC	NA	NA	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	.0011 (J)	.0092 (J)	mg/L	SH-04S / 09-11-01	4/15	.00026-.0086	0.0092	NA	0.073	NC	NA	NA	No	BSL
	131-11-3	Dimethylphthalate	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	36	NC	NA	NA	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.36	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/15	.00052-.051	0.051	NA	0.00036	NC	NA	NA	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/15	.001-.02	0.02	NA	0.0073	NC	NA	NA	No	ND, DLASL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.0073	NC	NA	NA	No	ND, DLASL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.0036	NC	NA	NA	No	ND, DLASL
	117-84-0	Di-n-octylphthalate	.00034 (J)	.00034 (J)	mg/L	WP-04 / 11-07-03	1/15	.00027-.02	0.00034	NA	0.15	NC	NA	NA	No	BSL
	100-41-4	Ethylbenzene	.005 (J)	0.023	mg/L	SH-04S / 09-11-01	4/20	.002-.02	0.023	NA	0.13	NC	NA	NA	No	BSL
	206-44-0	Fluoranthene	0.000081	0.003	mg/L	SH-04S / 09-11-01	10/20	.00005-.000057	0.003	NA	0.15	NC	NA	NA	No	BSL
	86-73-7	Fluorene	0.0001	0.012	mg/L	SH-04S / 09-11-01	10/20	.00005-.000057	0.012	NA	0.024	NC	NA	NA	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/15	.00026-.006	0.006	NA	0.000042	C	NA	NA	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/15	.00026-.006	0.006	NA	0.00086	C	NA	NA	No	ND, DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/15	.00026-.051	0.051	NA	0.022	NC	NA	NA	No	ND, DLASL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.0036	NC	NA	NA	No	ND, DLASL
	591-78-6	Hexanone (2-)	.008 (J)	0.018	mg/L	SH-04S / 09-11-01	2/20	.002-.025	0.018	NA	NA		NA	NA	Yes	NSV, TX
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	mg/L		0/20	.00005-.001	0.001	NA	0.000092	C	NA	NA	No	ND, DLASL
	7439-89-6	Iron [7]	0.091	35	mg/L	WP-04 / 11-07-03	19/20	.961	35	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.071	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	0.00036	0.23	mg/L	WP-04 / 11-07-03	12/20	.00012-.0022	0.23	NA	0.015		NA	NA	No	[8]
	7439-95-4	Magnesium [6]	.44 (J)	27	mg/L	SH-14S / 05-20-02	14/20	.29-2.2	27	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	0.011	3.9	mg/L	WP-04 / 11-07-03	17/20	.0014-.0292	3.9	NA	0.088	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	0.0002	0.00033	mg/L	WP-04 / 11-07-03	2/20	.0002	0.00033	NA	0.0011	NC	NA	NA	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.2	NC	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/20	.0002-.0078	0.0078	NA	0.0043	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.00043	0.096	mg/L	SH-04S / 09-11-01	10/20	.00005-.000057	0.096	NA	0.00062	NC	NA	NA	Yes	ASL
	95-48-7	Methylphenol (2-)	.0014 (J)	.0014 (J)	mg/L	SH-04S / 05-20-02	1/15	.00026-.02	0.0014	NA	0.18	NC	NA	NA	No	BSL
	106-44-5	Methylphenol (4-)	.0013 (J)	.0085 (J)	mg/L	SH-04S / 09-11-01	4/15	.00026-.0086	0.0085	NA	0.018	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.011	C	NA	NA	No	ND, DLASL
	91-20-3	Naphthalene	0.00072	0.31	mg/L	SH-04S / 09-11-01	11/20	.00005-.000053	0.31	NA	0.00062	NC	NA	NA	Yes	ASL
	7440-02-0	Nickel	0.0012	0.081	mg/L	WP-04 / 11-07-03	13/20	.0027-.01	0.081	NA	0.073	NC	NA	NA	Yes	ASL
	nitrate	Nitrate	0.2	2.3	mg/L	WP-05 / 11-07-03	10/20	.05-.1	2.3	NA	10	NC	NA	NA	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/15	.00026-.006	0.006	NA	0.011	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.0011	NC	NA	NA	No	ND, DLASL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/15	.00052-.02	0.02	NA	0.0032	C	NA	NA	No	ND, DLASL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/15	.00026-.006	0.006	NA	0.00034	NC	NA	NA	No	ND, DLASL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/15	.001-.02	0.02	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/15	.00026-.006	0.006	NA	0.0000096	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.014	C	NA	NA	No	ND, DLASL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/15	.00059-.006	0.006	NA	0.00056	C	NA	NA	No	ND, DLASL
	85-01-8	Phenanthrene	0.00007	0.024	mg/L	OW-204 / 09-11-01, SH-04S / 09-11-01	12/20	.00005-.000057	0.024	NA	0.018	NC	NA	NA	Yes	ASL
	108-95-2	Phenol	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	1.1	NC	NA	NA	No	ND, DLBSL

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Construction Worker-Dermal Contact)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	7440-09-7	Potassium [6]	.86 (J)	3.1	mg/L	SH-05S / 10-29-03	14/20	1-2.01	3.1	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	0.000055	0.004	mg/L	SH-04S / 09-11-01	12/20	.00005-.000053	0.004	NA	0.018	NC	NA	NA	No	BSL
	7782-49-2	Selenium	.0011 (J)	0.0038	mg/L	SH-17S / 05-20-02	11/20	.001-.0011	0.0038	NA	0.018	NC	NA	NA	No	BSL
	7440-22-4	Silver	ND	ND	mg/L		0/20	.00011-.0011	0.0011	NA	0.018	NC	NA	NA	No	ND, DLBSL
	7440-23-5	Sodium [6]	3.68	899	mg/L	SH-04S / 09-11-01	19/20	110	899	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	.0062 (J)	0.013	mg/L	SH-04S / 09-11-01	2/20	.002-.02	0.013	NA	0.16	NC	NA	NA	No	BSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/19	.00009-.0016	0.0016	NA	0.000055	C	NA	NA	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/20	.00021-.0021	0.0021	NA	0.0001	C	NA	NA	No	ND, DLASL
	7440-28-0	Thallium	.00014 (J)	.00021 (J)	mg/L	SH-05S / 05-21-02	3/20	.000075-.00032	0.00021	NA	0.00024	NC	NA	NA	No	BSL
	108-88-3	Toluene	.0017 (J)	0.057	mg/L	SH-04S / 09-11-01	8/20	.002-.01	0.057	NA	0.072	NC	NA	NA	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.00072	NC	NA	NA	No	ND, DLASL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.32	NC	NA	NA	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/20	.0001-.0024	0.0024	NA	0.0002	C	NA	NA	No	ND, DLASL
	79-01-6	Trichloroethene	.00073 (J)	.00073 (J)	mg/L	SH-25S / 11-05-03	1/20	.00018-.0026	0.00073	NA	0.000028	C	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/20	.002-.02	0.02	NA	0.13	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.36	NC	NA	NA	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/15	.00026-.02	0.02	NA	0.00036	NC	NA	NA	No	ND, DLASL
	7440-62-2	Vanadium	0.0013	.14 (J)	mg/L	SH-04S / 09-11-01	16/20	.001-.0111	0.14	NA	0.0036	NC	NA	NA	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/19	.002-.025	0.025	NA	0.041	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/20	.00032-.0058	0.0058	NA	0.00002	C	NA	NA	No	ND, DLASL
	108-38-3	Xylene (m,p-)	0.01	0.033	mg/L	SH-04S / 09-11-01	7/20	.002-.01	0.033	NA	0.021	NC	NA	NA	Yes	ASL
	95-47-6	Xylene (o-)	.0066 (J)	0.017	mg/L	SH-04S / 09-11-01	6/20	.002-.02	0.017	NA	0.021	NC	NA	NA	No	BSL
	7440-66-6	Zinc	0.02	0.077	mg/L	WP-04 / 11-07-03	2/20	.01-.0916	0.077	NA	1.1	NC	NA	NA	No	BSL
West of South Street Off-Facility/Off-Site Groundwater Exposure Area	83-32-9	Acenaphthene	0.00046	0.0062	mg/L	SH-15S / 10-28-03	6/7	.000054	0.0062	NA	0.037	NC	NA	NA	No	BSL
	208-96-8	Acenaphthylene	0.00007	0.002	mg/L	SH-15S / 09-10-01	6/7	.000054	0.002	NA	0.037	NC	NA	NA	No	BSL
	67-64-1	Acetone	.0075 (J)	.0075 (J)	mg/L	SH-26S / 10-28-03	1/7	.002-.025	0.0075	NA	0.55	NC	NA	NA	No	BSL
	7429-90-5	Aluminum [5]	0.735	15	mg/L	SH-26S / 10-28-03	4/7	.1-.5	15	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	0.0002	0.00084	mg/L	SH-15S / 09-10-01	5/7	.000054-.000057	0.00084	NA	0.18	NC	NA	NA	No	BSL
	7440-36-0	Antimony	0.0012	0.0014	mg/L	WP-07 / 10-27-03	2/7	.001-.0111	0.0014	NA	0.0015	NC	NA	NA	No	BSL
	7440-38-2	Arsenic	.00036 (J)	0.059	mg/L	WP-07 / 10-27-03	7/7		0.059	NA	0.000045	C	NA	NA	Yes	ASL
	7440-39-3	Barium	0.013	0.18	mg/L	SH-15S / 05-20-02	6/7	.001	0.18	NA	0.26	NC	NA	NA	No	BSL
	56-55-3	Benz(a)anthracene	0.000067	0.000071	mg/L	SH-15S / 09-10-01	2/7	.000054-.00021	0.000071	NA	0.000092	C	NA	NA	No	BSL
	71-43-2	Benzene	.00019 (J)	.0076 (J)	mg/L	SH-15S / 09-10-01	6/7	.00015	0.0076	NA	0.00035	C	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	.0000054 (J)	.000077 (J)	mg/L	WP-07 / 10-27-03	6/7	.0000032	0.000077	NA	0.0000092	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/7	.00005-.00021	0.00021	NA	0.000092	C	NA	NA	No	ND, DLASL
	191-24-2	Benzo(g,h,i)perylene	ND	ND	mg/L		0/7	.00005-.00021	0.00021	NA	0.018	NC	NA	NA	No	ND, DLBSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	mg/L		0/7	.00005-.00021	0.00021	NA	0.00092	C	NA	NA	No	ND, DLBSL
	65-85-0	Benzoic acid	.0011 (J)	.0021 (J)	mg/L	SH-26S / 10-28-03	2/6	.0011-.0056	0.0021	NA	15	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/6	.00027-.0056	0.0056	NA	1.1	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/L		0/7	.001-.0011	0.0011	NA	0.0073	NC	NA	NA	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/6	.00027-.001	0.001	NA	0.00001	C	NA	NA	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/6	.00027-.001	0.001	NA	0.00027	C	NA	NA	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ND	mg/L		0/7	.00028-.0038	0.0038	NA	0.0048	C	NA	NA	No	ND, DLBSL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/7	.002-.01	0.01	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/7	.00006-.0012	0.0012	NA	0.00018	C	NA	NA	No	ND, DLASL
	75-25-2	Bromoform	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.0085	C	NA	NA	No	ND, DLASL
	74-83-9	Bromomethane	ND	ND	mg/L		0/7	.00078-.0077	0.0077	NA	0.00087	NC	NA	NA	No	ND, DLASL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.7	NC	NA	NA	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.73	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	ND	ND	mg/L		0/7	.00011-.0011	0.0011	NA	0.0018	NC	NA	NA	No	ND, DLBSL
	7440-70-2	Calcium [6]	2.6 (B)	56	mg/L	SH-15S / 05-20-02	7/7		56	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	0.00064	.0007 (J)	mg/L	SH-15S / 09-10-01	3/7	.00027-.0021	0.0007	NA	0.0034	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.1	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/7	.00033-.0036	0.0036	NA	0.00017	C	NA	NA	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.015	NC	NA	NA	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.011	NC	NA	NA	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.0046	C	NA	NA	No	ND, DLASL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/7	.002-.01	0.01	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/L		0/7	.00011-.0016	0.0016	NA	0.00017	C	NA	NA	No	ND, DLASL

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Construction Worker-Dermal Contact)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	74-87-3	Chloromethane	ND	ND	mg/L		0/7	.0002-.004	0.004	NA	0.016	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.049	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.003	NC	NA	NA	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	.0011 (B)	0.03	mg/L	SH-26S / 10-28-03	6/7	.001	0.03	NA	0.011	NC	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.000057	0.000065	mg/L	SH-15S / 09-10-01	2/7	.000054-.00021	0.000065	NA	0.0092	C	NA	NA	No	BSL
	7440-48-4	Cobalt [5]	0.00091	0.01	mg/L	SH-26S / 10-28-03	4/7	.001-.0011	0.01	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [5]	0.0078	0.12	mg/L	WP-07 / 10-27-03	5/7	.0022-.0147	0.12	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/6	.005	0.005	NA	0.00062	NC	NA	NA	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	.0000033 (J)	.000025 (J)	mg/L	WP-07 / 10-27-03	3/7	.0000023-.0000091	0.000025	NA	0.0000092	C	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	.00036 (J)	.00072 (J)	mg/L	SH-15S / 09-10-01	3/6	.00027-.0022	0.00072	NA	0.0012	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/7	.00009-.001	0.001	NA	0.00013	C	NA	NA	No	ND, DLASL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.037	NC	NA	NA	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/6	.00027-.001	0.001	NA	0.018	NC	NA	NA	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/6	.00027-.001	0.001	NA	0.0005	C	NA	NA	No	ND, DLASL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/6	.00027-.0044	0.0044	NA	0.00015	C	NA	NA	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.081	NC	NA	NA	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/7	.0001-.0014	0.0014	NA	0.00012	C	NA	NA	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/7	.00022-.0022	0.0022	NA	0.034	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.0061	NC	NA	NA	No	ND, DLASL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.012	NC	NA	NA	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.011	NC	NA	NA	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/7	.00014-.0012	0.0012	NA	0.00016	C	NA	NA	No	ND, DLASL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/7	.00014-.0012	0.0012	NA	0.0004	C	NA	NA	No	ND, DLASL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/7	.0001-.0012	0.0012	NA	0.0004	C	NA	NA	No	ND, DLASL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	2.9	NC	NA	NA	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	.0005 (J)	.0011 (J)	mg/L	SH-15S / 09-10-01	2/6	.00027-.0056	0.0011	NA	0.073	NC	NA	NA	No	BSL
	131-11-3	Dimethylphthalate	.00017 (J)	.00017 (J)	mg/L	SH-28S / 11-06-03	1/6	.00028-.0022	0.00017	NA	36	NC	NA	NA	No	BSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.36	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/6	.00054-.0056	0.0056	NA	0.00036	NC	NA	NA	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/6	.0011-.0056	0.0056	NA	0.0073	NC	NA	NA	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.0073	NC	NA	NA	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.0036	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	.0003 (J)	.0003 (J)	mg/L	WP-07 / 10-27-03	1/6	.00027-.0022	0.0003	NA	0.15	NC	NA	NA	No	BSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.13	NC	NA	NA	No	ND, DLBSL
	206-44-0	Fluoranthene	0.00028	0.0011	mg/L	SH-26S / 10-28-03	5/7	.000054-.000057	0.0011	NA	0.15	NC	NA	NA	No	BSL
	86-73-7	Fluorene	0.00027	0.0039	mg/L	SH-15S / 10-28-03	6/7	.000054	0.0039	NA	0.024	NC	NA	NA	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/6	.00027-.001	0.001	NA	0.000042	C	NA	NA	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/6	.00027-.001	0.001	NA	0.00086	C	NA	NA	No	ND, DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/6	.00027-.005	0.005	NA	0.022	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.0036	NC	NA	NA	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/7	.002-.025	0.025	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	mg/L		0/7	.00005-.00021	0.00021	NA	0.000092	C	NA	NA	No	ND, DLASL
	7439-89-6	Iron [7]	0.12	14	mg/L	SH-26S / 10-28-03	7/7		14	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.071	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	0.0011	0.17	mg/L	WP-07 / 10-27-03	6/7	.001	0.17	NA	0.015		NA	NA	No	[8]
	7439-95-4	Magnesium [6]	.58 (J)	4.6	mg/L	SH-28S / 11-06-03	4/7	.224-.56	4.6	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	0.022	0.76	mg/L	SH-28S / 11-06-03	7/7		0.76	NA	0.088	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	ND	ND	mg/L		0/7	.0002	0.0002	NA	0.0011	NC	NA	NA	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.2	NC	NA	NA	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/7	.00025-.0078	0.0078	NA	0.0043	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.0012	0.021	mg/L	SH-15S / 09-10-01	6/7	.000054	0.021	NA	0.00062	NC	NA	NA	Yes	ASL
	95-48-7	Methylphenol (2-)	.00043 (J)	.0006 (J)	mg/L	SH-15S / 09-10-01	2/6	.00027-.0022	0.0006	NA	0.18	NC	NA	NA	No	BSL
	106-44-5	Methylphenol (4-)	.00059 (J)	0.00061	mg/L	WP-07 / 10-27-03	2/6	.00027-.0022	0.00061	NA	0.018	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.011	C	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	0.0031	0.059	mg/L	SH-15S / 09-10-01	6/7	.000054	0.059	NA	0.00062	NC	NA	NA	Yes	ASL
	7440-02-0	Nickel	0.0096	0.024	mg/L	SH-26S / 10-28-03	4/7	.01	0.024	NA	0.073	NC	NA	NA	No	BSL
	nitrate	Nitrate	.36 (B)	1.4	mg/L	SH-28S / 11-06-03	3/7	.05-.1	1.4	NA	10	NC	NA	NA	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/6	.00027-.001	0.001	NA	0.011	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.0011	NC	NA	NA	No	ND, DLASL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/6	.00054-.0022	0.0022	NA	0.0032	C	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/6	.00027-.001	0.001	NA	0.00034	NC	NA	NA	No	ND, DLASL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Construction Worker-Dermal Contact)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/6	.0011-.0042	0.0042	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/6	.00027-.001	0.001	NA	0.0000096	C	NA	NA	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.014	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/6	.00059-.0042	0.0042	NA	0.00056	C	NA	NA	No	ND, DLASL
	85-01-8	Phenanthrene	0.00047	0.0068	mg/L	SH-26S / 10-28-03	6/7	.000054	0.0068	NA	0.018	NC	NA	NA	No	BSL
	108-95-2	Phenol	.00067 (J)	.00067 (J)	mg/L	SH-15S / 09-10-01	1/6	.00027-.0022	0.00067	NA	1.1	NC	NA	NA	No	BSL
	7440-09-7	Potassium [6]	.79 (B)	3.2	mg/L	SH-15S / 05-20-02	7/7		3.2	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	0.00045	0.0019	mg/L	SH-26S / 10-28-03	5/7	.000054-.000057	0.0019	NA	0.018	NC	NA	NA	No	BSL
	7782-49-2	Selenium	0.0013	0.0022	mg/L	SH-26S / 10-28-03	5/7	.001	0.0022	NA	0.018	NC	NA	NA	No	BSL
	7440-22-4	Silver	ND	ND	mg/L		0/7	.00011-.0011	0.0011	NA	0.018	NC	NA	NA	No	ND, DLBSL
	7440-23-5	Sodium [6]	40	419	mg/L	SH-15S / 09-10-01	7/7		419	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.16	NC	NA	NA	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/7	.00009-.0016	0.0016	NA	0.000055	C	NA	NA	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/7	.00015-.0016	0.0016	NA	0.0001	C	NA	NA	No	ND, DLASL
	7440-28-0	Thallium	.00011 (J)	.0002 (J)	mg/L	SH-15S / 05-20-02	3/7	.000075-.00032	0.0002	NA	0.00024	NC	NA	NA	No	BSL
	108-88-3	Toluene	.0078 (J)	.0078 (J)	mg/L	SH-15S / 09-10-01	1/7	.002-.01	0.0078	NA	0.072	NC	NA	NA	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.00072	NC	NA	NA	No	ND, DLASL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.32	NC	NA	NA	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/7	.0001-.0013	0.0013	NA	0.0002	C	NA	NA	No	ND, DLASL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/7	.00018-.0013	0.0013	NA	0.000028	C	NA	NA	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.13	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.36	NC	NA	NA	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/6	.00027-.0022	0.0022	NA	0.00036	NC	NA	NA	No	ND, DLASL
	7440-62-2	Vanadium	0.026	0.22	mg/L	WP-07 / 10-27-03	6/7	.001	0.22	NA	0.0036	NC	NA	NA	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/7	.002-.025	0.025	NA	0.041	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/7	.00032-.0038	0.0038	NA	0.00002	C	NA	NA	No	ND, DLASL
	108-38-3	Xylene (m,p-)	.0054 (J)	.0054 (J)	mg/L	SH-15S / 09-10-01	1/7	.002-.01	0.0054	NA	0.021	NC	NA	NA	No	BSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/7	.002-.01	0.01	NA	0.021	NC	NA	NA	No	ND, DLBSL
	7440-66-6	Zinc	0.017	0.063	mg/L	SH-26S / 10-28-03	4/7	.01-.0111	0.063	NA	1.1	NC	NA	NA	No	BSL

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:
Shaded chemicals are selected as COPCs.
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
C - Screening toxicity value based on cancer effects
NA - Not Available/Not Applicable
NC - Screening toxicity value based on non-cancer effects
ND - Not Detected

(1) Minimum/Maximum detected concentration data qualifiers:
J- The result is estimated (uncertain) due to QC exceedance(s).
B- The chemical was also detected in an associated non-matrix matched Blank.

(2) Maximum detected concentration, or if never detected, maximum detection limit.

(3) United States Environmental Protection Agency (USEPA) Region IX. 2004. Region IX Preliminary Remediation Goal Table. PRGs for tap water are used. Non-cancer PRGs are adjusted to account for a Hazard Index of 0.1.
Massachusetts Department of Environmental Protection (MADEP). 2003. *Massachusetts Contingency Plan* . 310 CMR 40.00. Commonwealth of Massachusetts: Office of the Secretary of State.
The PRG for acenaphthene is used for acenaphthylene.
The PRG for pyrene is used for benzo (g,h,i)perylene.
The GW-1 Standards are used for the petroleum fractions (MADEP, 2003).
The PRG for chromium VI is used for chromium.
The PRG for hydrogen cyanide is used for cyanide.
The PRG for 1,3-dichloropropene is used for cis- and trans-1,3-dichloropropene.
The Maximum Contaminant Level (MCL) for lead is used since there is no Region IX PRG for lead.
The PRG for naphthalene is used for 2-methylnaphthalene.
The PRG for pyrene is used for phenanthrene.
The PRG for xylenes (total) is used for m,p-xylene and o-xylene.

(4) Rationale for Selection or Deletion:
ASL - Above Screening Level
BSL - Below (or Equal to) Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below (or Equal to) Screening Level
ND - Not Detected
NSV - No Screening Value
NUT - Nutrient
NTX - No Toxicity Information
TX - Toxicity Information available

(5) USEPA Region I does not endorse quantitative evaluation of risk for these chemicals (personal communication, USEPA Region 1 risk assessor, Sarah Levinson, 2004 and Region 1 Risk Update, September, 1999). These chemicals will not be evaluated.

(6) USEPA Region I does not quantitatively evaluate these chemicals for human effects since they are considered essential nutrients and present little hazard to humans. These chemicals, if detected, will be evaluated qualitatively.

(7) USEPA Region I does not endorse quantitative evaluation of risk for these chemicals (Region 1 Risk Update, September 1999). These chemicals, if detected, will be evaluated qualitatively.

(8) Lead is not well absorbed dermally; in fact, estimates of dermal absorption range from 0.006% to less than 0.3% (Moore et al., 1980). Since dermal exposure is the only exposure pathway that will be quantified for groundwater (construction worker), lead is not a COPC in this exposure medium.

TABLE 2.7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT AND SITE-WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
East of South Street On-Facility Building 3	83-32-9	Acenaphthene	0.000092	0.00024	mg/L	SH-19S / 09-05-01	4/8	.000052-.000053	0.00024	NA	NA		NA	NA	No	NSV [6]
(Indoor Air - Site Worker)	67-64-1	Acetone	.0011 (J)	.0024 (J)	mg/L	OW-205 / 05-21-02	3/8	.005-.02	0.0024	NA	22	NC	NA	NA	No	BSL
	71-43-2	Benzene	ND	ND	mg/L		0/8	.00022-.00025	0.00025	NA	0.005	C	NA	NA	No	ND, DLBSL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/8	.00005-.000053	0.000053	NA	NA		NA	NA	No	ND, NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/8	.002	0.002	NA	44	NC	NA	NA	No	ND, DLBSL
	EPH C11-22	C11-C22 Aromatic	ND	ND	mg/L		0/6	.085-.089	0.089	NA	50		NA	NA	No	ND, DLBSL
	EPH C19-36	C19-C36 Aliphatic	ND	ND	mg/L		0/6	.04-.042	0.042	NA	NA		NA	NA	No	ND, NSV
	VPH C5-8	C5-C8 Aliphatic	ND	ND	mg/L		0/6	.24	0.24	NA	1		NA	NA	No	ND, DLBSL
	VPH C9-10	C9-C10 Aromatic	ND	ND	mg/L		0/6	.07	0.07	NA	5		NA	NA	No	ND, DLBSL
	VPH C9-12	C9-C12 Aliphatic	ND	ND	mg/L		0/6	.1	0.1	NA	1		NA	NA	No	ND, DLBSL
	EPH C9-18	C9-C18 Aliphatic	ND	ND	mg/L		0/6	.03-.032	0.032	NA	1		NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/L		0/8	.00022-.0004	0.0004	NA	0.08	C	NA	NA	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/L		0/8	.00029-.00057	0.00057	NA	0.0067	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	ND	ND	mg/L		0/8	.00005-.000053	0.000053	NA	NA		NA	NA	No	ND, NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/8	.002-.0021	0.0021	NA	NA		NA	NA	No	ND, NSV [6]
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/8	.00019-.00043	0.00043	NA	0.019	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/8	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/8	.002	0.002	NA	0.7	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.000088	0.00021	mg/L	SH-19S / 09-05-01	4/8	.000052-.000053	0.00021	NA	NA		NA	NA	No	NSV [6]
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/8	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	75-09-2	Methylene chloride	ND	ND	mg/L		0/8	.0002-.00021	0.00021	NA	0.058	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/L		0/8	.00005-.000053	0.000053	NA	0.33	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/8	.002	0.002	NA	12	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	ND	ND	mg/L		0/8	.00005-.000053	0.000053	NA	0.015	NC	NA	NA	No	ND, DLBSL
	129-00-0	Pyrene	ND	ND	mg/L		0/8	.00005-.000053	0.000053	NA	NA		NA	NA	No	ND, NSV [6]
	100-42-5	Styrene	ND	ND	mg/L		0/8	.002	0.002	NA	0.89	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/8	.002	0.002	NA	0.15	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/8	.002	0.002	NA	0.31	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.00043 (J)	.00043 (J)	mg/L	SH-22S / 09-05-01	1/8	.00026	0.00043	NA	0.005	C	NA	NA	No	BSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/L		0/8	.002	0.002	NA	2.2	NC	NA	NA	No	ND, DLBSL
	106-42-3 95-47-6	Xylene (o-)	ND	ND	mg/L		0/8	.002	0.002	NA	3.3	NC	NA	NA	No	ND, DLBSL

TABLE 2.7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT AND SITE-WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
East of South Street On-Facility Building 4 (Indoor Air - Site Worker)	83-32-9	Acenaphthene	0.000092	0.0028	mg/L	SH-21S / 09-06-01	6/10	.000052-.000053	0.0028	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	.0011 (J)	.0024 (J)	mg/L	OW-205 / 05-21-02	3/10	.005-.02	0.0024	NA	22	NC	NA	NA	No	BSL
	71-43-2	Benzene	ND	ND	mg/L		0/10	.00022-.00025	0.00025	NA	0.005	C	NA	NA	No	ND, DLBSL
	205-99-2	Benzo(b)fluoranthene	0.00022	0.00059	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00059	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/10	.002	0.002	NA	44	NC	NA	NA	No	ND, DLBSL
	EPH C11-22	C11-C22 Aromatic	ND	ND	mg/L		0/6	.085-.089	0.089	NA	50		NA	NA	No	ND, DLBSL
	EPH C19-36	C19-C36 Aliphatic	ND	ND	mg/L		0/6	.04-.042	0.042	NA	NA		NA	NA	No	ND, NSV
	VPH C5-8	C5-C8 Aliphatic	ND	ND	mg/L		0/6	.24	0.24	NA	1		NA	NA	No	ND, DLBSL
	VPH C9-10	C9-C10 Aromatic	ND	ND	mg/L		0/6	.07	0.07	NA	5		NA	NA	No	ND, DLBSL
	VPH C9-12	C9-C12 Aliphatic	ND	ND	mg/L		0/6	.1	0.1	NA	1		NA	NA	No	ND, DLBSL
	EPH C9-18	C9-C18 Aliphatic	ND	ND	mg/L		0/6	.03-.032	0.032	NA	1		NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	.00048 (J)	.00048 (J)	mg/L	SH-21S / 05-16-02	1/10	.00022-.00059	0.00048	NA	0.08	C	NA	NA	No	BSL
	74-87-3	Chloromethane	ND	ND	mg/L		0/10	.00029-.00057	0.00057	NA	0.0067	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	0.00025	0.00064	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00064	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.00076 (J)	.00076 (J)	mg/L	SH-21S / 09-06-01	1/10	.002-.0022	0.00076	NA	NA		NA	NA	No	NSV [6]
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/10	.00019-.00043	0.00043	NA	0.019	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/10	.002	0.002	NA	0.7	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.000088	0.0021	mg/L	SH-21S / 09-06-01	6/10	.000052-.000053	0.0021	NA	NA		NA	NA	No	NSV [6]
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/10	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	75-09-2	Methylene chloride	ND	ND	mg/L		0/10	.0002-.00023	0.00023	NA	0.058	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.00017	0.0004	mg/L	SH-21S / 09-06-01	2/10	.00005-.000053	0.0004	NA	0.33	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	0.005	0.005	mg/L	SH-21S / 05-16-02	1/10	.002	0.005	NA	12	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.00047	0.0011	mg/L	SH-21S / 09-06-01	2/10	.00005-.000053	0.0011	NA	0.015	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.00016	0.0014	mg/L	SH-21S / 05-16-02	3/10	.00005-.000053	0.0014	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/L		0/10	.002	0.002	NA	0.89	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/10	.002	0.002	NA	0.15	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.31	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.00031 (J)	.00043 (J)	mg/L	SH-22S / 09-05-01	2/10	.00026	0.00043	NA	0.005	C	NA	NA	No	BSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/L		0/10	.002	0.002	NA	2.2	NC	NA	NA	No	ND, DLBSL
	106-42-3 95-47-6	Xylene (o-)	ND	ND	mg/L		0/10	.002	0.002	NA	3.3	NC	NA	NA	No	ND, DLBSL

TABLE 2.7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT AND SITE-WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [5]
East of South Street On-Facility Building 5 (Indoor Air - Site Worker)	83-32-9	Acenaphthene	0.000092	0.0028	mg/L	SH-21S / 09-06-01	7/11	.000052-.000053	0.0028	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	.0011 (J)	.0024 (J)	mg/L	OW-205 / 05-21-02	3/11	.002-.02	0.0024	NA	22	NC	NA	NA	No	BSL
	71-43-2	Benzene	ND	ND	mg/L		0/11	.00015-.00025	0.00025	NA	0.005	C	NA	NA	No	ND, DLBSL
	205-99-2	Benzo(b)fluoranthene	0.00022	0.00059	mg/L	SH-21S / 05-16-02	2/11	.00005-.000053	0.00059	NA	NA		NA	NA	No	NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/11	.002	0.002	NA	44	NC	NA	NA	No	ND, DLBSL
	EPH C11-22	C11-C22 Aromatic	ND	ND	mg/L		0/6	.085-.089	0.089	NA	50		NA	NA	No	ND, DLBSL
	EPH C19-36	C19-C36 Aliphatic	ND	ND	mg/L		0/6	.04-.042	0.042	NA	NA		NA	NA	No	ND, NSV
	VPH C5-8	C5-C8 Aliphatic	ND	ND	mg/L		0/6	.24	0.24	NA	1		NA	NA	No	ND, DLBSL
	VPH C9-10	C9-C10 Aromatic	ND	ND	mg/L		0/6	.07	0.07	NA	5		NA	NA	No	ND, DLBSL
	VPH C9-12	C9-C12 Aliphatic	ND	ND	mg/L		0/6	.1	0.1	NA	1		NA	NA	No	ND, DLBSL
	EPH C9-18	C9-C18 Aliphatic	ND	ND	mg/L		0/6	.03-.032	0.032	NA	1		NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	.00048 (J)	.00048 (J)	mg/L	SH-21S / 05-16-02	1/11	.00011-.00059	0.00048	NA	0.08	C	NA	NA	No	BSL
	74-87-3	Chloromethane	ND	ND	mg/L		0/11	.0002-.00057	0.00057	NA	0.0067	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	0.00025	0.00064	mg/L	SH-21S / 05-16-02	2/11	.00005-.000053	0.00064	NA	NA		NA	NA	No	NSV [6]
	132-64-9	Dibenzofuran	.00076 (J)	.00076 (J)	mg/L	SH-21S / 09-06-01	1/11	.00026-.0022	0.00076	NA	NA		NA	NA	No	NSV [6]
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/11	.00019-.00043	0.00043	NA	0.019	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/11	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/11	.002	0.002	NA	0.7	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.000088	0.0021	mg/L	SH-21S / 09-06-01	7/11	.000052-.000053	0.0021	NA	NA		NA	NA	No	NSV [6]
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/11	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	75-09-2	Methylene chloride	ND	ND	mg/L		0/11	.0002-.00025	0.00025	NA	0.058	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.00017	0.0004	mg/L	SH-21S / 09-06-01	2/11	.00005-.000053	0.0004	NA	0.33	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	0.005	0.005	mg/L	SH-21S / 05-16-02	1/11	.002	0.005	NA	12	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.00047	0.0011	mg/L	SH-21S / 09-06-01	2/11	.00005-.000053	0.0011	NA	0.015	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.00016	0.0017	mg/L	WP-01 / 11-04-03	4/11	.00005-.000053	0.0017	NA	NA		NA	NA	No	NSV [6]
	100-42-5	Styrene	ND	ND	mg/L		0/11	.002	0.002	NA	0.89	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/11	.002	0.002	NA	0.15	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/11	.002	0.002	NA	0.31	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.00031 (J)	.00043 (J)	mg/L	SH-22S / 09-05-01	2/11	.00018-.00026	0.00043	NA	0.005	C	NA	NA	No	BSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/L		0/11	.002	0.002	NA	2.2	NC	NA	NA	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/11	.002	0.002	NA	3.3	NC	NA	NA	No	ND, DLBSL
West of South Street Off-Facility/Off-Site Groundwater Exposure Area (Indoor Air - Resident)	83-32-9	Acenaphthene	0.00046	0.00046	mg/L	WP-06 / 10-28-03	1/9	.00005-.000054	0.00046	NA	NA		NA	NA	No	NSV [6]
	67-64-1	Acetone	ND	ND	mg/L		0/9	.002-.02	0.02	NA	22	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	.00019 (J)	.00019 (J)	mg/L	WP-06 / 10-28-03	1/9	.00015-.00025	0.00019	NA	0.005	C	NA	NA	No	BSL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/9	.00005-.000057	0.000057	NA	NA		NA	NA	No	ND, NSV [6]
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/9	.002	0.002	NA	44	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/L		0/9	.00011-.00028	0.00028	NA	0.08	C	NA	NA	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/L		0/9	.0002-.00079	0.00079	NA	0.0067	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	ND	ND	mg/L		0/9	.00005-.000057	0.000057	NA	NA		NA	NA	No	ND, NSV [6]
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/7	.00026-.0021	0.0021	NA	NA		NA	NA	No	ND, NSV [6]
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/9	.00019-.00043	0.00043	NA	0.019	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/9	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/9	.002	0.002	NA	0.7	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.00027	0.00027	mg/L	WP-06 / 10-28-03	1/9	.00005-.000054	0.00027	NA	NA		NA	NA	No	NSV [6]
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/9	.002-.005	0.005	NA	NA		NA	NA	No	ND, NSV
	75-09-2	Methylene chloride	ND	ND	mg/L		0/9	.0002-.0016	0.0016	NA	0.058	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.0012	0.0012	mg/L	WP-06 / 10-28-03	1/9	.00005-.000054	0.0012	NA	0.33	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/9	.002	0.002	NA	12	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	0.0031	0.0031	mg/L	WP-06 / 10-28-03	1/9	.00005-.000054	0.0031	NA	0.015	NC	NA	NA	No	BSL
	129-00-0	Pyrene	ND	ND	mg/L		0/9	.00005-.000057	0.000057	NA	NA		NA	NA	No	ND, NSV [6]
	100-42-5	Styrene	ND	ND	mg/L		0/9	.002	0.002	NA	0.89	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/9	.002	0.002	NA	0.15	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	.0011 (J)	.0011 (J)	mg/L	SH-27S / 11-21-03	1/9	.002	0.0011	NA	0.31	NC	NA	NA	No	BSL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/9	.00018-.00026	0.00026	NA	0.005	C	NA	NA	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	ND	ND	mg/L		0/9	.002	0.002	NA	2.2	NC	NA	NA	No	ND, DLBSL
	106-42-3															
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/9	.002	0.002	NA	3.3	NC	NA	NA	No	ND, DLBSL

TABLE 2.7
OCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT RESIDENT AND SITE-WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:
Shaded chemicals are selected as COPCs.
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
C - Screening toxicity value based on cancer effects
NA - Not Available/Not Applicable
NC - Screening toxicity value based on non-cancer effects
ND - Not Detected
(1) Chemicals included in this COPC screening were analyzed in groundwater at the exposure point and have chemical properties in the Johnson & Ettinger model (USEPA, 2003). An exception to this is 2-hexanone, which is a volatile organic compound for which we have toxicity information, but is not in the Johnson & Ettinger model (USEPA, 2003). We performed a literature search to identify and select chemical properties to model air concentrations of this chemical using the Johnson & Ettinger model (USEPA, 2003).
(2) Minimum/Maximum detected concentration data qualifiers:
J- The result is estimated (uncertain) due to QC exceedance(s).
(3) Maximum detected concentration, or if never detected, maximum detection limit.
(4) United States Environmental Protection Agency (USEPA) Office of Solid Waste and Emergency Response. 2002. Draft Guidance for Evaluating the Vapor Intrusion Indoor Air Pathway From Groundwater and Soils. Target groundwater concentrations correspond to a cancer risk of 1×10^{-6} or a non-cancer Hazard Index of 0.1. The p-xylene target groundwater concentration is used for m,p-xylene. The MADEP GW-2 standards are used for the petroleum fractions (MADEP, 2003). Massachusetts Department of Environmental Protection (MADEP). 2003. Massachusetts Contingency Plan. 310 CMR 40.0974(2). Table 1 – Method 1 Groundwater Standards.
(5) Rationale for Selection or Deletion:
BSL - Below or Equal to Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below or Equal to Screening Level
ND - Not Detected
NSV - No Screening Value
(6) The target soil gas concentration exceeds the maximum possible vapor concentration for these chemicals (USEPA, 2002).

TABLE 2.8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER (SCREENING STEP 1), RESIDENT, AND SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4,5]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [6]
Lots South of the AOC (Indoor Air - Resident)	83-32-9	Acenaphthene	ND	ND	mg/L		0/14	.00005-.000054	0.000054	NA	NA		NA	NA	No	ND, NSV [7]
	67-64-1	Acetone	.0023 (J)	.0045 (J)	mg/L	SH-12S / 05-17-02	3/14	.002-.02	0.0045	NA	22	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00039 (J)	.00053 (J)	mg/L	SH-12S / 11-03-03	2/14	.00015-.00025	0.00053	NA	0.005	C	NA	NA	No	BSL
	205-99-2	Benzo(b)fluoranthene	0.00014	0.00014	mg/L	SH-13S / 11-03-03	1/14	.00005-.000054	0.00014	NA	NA		NA	NA	No	NSV [7]
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/14	.002	0.002	NA	44	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/L		0/14	.00011-.00036	0.00036	NA	0.08	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	0.000077	0.000077	mg/L	SH-13S / 11-03-03	1/14	.00005-.000054	0.000077	NA	NA		NA	NA	No	NSV [7]
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	NA		NA	NA	No	ND, NSV [7]
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/14	.002	0.002	NA	0.7	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/L		0/14	.00005-.000054	0.000054	NA	NA		NA	NA	No	ND, NSV [7]
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/14	.002-.005	0.005	NA	NA		NA	NA	No	ND, NSV
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/L		0/14	.00005-.000054	0.000054	NA	0.33	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/14	.002	0.002	NA	12	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	0.00029	0.00029	mg/L	SH-10S / 10-31-03	1/14	.00005-.000054	0.00029	NA	0.015	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.00011	0.00011	mg/L	SH-13S / 11-03-03	1/14	.00005-.000054	0.00011	NA	NA		NA	NA	No	NSV [7]
	100-42-5	Styrene	ND	ND	mg/L		0/14	.002	0.002	NA	0.89	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/14	.002	0.002	NA	0.15	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/14	.002	0.002	NA	0.31	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/14	.00018-.00026	0.00026	NA	0.005	C	NA	NA	No	ND, DLBSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/L		0/14	.002	0.002	NA	2.2	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/14	.002	0.002	NA	3.3	NC	NA	NA	No	ND, DLBSL
Lots South of the AOC (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	ND	ND	mg/L		0/14	.00005-.000054	0.000054	NA	0.037	NC	NA	NA	No	ND, DLBSL
	67-64-1	Acetone	.0023 (J)	.0045 (J)	mg/L	SH-12S / 05-17-02	3/14	.002-.02	0.0045	NA	0.55	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00039 (J)	.00053 (J)	mg/L	SH-12S / 11-03-03	2/14	.00015-.00025	0.00053	NA	0.00035	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.00014	0.00014	mg/L	SH-13S / 11-03-03	1/14	.00005-.000054	0.00014	NA	0.000092	C	NA	NA	Yes	ASL
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/14	.002	0.002	NA	0.7	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/L		0/14	.00011-.00036	0.00036	NA	0.00017	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.000077	0.000077	mg/L	SH-13S / 11-03-03	1/14	.00005-.000054	0.000077	NA	0.0092	C	NA	NA	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/10	.002-.0022	0.0022	NA	0.0012	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/14	.002	0.002	NA	0.13	NC	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/L		0/14	.00005-.000054	0.000054	NA	0.024	NC	NA	NA	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/14	.002-.005	0.005	NA	NA		NA	NA	No	ND, NSV
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/L		0/14	.00005-.000054	0.000054	NA	0.00062	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/14	.002	0.002	NA	0.011	C	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	0.00029	0.00029	mg/L	SH-10S / 10-31-03	1/14	.00005-.000054	0.00029	NA	0.00062	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.00011	0.00011	mg/L	SH-13S / 11-03-03	1/14	.00005-.000054	0.00011	NA	0.018	NC	NA	NA	No	BSL
	100-42-5	Styrene	ND	ND	mg/L		0/14	.002	0.002	NA	0.16	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/14	.002	0.002	NA	0.072	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/14	.002	0.002	NA	0.32	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/14	.00018-.00026	0.00026	NA	0.000028	C	NA	NA	No	ND, DLASL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/L		0/14	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/14	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL

TABLE 2.8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER (SCREENING STEP 1), RESIDENT, AND SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4,5]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [6]
East of South Street On-Facility (Indoor Air - Resident and Site Worker)	83-32-9	Acenaphthene	.000092	.0028	mg/L	SH-21S / 09-06-01	6/10	.000052-.000053	0.0028	NA	NA		NA	NA	No	NSV [7]
	67-64-1	Acetone	.0011 (J)	.0024 (J)	mg/L	OW-205 / 05-21-02	3/10	.005-.02	0.0024	NA	22	NC	NA	NA	No	BSL
	71-43-2	Benzene	ND	ND	mg/L		0/10	.00022-.00025	0.00025	NA	0.005	C	NA	NA	No	ND, DLBSL
	205-99-2	Benzo(b)fluoranthene	.00022	.00059	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00059	NA	NA		NA	NA	No	NSV [7]
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/10	.002	0.002	NA	44	NC	NA	NA	No	ND, DLBSL
	EPH C11-22	C11-C22 Aromatic	ND	ND	mg/L		0/6	.085-.089	0.089	NA	50		NA	NA	No	ND, DLBSL
	VPH C9-10	C9-C10 Aromatic	ND	ND	mg/L		0/6	.07	0.07	NA	5		NA	NA	No	ND, DLBSL
	VPH C9-12	C9-C12 Aliphatic	ND	ND	mg/L		0/6	.1	0.1	NA	1		NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	.00048 (J)	.00048 (J)	mg/L	SH-21S / 05-16-02	1/10	.00022-.00059	0.00048	NA	0.08	C	NA	NA	No	BSL
	74-87-3	Chloromethane	ND	ND	mg/L		0/10	.00029-.00057	0.00057	NA	0.0067	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	.00025	.00064	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00064	NA	NA		NA	NA	No	NSV [7]
	132-64-9	Dibenzofuran	.00076 (J)	.00076 (J)	mg/L	SH-21S / 09-06-01	1/10	.002-.0022	0.00076	NA	NA		NA	NA	No	NSV [7]
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/10	.00019-.00043	0.00043	NA	0.019	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/10	.002	0.002	NA	0.7	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	.000088	.0021	mg/L	SH-21S / 09-06-01	6/10	.000052-.000053	0.0021	NA	NA		NA	NA	No	NSV [7]
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/10	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	75-09-2	Methylene chloride	ND	ND	mg/L		0/10	.0002-.00023	0.00023	NA	0.058	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.00017	.0004	mg/L	SH-21S / 09-06-01	2/10	.00005-.000053	0.0004	NA	0.33	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	.005	.005	mg/L	SH-21S / 05-16-02	1/10	.002	0.005	NA	12	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	.00047	.0011	mg/L	SH-21S / 09-06-01	2/10	.00005-.000053	0.0011	NA	0.015	NC	NA	NA	No	BSL
	129-00-0	Pyrene	.00016	.0014	mg/L	SH-21S / 05-16-02	3/10	.00005-.000053	0.0014	NA	NA		NA	NA	No	NSV [7]
	100-42-5	Styrene	ND	ND	mg/L		0/10	.002	0.002	NA	0.89	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/10	.002	0.002	NA	0.15	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.31	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.00031 (J)	.00043 (J)	mg/L	SH-22S / 09-05-01	2/10	.00026	0.00043	NA	0.005	C	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/L		0/10	.002	0.002	NA	2.2	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/10	.002	0.002	NA	3.3	NC	NA	NA	No	ND, DLBSL
East of South Street On-Facility (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.000092	0.0028	mg/L	SH-21S / 09-06-01	6/10	.000052-.000053	0.0028	NA	0.037	NC	NA	NA	No	BSL
	67-64-1	Acetone	.0011 (J)	.0024 (J)	mg/L	OW-205 / 05-21-02	3/10	.005-.02	0.0024	NA	0.55	NC	NA	NA	No	BSL
	71-43-2	Benzene	ND	ND	mg/L		0/10	.00022-.00025	0.00025	NA	0.00035	C	NA	NA	No	ND, DLBSL
	205-99-2	Benzo(b)fluoranthene	0.00022	0.00059	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00059	NA	0.000092	C	NA	NA	Yes	ASL
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.7	NC	NA	NA	No	ND, DLBSL
	EPH C11-22	C11-C22 Aromatic	ND	ND	mg/L		0/6	.085-.089	0.089	NA	0.2		NA	NA	No	ND, DLBSL
	VPH C9-10	C9-C10 Aromatic	ND	ND	mg/L		0/6	.07	0.07	NA	0.2		NA	NA	No	ND, DLBSL
	VPH C9-12	C9-C12 Aliphatic	ND	ND	mg/L		0/6	.1	0.1	NA	4		NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	.00048 (J)	.00048 (J)	mg/L	SH-21S / 05-16-02	1/10	.00022-.00059	0.00048	NA	0.00017	C	NA	NA	Yes	ASL
	74-87-3	Chloromethane	ND	ND	mg/L		0/10	.00029-.00057	0.00057	NA	0.0015	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	0.00025	0.00064	mg/L	SH-21S / 05-16-02	2/10	.00005-.000053	0.00064	NA	0.0092	C	NA	NA	No	BSL
	132-64-9	Dibenzofuran	.00076 (J)	.00076 (J)	mg/L	SH-21S / 09-06-01	1/10	.002-.0022	0.00076	NA	0.0012	NC	NA	NA	No	BSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/10	.00019-.00043	0.00043	NA	0.034	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.0061	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/10	.002	0.002	NA	0.13	NC	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.000088	0.0021	mg/L	SH-21S / 09-06-01	6/10	.000052-.000053	0.0021	NA	0.024	NC	NA	NA	No	BSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/10	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	75-09-2	Methylene chloride	ND	ND	mg/L		0/10	.0002-.00023	0.00023	NA	0.0043	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.00017	0.0004	mg/L	SH-21S / 09-06-01	2/10	.00005-.000053	0.0004	NA	0.00062	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	0.005	0.005	mg/L	SH-21S / 05-16-02	1/10	.002	0.005	NA	0.011	C	NA	NA	No	BSL
	91-20-3	Naphthalene	0.00047	0.0011	mg/L	SH-21S / 09-06-01	2/10	.00005-.000053	0.0011	NA	0.00062	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.00016	0.0014	mg/L	SH-21S / 05-16-02	3/10	.00005-.000053	0.0014	NA	0.018	NC	NA	NA	No	BSL
	100-42-5	Styrene	ND	ND	mg/L		0/10	.002	0.002	NA	0.16	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/10	.002	0.002	NA	0.072	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.32	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.00031 (J)	.00043 (J)	mg/L	SH-22S / 09-05-01	2/10	.00026	0.00043	NA	0.000028	C	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/10	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL

TABLE 2.8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER (SCREENING STEP 1), RESIDENT, AND SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4,5]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [6]
Old Railroad and Former Lower Mill Pond Area (Indoor Air - Resident)	83-32-9	Acenaphthene	ND	ND	mg/L		0/1	.000052	0.000052	NA	NA		NA	NA	No	ND, NSV [7]
	67-64-1	Acetone	ND	ND	mg/L		0/1	.002	0.002	NA	22	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/L		0/1	.00015	0.00015	NA	0.005	C	NA	NA	No	ND, DLBSL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/1	.000052	0.000052	NA	NA		NA	NA	No	ND, NSV [7]
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/1	.002	0.002	NA	44	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/L		0/1	.00011	0.00011	NA	0.08	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	ND	ND	mg/L		0/1	.000052	0.000052	NA	NA		NA	NA	No	ND, NSV [7]
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/1	.00026	0.00026	NA	NA		NA	NA	No	ND, NSV [7]
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/1	.002	0.002	NA	0.7	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/L		0/1	.000052	0.000052	NA	NA		NA	NA	No	ND, NSV [7]
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/1	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.33	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/1	.002	0.002	NA	12	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.015	NC	NA	NA	No	ND, DLBSL
	129-00-0	Pyrene	ND	ND	mg/L		0/1	.000052	0.000052	NA	NA		NA	NA	No	ND, NSV [7]
	100-42-5	Styrene	ND	ND	mg/L		0/1	.002	0.002	NA	0.89	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/1	.002	0.002	NA	0.15	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.31	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/1	.00018	0.00018	NA	0.005	C	NA	NA	No	ND, DLBSL
	108-38-3 106	Xylene (m,p-)	ND	ND	mg/L		0/1	.002	0.002	NA	2.2	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/1	.002	0.002	NA	3.3	NC	NA	NA	No	ND, DLBSL
Old Railroad and Former Lower Mill Pond Area (Trench Vapor - Construction	83-32-9	Acenaphthene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.037	NC	NA	NA	No	ND, DLBSL
	67-64-1	Acetone	ND	ND	mg/L		0/1	.002	0.002	NA	0.55	NC	NA	NA	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/L		0/1	.00015	0.00015	NA	0.00035	C	NA	NA	No	ND, DLBSL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.000092	C	NA	NA	No	ND, DLBSL
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.7	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/L		0/1	.00011	0.00011	NA	0.00017	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.0092	C	NA	NA	No	ND, DLBSL
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/1	.00026	0.00026	NA	0.0012	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/1	.002	0.002	NA	0.13	NC	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.024	NC	NA	NA	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/1	.002	0.002	NA	NA		NA	NA	No	ND, NSV
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.00062	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/1	.002	0.002	NA	0.011	C	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.00062	NC	NA	NA	No	ND, DLBSL
	129-00-0	Pyrene	ND	ND	mg/L		0/1	.000052	0.000052	NA	0.018	NC	NA	NA	No	ND, DLBSL
	100-42-5	Styrene	ND	ND	mg/L		0/1	.002	0.002	NA	0.16	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/L		0/1	.002	0.002	NA	0.072	NC	NA	NA	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.32	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/1	.00018	0.00018	NA	0.000028	C	NA	NA	No	ND, DLASL
	108-38-3 106	Xylene (m,p-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/1	.002	0.002	NA	0.021	NC	NA	NA	No	ND, DLBSL

TABLE 2.8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER (SCREENING STEP 1), RESIDENT, AND SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4,5]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [6]
West of South Street Off-Facility/Off-Site Groundwater Exposure Area (Indoor Air - Resident)	83-32-9	Acenaphthene	0.00046	0.0062	mg/L	SH-15S / 10-28-03	6/8	.000053-.000054	0.0062	NA	NA		NA	NA	No	NSV [7]
	67-64-1	Acetone	.0075 (J)	.0075 (J)	mg/L	SH-26S / 10-28-03	1/8	.002-.025	0.0075	NA	22	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00019 (J)	.0076 (J)	mg/L	SH-15S / 09-10-01	6/8	.00015	0.0076	NA	0.005	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/8	.00005-.00021	0.00021	NA	NA		NA	NA	No	ND, NSV [7]
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/8	.002-.01	0.01	NA	44	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/L		0/8	.00011-.0016	0.0016	NA	0.08	C	NA	NA	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/L		0/8	.0002-.004	0.004	NA	0.0067	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	0.000057	0.000065	mg/L	SH-15S / 09-10-01	2/8	.000053-.00021	0.000065	NA	NA		NA	NA	No	NSV [7]
	132-64-9	Dibenzofuran	.00036 (J)	.00072 (J)	mg/L	SH-15S / 09-10-01	3/7	.00026-.0022	0.00072	NA	NA		NA	NA	No	NSV [7]
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/8	.00022-.0022	0.0022	NA	0.019	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/8	.002-.01	0.01	NA	0.021	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/8	.002-.01	0.01	NA	0.7	C	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.00027	0.0039	mg/L	SH-15S / 10-28-03	6/8	.000053-.000054	0.0039	NA	NA		NA	NA	No	NSV [7]
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/8	.002-.025	0.025	NA	NA		NA	NA	No	ND, NSV
	75-09-2	Methylene chloride	ND	ND	mg/L		0/8	.00025-.0078	0.0078	NA	0.058	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.0012	0.021	mg/L	SH-15S / 09-10-01	6/8	.000053-.000054	0.021	NA	0.33	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/8	.002-.01	0.01	NA	12	NC	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	0.0031	0.059	mg/L	SH-15S / 09-10-01	6/8	.000053-.000054	0.059	NA	0.015	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.00045	0.0019	mg/L	SH-26S / 10-28-03	5/8	.000053-.000057	0.0019	NA	NA		NA	NA	No	NSV [7]
	100-42-5	Styrene	ND	ND	mg/L		0/8	.002-.01	0.01	NA	0.89	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.0078 (J)	.0078 (J)	mg/L	SH-15S / 09-10-01	1/8	.002-.01	0.0078	NA	0.15	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	.0011 (J)	.0011 (J)	mg/L	SH-27S / 11-21-03	1/8	.002-.01	0.0011	NA	0.31	NC	NA	NA	No	BSL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/8	.00018-.0013	0.0013	NA	0.005	C	NA	NA	No	ND, DLBSL
	108-38-3	Xylene (m,p-)	.0054 (J)	.0054 (J)	mg/L	SH-15S / 09-10-01	1/8	.002-.01	0.0054	NA	2.2	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/8	.002-.01	0.01	NA	3.3	NC	NA	NA	No	ND, DLBSL
West of South Street Off-Facility/Off-Site Groundwater Exposure Area (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.00046	0.0062	mg/L	SH-15S / 10-28-03	6/8	.000053-.000054	0.0062	NA	0.037	NC	NA	NA	No	BSL
	67-64-1	Acetone	.0075 (J)	.0075 (J)	mg/L	SH-26S / 10-28-03	1/8	.002-.025	0.0075	NA	0.55	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00019 (J)	.0076 (J)	mg/L	SH-15S / 09-10-01	6/8	.00015	0.0076	NA	0.00035	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	ND	ND	mg/L		0/8	.00005-.00021	0.00021	NA	0.000092	C	NA	NA	No	ND, DLASL
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/8	.002-.01	0.01	NA	0.7	NC	NA	NA	No	ND, DLBSL
	67-66-3	Chloroform	ND	ND	mg/L		0/8	.00011-.0016	0.0016	NA	0.00017	C	NA	NA	No	ND, DLASL
	74-87-3	Chloromethane	ND	ND	mg/L		0/8	.0002-.004	0.004	NA	0.0015	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.000057	0.000065	mg/L	SH-15S / 09-10-01	2/8	.000053-.00021	0.000065	NA	0.0092	C	NA	NA	No	BSL
	132-64-9	Dibenzofuran	.00036 (J)	.00072 (J)	mg/L	SH-15S / 09-10-01	3/7	.00026-.0022	0.00072	NA	0.0012	NC	NA	NA	No	BSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/8	.00022-.0022	0.0022	NA	0.034	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/8	.002-.01	0.01	NA	0.0061	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/8	.002-.01	0.01	NA	0.13	NC	NA	NA	No	ND, DLBSL
	86-73-7	Fluorene	0.00027	0.0039	mg/L	SH-15S / 10-28-03	6/8	.000053-.000054	0.0039	NA	0.024	NC	NA	NA	No	BSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/8	.002-.025	0.025	NA	NA		NA	NA	No	ND, NSV
	75-09-2	Methylene chloride	ND	ND	mg/L		0/8	.00025-.0078	0.0078	NA	0.0043	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.0012	0.021	mg/L	SH-15S / 09-10-01	6/8	.000053-.000054	0.021	NA	0.00062	NC	NA	NA	Yes	ASL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/8	.002-.01	0.01	NA	0.011	C	NA	NA	No	ND, DLBSL
	91-20-3	Naphthalene	0.0031	0.059	mg/L	SH-15S / 09-10-01	6/8	.000053-.000054	0.059	NA	0.00062	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.00045	0.0019	mg/L	SH-26S / 10-28-03	5/8	.000053-.000057	0.0019	NA	0.018	NC	NA	NA	No	BSL
	100-42-5	Styrene	ND	ND	mg/L		0/8	.002-.01	0.01	NA	0.16	NC	NA	NA	No	ND, DLBSL
	108-88-3	Toluene	.0078 (J)	.0078 (J)	mg/L	SH-15S / 09-10-01	1/8	.002-.01	0.0078	NA	0.072	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	.0011 (J)	.0011 (J)	mg/L	SH-27S / 11-21-03	1/8	.002-.01	0.0011	NA	0.32	NC	NA	NA	No	BSL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/8	.00018-.0013	0.0013	NA	0.000028	C	NA	NA	No	ND, DLASL
	108-38-3 106	Xylene (m,p-)	.0054 (J)	.0054 (J)	mg/L	SH-15S / 09-10-01	1/8	.002-.01	0.0054	NA	0.021	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/8	.002-.01	0.01	NA	0.021	NC	NA	NA	No	ND, DLBSL

TABLE 2.8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FUTURE CONSTRUCTION WORKER (SCREENING STEP 1), RESIDENT, AND SITE WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	CAS Number	Chemical [1]	Minimum Concentration (Qualifier) [2]	Maximum Concentration (Qualifier) [2]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [3]	Background Value	Screening Toxicity Value [4,5]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [6]
West of South Street On-Facility (Indoor Air - Resident and Site Worker)	83-32-9	Acenaphthene	0.000084	0.02	mg/L	SH-01S / 10-28-03, SH-04S / 09-11-01	27/44	.00005-.000057	0.02	NA	NA		NA	NA	No	NSV [7]
	67-64-1	Acetone	.0034 (J)	.025 (J)	mg/L	SH-05S / 05-21-02	7/44	.002-.1	0.025	NA	22	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00043 (J)	0.043	mg/L	SH-04S / 09-11-01	20/44	.00015-.00075	0.043	NA	0.005	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.000084	0.00014	mg/L	SH-06S / 09-06-01	5/44	.00005-.001	0.00014	NA	NA		NA	NA	No	NSV [7]
	78-93-3	Butanone (2-)	0.0029	0.026	mg/L	SH-01S / 10-28-03	5/44	.002-.02	0.026	NA	44	NC	NA	NA	No	BSL
	EPH C11-22	C11-C22 Aromatic	0.094	0.099	mg/L	OW-202-2 / 09-07-01	2/8	.085-.092	0.099	NA	50		NA	NA	No	BSL
	VPH C9-10	C9-C10 Aromatic	.2 (J)	.2 (J)	mg/L	OW-202-2 / 09-07-01, SH-07S / 09-07-01	2/8	.07	0.2	NA	5		NA	NA	No	BSL
	VPH C9-12	C9-C12 Aliphatic	.11 (J)	0.36	mg/L	OW-202-2 / 09-07-01	3/8	.1	0.36	NA	1		NA	NA	No	BSL
	67-66-3	Chloroform	ND	ND	mg/L		0/44	.00011-.028	0.028	NA	0.08	C	NA	NA	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/L		0/44	.0002-.004	0.004	NA	0.0067	C	NA	NA	No	ND, DLBSL
	218-01-9	Chrysene	0.0001	0.00075	mg/L	SH-04S / 09-11-01	9/44	.00005-.001	0.00075	NA	NA		NA	NA	No	NSV [7]
	132-64-9	Dibenzofuran	.0011 (J)	.0012 (J)	mg/L	OW-208 / 05-21-02	2/31	.00026-.02	0.0012	NA	NA		NA	NA	No	NSV [7]
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/44	.00019-.0022	0.0022	NA	0.019	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/44	.002-.02	0.02	NA	0.021	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	.0017 (J)	0.023	mg/L	SH-04S / 09-11-01	8/44	.002-.02	0.023	NA	0.7	C	NA	NA	No	BSL
	86-73-7	Fluorene	0.000087	0.016	mg/L	SH-01S / 10-28-03	26/44	.00005-.000057	0.016	NA	NA		NA	NA	No	NSV [7]
	591-78-6	Hexanone (2-)	.0015 (J)	0.018	mg/L	SH-04S / 09-11-01	4/44	.002-.025	0.018	NA	NA		NA	NA	Yes	NSV, TX
	75-09-2	Methylene chloride	ND	ND	mg/L		0/44	.0002-.0078	0.0078	NA	0.058	C	NA	NA	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	0.000069	0.096	mg/L	SH-04S / 09-11-01	22/44	.00005-.000057	0.096	NA	0.33	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	0.031	0.04	mg/L	SH-09S / 09-07-01	2/44	.002-.02	0.04	NA	12	NC	NA	NA	No	BSL
	91-20-3	Naphthalene	0.000055	0.31	mg/L	SH-04S / 09-11-01	27/44	.00005-.000055	0.31	NA	0.015	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.000055	0.004	mg/L	SH-04S / 09-11-01	23/44	.00005-.0001	0.004	NA	NA		NA	NA	No	NSV [7]
	100-42-5	Styrene	.0062 (J)	0.013	mg/L	SH-04S / 09-11-01	3/44	.002-.02	0.013	NA	0.89	NC	NA	NA	No	BSL
	108-88-3	Toluene	.0017 (J)	0.057	mg/L	SH-04S / 09-11-01	17/44	.002-.01	0.057	NA	0.15	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/44	.002-.02	0.02	NA	0.31	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.00073 (J)	.00073 (J)	mg/L	SH-25S / 11-05-03	1/44	.00018-.0026	0.00073	NA	0.005	C	NA	NA	No	BSL
	108-38-3 106-42-3	Xylene (m,p-)	.0014 (J)	0.033	mg/L	SH-04S / 09-11-01	15/44	.002-.01	0.033	NA	2.2	NC	NA	NA	No	BSL
	95-47-6	Xylene (o-)	.0017 (J)	0.017	mg/L	SH-04S / 09-11-01	11/44	.002-.02	0.017	NA	3.3	NC	NA	NA	No	BSL
West of South Street On-Facility (Trench Vapor - Construction Worker)	83-32-9	Acenaphthene	0.000084	0.02	mg/L	SH-01S / 10-28-03, SH-04S / 09-11-01	27/44	.00005-.000057	0.02	NA	0.037	NC	NA	NA	No	BSL
	67-64-1	Acetone	.0034 (J)	.025 (J)	mg/L	SH-05S / 05-21-02	7/44	.002-.1	0.025	NA	0.55	NC	NA	NA	No	BSL
	71-43-2	Benzene	.00043 (J)	0.043	mg/L	SH-04S / 09-11-01	20/44	.00015-.00075	0.043	NA	0.00035	C	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.000084	0.00014	mg/L	SH-06S / 09-06-01	5/44	.00005-.001	0.00014	NA	0.000092	C	NA	NA	Yes	ASL
	78-93-3	Butanone (2-)	0.0029	0.026	mg/L	SH-01S / 10-28-03	5/44	.002-.02	0.026	NA	0.7	NC	NA	NA	No	BSL
	EPH C11-22	C11-C22 Aromatic	0.094	0.099	mg/L	OW-202-2 / 09-07-01	2/8	.085-.092	0.099	NA	0.2		NA	NA	No	BSL
	VPH C9-10	C9-C10 Aromatic	.2 (J)	.2 (J)	mg/L	OW-202-2 / 09-07-01, SH-07S / 09-07-01	2/8	.07	0.2	NA	0.2		NA	NA	No	BSL
	VPH C9-12	C9-C12 Aliphatic	.11 (J)	0.36	mg/L	OW-202-2 / 09-07-01	3/8	.1	0.36	NA	4		NA	NA	No	BSL
	67-66-3	Chloroform	ND	ND	mg/L		0/44	.00011-.028	0.028	NA	0.00017	C	NA	NA	No	ND, DLASL
	74-87-3	Chloromethane	ND	ND	mg/L		0/44	.0002-.004	0.004	NA	0.0015	C	NA	NA	No	ND, DLASL
	218-01-9	Chrysene	0.0001	0.00075	mg/L	SH-04S / 09-11-01	9/44	.00005-.001	0.00075	NA	0.0092	C	NA	NA	No	BSL
	132-64-9	Dibenzofuran	.0011 (J)	.0012 (J)	mg/L	OW-208 / 05-21-02	2/31	.00026-.02	0.0012	NA	0.0012	NC	NA	NA	No	BSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/44	.00019-.0022	0.0022	NA	0.034	NC	NA	NA	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/44	.002-.02	0.02	NA	0.0061	NC	NA	NA	No	ND, DLASL
	100-41-4	Ethylbenzene	.0017 (J)	0.023	mg/L	SH-04S / 09-11-01	8/44	.002-.02	0.023	NA	0.13	NC	NA	NA	No	BSL
	86-73-7	Fluorene	0.000087	0.016	mg/L	SH-01S / 10-28-03	26/44	.00005-.000057	0.016	NA	0.024	NC	NA	NA	No	BSL
	591-78-6	Hexanone (2-)	.0015 (J)	0.018	mg/L	SH-04S / 09-11-01	4/44	.002-.025	0.018	NA	NA		NA	NA	Yes	NSV, TX
	75-09-2	Methylene chloride	ND	ND	mg/L		0/44	.0002-.0078	0.0078	NA	0.0043	C	NA	NA	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	0.000069	0.096	mg/L	SH-04S / 09-11-01	22/44	.00005-.000057	0.096	NA	0.00062	NC	NA	NA	Yes	ASL
	1634-04-4	Methyl-tert Butyl Ether	0.031	0.04	mg/L	SH-09S / 09-07-01	2/44	.002-.02	0.04	NA	0.011	C	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.000055	0.31	mg/L	SH-04S / 09-11-01	27/44	.00005-.000055	0.31	NA	0.00062	NC	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.000055	0.004	mg/L	SH-04S / 09-11-01	23/44	.00005-.0001	0.004	NA	0.018	NC	NA	NA	No	BSL
	100-42-5	Styrene	.0062 (J)	0.013	mg/L	SH-04S / 09-11-01	3/44	.002-.02	0.013	NA	0.16	NC	NA	NA	No	BSL
	108-88-3	Toluene	.0017 (J)	0.057	mg/L	SH-04S / 09-11-01	17/44	.002-.01	0.057	NA	0.072	NC	NA	NA	No	BSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/44	.002-.02	0.02		0.32	NC	NA	NA	No	ND, DLBSL
	79-01-6	Trichloroethene	.00073 (J)	.00073 (J)	mg/L	SH-25S / 11-05-03	1/44	.00018-.0026	0.00073	NA	0.000028	C	NA	NA	Yes	ASL
	108-38-3 106-42-3	Xylene (m,p-)	.0014 (J)	0.033	mg/L	SH-04S / 09-11-01	15/44	.002-.01	0.033	NA	0.021	NC	NA	NA	Yes	ASL
	95-47-6	Xylene (o-)	.0017 (J)	0.017	mg/L	SH-04S / 09-11-01	11/44	.002-.02	0.017	NA	0.021	NC	NA	NA	No	BSL

TABLE 2.8
OCCURENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SCREENING STEP 1 FOR FUTURE GROUNDWATER TO AIR
FUTURE RESIDENT, SITE WORKER, AND CONSTRUCTION WORKER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:
For indoor air, shaded chemicals are selected as COPCs. For trench vapor, shaded chemicals are evaluated in an additional screening step in Table C2.3a.
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
C - Screening toxicity value based on cancer effects
NA - Not Available/Not Applicable
NC - Screening toxicity value based on non-cancer effects
ND - Not Detected
(1) Chemicals included in this COPC screening are detected in at least one groundwater exposure point and have chemical properties in the Johnson & Ettinger model (USEPA, 2004). An exception to this is 2-hexanone, which is a volatile organic compound for which we have toxicity information, but is not in the Johnson & Ettinger model (USEPA, 2004). We performed a literature search to identify and select chemical properties to model air concentrations of this chemical using the Johnson and Ettinger model (USEPA, 2004). Also, there are no chemical properties in the Johnson & Ettinger Model (USEPA, 2004) for the detected petroleum fractions, but they are included in this table because MADEP GW-2 standards are available for screening.
(2) Minimum/Maximum detected concentration data qualifiers:
J- The result is estimated (uncertain) due to QC exceedance(s).
(3) Maximum detected concentration, or if never detected, maximum detection limit.
(4) For indoor air, the screening toxicity values are from: United States Environmental Protection Agency (USEPA) Office of Solid Waste and Emergency Response. 2002. Draft Guidance for Evaluating the Vapor Intrusion Indoor Air Pathway From Groundwater and Soils. Target groundwater concentrations correspond to a cancer risk of 1×10^{-6} or a non-cancer Hazard Index of 0.1. The p-xylene target groundwater concentration is used for m,p-xylene. The MADEP GW-2 standards are used for the petroleum fractions (MADEP, 2003). Massachusetts Department of Environmental Protection (MADEP). 2003. Massachusetts Contingency Plan. 310 CMR 40.0974(2). Table 1 – Method 1 Groundwater Standards.
(5) For trench vapor, the screening toxicity values are from: United States Environmental Protection Agency (USEPA) Region IX. 2004. Region IX Preliminary Remediation Goal Table; and Massachusetts Department of Environmental Protection (MADEP). 2003. Massachusetts Contingency Plan. 310 CMR 40.0974(2). Table 1 – Method 1 Groundwater Standards.
PRGs for tap water are used to screen groundwater at trench vapor exposure points. Non-cancer PRGs are adjusted to account for a Hazard Index of 0.1.
The MADEP GW-1 Standards (MADEP, 2003) are used for the petroleum fractions.
The PRG for naphthalene is used for 2-methylnaphthalene.
The PRG for xylenes (total) is used for m,p-xylenes and o-xylenes.
(6) Rationale for Selection or Deletion:
ASL - Above Screening Level
BSL - Below (or Equal to) Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below (or Equal to) Screening Level
ND - Not Detected
NSV - No Screening Value
TX - Toxicity Information available
(7) The target soil gas concentration exceeds the maximum possible vapor concentration for these chemicals (USEPA, 2002).

TABLE 2.8a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SCREENING STEP 2 FOR FUTURE CONSTRUCTION WORKER GROUNDWATER TO TRENCH VAPOR
Blackburn and Union Privileges Site
Walpole, Massachusetts

Exposure Point	CAS Number	Chemical [1]	Concentration Used for Screening (mg/L) [2]	Screening Toxicity Value (mg/L) [3]	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
Lots South of the AOC	71-43-2	Benzene	0.00053	0.94	No	BSL
	205-99-2	Benzo(b)fluoranthene	0.00014	NC	No	NOC
East of South Street On-Facility	205-99-2	Benzo(b)fluoranthene	0.00059	NC	No	NOC
	67-66-3	Chloroform	0.00048	1.2	No	BSL
	91-20-3	Naphthalene	0.0011	2	No	BSL
	79-01-6	Trichloroethene	0.00043	0.13	No	BSL
West of South Street Off-Facility/Off-Site Groundwater Exposure Area	71-43-2	Benzene	0.0076	0.94	No	BSL
	91-57-6	Methylnaphthalene (2-)	0.021	2.7	No	BSL
	91-20-3	Naphthalene	0.059	2	No	BSL
West of South Street On-Facility	71-43-2	Benzene	0.043	0.94	No	BSL
	205-99-2	Benzo(b)fluoranthene	0.00014	NC	No	NOC
	591-78-6	Hexanone (2-)	0.018	7.9	No	BSL
	91-57-6	Methylnaphthalene (2-)	0.096	2.7	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	0.04	620	No	BSL
	91-20-3	Naphthalene	0.31	2	No	BSL
	79-01-6	Trichloroethene	0.00073	0.13	No	BSL
	108-38-3	Xylene (m,p-)	0.033	3.1	No	BSL
	106-42-3					

Notes:
NC - Not calculated
[1] Chemicals with maximum concentrations greater than Region IX tapwater PRGs (see Table 2.8 in Appendix C).
[2] Maximum detected concentration in groundwater at each exposure point.
[3] Derived using the Johnson & Ettinger model (USEPA, 2004), modified for exposure of a construction worker to trench vapor (see Appendix E).
[4] NOC = Not of Concern. The groundwater concentration at or above the solubility limits is not of concern for this pathway (Johnson & Ettinger Model, USEPA, 2004). See Appendix E.
BSL = Below Screening Level.

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
Lewis Pond (Fisher and Wader)	83-32-9	Acenaphthene	.031	.23 (J)	mg/kg	LP-04 / 07-31-01	13/13		0.23	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.29	.9 (J)	mg/kg	LP-1 & OW-402 & OW-503 / 07-31-01	13/13		0.9	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	.02 (J)	.44 (J)	mg/kg	LP-05 / 07-30-01	5/11	.032-.19	0.44	NA	1400	NC	500	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	4500 (J)	11000 (J)	mg/kg	LP-06 / 12-18-02	13/13		11000	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.3	1.1	mg/kg	LP-06 / 12-18-02	13/13		1.1	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	1	13	mg/kg	LP-01 / 12-18-02	7/13	1.1-1.4	13	NA	3.1	NC	10	MCP Method 2 S-1	Yes	ASL
	7440-38-2	Arsenic	3.2	28.2	mg/kg	LP-02 / 07-31-01	13/13		28.2	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	26	127	mg/kg	LP-06 / 07-30-01	13/13		127	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	1	3.4	mg/kg	LP-06 / 12-18-02	13/13		3.4	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.9	3.7	mg/kg	LP-06 / 12-18-02	13/13		3.7	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	1.3	4	mg/kg	LP-06 / 12-18-02	13/13		4	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.19 (J)	.65	mg/kg	LP-01 / 12-18-02	13/13		0.65	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.95	3.9 (J)	mg/kg	LP-06 / 12-18-02, LP-10 / 07-30-01	13/13		3.9	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.12 (J)	1.6 (J)	mg/kg	LP-04 / 07-31-01	12/12		1.6	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	.047 (J)	.1 (J)	mg/kg	LP-04 / 07-31-01	6/13	.21-.37	0.1	NA	1800	NC	NA	NA	No	BSL
	7440-41-7	Beryllium	.25	.89	mg/kg	LP-02 / 07-31-01	9/13	.41-.54	0.89	NA	15	NC	0.7	MCP Method 2 S-1	Yes	ASL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/10	.04-.054	0.054	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.22 (J)	3	mg/kg	LP-10 / 07-30-01	10/13	.4-1.9	3	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	.02	.07 (J)	mg/kg	LP-01 / 12-18-02	8/11	.0051-.007	0.07	NA	2200	NC	500	MCP Method 2 S-1	No	BSL
	85-68-7	Butylbenzylphthalate	.091 (J)	.65	mg/kg	LP-08 / 07-30-01	10/10		0.65	NA	1200	NC	NA	NA	No	BSL
	7440-43-9	Cadmium	.64 (J)	8	mg/kg	LP-10 / 07-30-01	13/13		8	NA	3.7	NC	30	MCP Method 2 S-1	Yes	ASL
	7440-70-2	Calcium [7]	1400 (JB)	6570 (J)	mg/kg	LP-09 / 07-30-01	13/13		6570	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.1 (J)	.28 (J)	mg/kg	LP-10 / 07-30-01	12/13	.21	0.28	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0038 (J)	.0082	mg/kg	LP-04 / 07-31-01	2/11	.0045-.0079	0.0082	NA	36	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/10	.022-.04	0.04	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	35.2	410	mg/kg	LP-06 / 12-18-02	13/13		410	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	1.1	4.1	mg/kg	LP-06 / 12-18-02	13/13		4.1	NA	62	C	7	MCP Method 2 S-1	No	BSL

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	7440-48-4	Cobalt [6]	4.7	25 (J)	mg/kg	LP-06 / 12-18-02	13/13		25	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	49.6	180	mg/kg	LP-06 / 12-18-02	13/13		180	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/10	.66-1.1	1.1	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.1 (J)	.25	mg/kg	LP-06 / 12-18-02	13/13		0.25	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.061 (J)	.16 (J)	mg/kg	LP-10 / 07-30-01	10/10		0.16	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	.059 (J)	.059 (J)	mg/kg	LP-02 / 07-31-01	1/10	.23-.31	0.059	NA	110	NC	100	MCP Method 2 S-1	No	BSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	.054 (J)	.054 (J)	mg/kg	LP-02 / 07-31-01	1/10	.23-.31	0.054	NA	3.4	C	40	MCP Method 2 S-1	No	BSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/9	.23-.31	0.31	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	.052 (J)	.61 (J)	mg/kg	LP-06 / 12-18-02	10/13	.21-.31	0.61	NA	120	NC	400	MCP Method 2 S-1	No	BSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	.043 (J)	.072 (J)	mg/kg	LP-09 / 07-30-01	6/10	.23-.31	0.072	NA	610	NC	NA	NA	No	BSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/9	.23-.31	0.31	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/9	.57-.78	0.78	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	.16 (J)	.16 (J)	mg/kg	LP-09 / 12-18-02	1/13	.21-.37	0.16	NA	240	NC	NA	NA	No	BSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	2	6.1	mg/kg	LP-06 / 12-18-02	13/13		6.1	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.051	.36	mg/kg	LP-04 / 07-31-01	13/13		0.36	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/10	.032-.043	0.043	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/9	.23-.31	0.31	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/9	.23-.31	0.31	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.24 (J)	.72	mg/kg	LP-01 / 12-18-02	13/13		0.72	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	9200	19700	mg/kg	LP-06 / 07-30-01	13/13		19700	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	240 (J)	7600 (J)	mg/kg	LP-06 / 12-18-02	13/13		7600	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	1800 (B)	79000 (J)	mg/kg	LP-06 / 12-18-02	13/13		79000	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	208	1010	mg/kg	LP-08 / 07-30-01	13/13		1010	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.17	.9	mg/kg	LP-06 / 12-18-02	13/13		0.9	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/10	.019-.04	0.04	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.027	.19 (J)	mg/kg	LP-05 / 07-30-01, LP-06 / 12-18-02	13/13		0.19	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	.074 (J)	.55	mg/kg	LP-07 / 07-30-01	11/13	.21-.31	0.55	NA	31	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	.0027 (J)	.0027 (J)	mg/kg	LP-07 / 07-30-01	1/11	.0045-.0079	0.0027	NA	32	C	100	MCP Method 2 S-1	No	BSL
	91-20-3	Naphthalene	.061	.76 (J)	mg/kg	LP-1 & OW-402 & OW-503 / 07-31-01	13/13		0.76	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	8.6	510	mg/kg	LP-06 / 12-18-02	13/13		510	NA	160	NC	300	MCP Method 2 S-1	Yes	ASL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/9	.23-.31	0.31	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/12	.21-.37	0.37	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/10	.04-.054	0.054	NA	0.069	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.69	2.7 (J)	mg/kg	LP-1 & OW-402 & OW-503 / 07-31-01	13/13		2.7	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	.048 (J)	.11 (J)	mg/kg	LP-07 / 07-30-01	9/10	.31	0.11	NA	1800	NC	500	MCP Method 2 S-1	No	BSL
	7440-09-7	Potassium [7]	200 (B)	667	mg/kg	LP-10 / 07-30-01	13/13		667	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	1.9	7.3	mg/kg	LP-06 / 12-18-02	13/13		7.3	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.44 (J)	1.3 (J)	mg/kg	LP-02 / 07-31-01, LP-05 / 07-30-01	13/13		1.3	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	.31	1.9	mg/kg	LP-02 / 07-31-01	3/13	.2-.83	1.9	NA	39	NC	100	MCP Method 2 S-1	No	BSL
	7440-23-5	Sodium [7]	190 (B)	660 (B)	mg/kg	LP-06 / 12-18-02	13/13		660	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.084 (J)	.14 (J)	mg/kg	LP-02 / 07-31-01	7/13	.062-.17	0.14	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.0025 (J)	.0045 (J)	mg/kg	LP-07 / 07-30-01	4/10	.0045-.0079	0.0045	NA	66	NC	500	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.053	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/10	.23-.31	0.31	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	18	84.6 (J)	mg/kg	LP-02 / 07-31-01	13/13		84.6	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	0.079	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 & 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/10	.0045-.0079	0.0079	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	160	477 (J)	mg/kg	LP-10 / 07-30-01	13/13		477	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Neponset River East of South Street (Fisher and Wader)	83-32-9	Acenaphthene	.012	.0205	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	2/3	.0065	0.0205	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.031	.0845	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.0845	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/3	.0053-.0073	0.0073	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	2265	4220	mg/kg	NR-3 / 07-26-01	3/3		4220	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.02	.0725	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.0725	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	ND	ND	mg/kg		0/3	.58-.72	0.72	NA	3.1	NC	10	MCP Method 2 S-1	No	ND, DLBSL
	7440-38-2	Arsenic	.71	1.215	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		1.22	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL

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Scenario Timeframe: Current/Future
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Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	7440-39-3	Barium	14.1	24.2	mg/kg	NR-3 / 07-26-01	3/3		24.2	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.059	.26	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.26	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	71-43-2	Benzene	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.061	.23	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.23	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.059	.24	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.24	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.04	.13	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.13	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.036	.13	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.13	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.041 (J)	.0635 (J)	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	2/2		0.0635	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg		0/3	.24-.32	0.32	NA	15	NC	0.7	MCP Method 2 S-1	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/3	.035-.045	0.045	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.039 (J)	.039 (J)	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	1/3	.23-.26	0.039	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.12	.48	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.48	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	807.5	1140	mg/kg	NR-3 / 07-26-01	3/3		1140	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	24	C	NA	NA	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	5 (J)	5.9 (J)	mg/kg	NR-3 / 07-26-01	3/3		5.9	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.08	.27	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.27	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2.2	2.8	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		2.8	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	4.9	9.4	mg/kg	NR-3 / 07-26-01	3/3		9.4	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/3	.47-.59	0.59	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.0088	.035	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.035	NA	0.062	C	0.7	MCP Method 2 S-1	No	BSL
	132-64-9	Dibenzofuran	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	15	NC	NA	NA	No	ND, DLBSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.9

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT/FUTURE FISHER AND WADER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/3	.5-.65	0.65	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.13	.515	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.515	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.014	.088 (J)	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.088	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/3	.028-.036	0.036	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.036	.135	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.135	NA	0.62	C	0.7	MCP Method 2 S-1	No	BSL
	7439-89-6	Iron [8]	5700	19500	mg/kg	NR-3 / 07-26-01	3/3		19500	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	8.8	21.15	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		21.15	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	1250	2190	mg/kg	NR-3 / 07-26-01	3/3		2190	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	204	586	mg/kg	NR-3 / 07-26-01	3/3		586	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	ND	ND	mg/kg		0/3	.026-.032	0.032	NA	2.3	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/3	.0053-.0073	0.0073	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.007	.037 (J)	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.037	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.0091	.045	mg/kg	NR-3 / 07-26-01	3/3		0.045	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	3 (J)	5.1 (J)	mg/kg	NR-3 / 07-26-01	2/3	3.6	5.1	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	1.8	NC	NA	NA	No	ND, DLBSL

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/3	.035-.045	0.045	NA	0.069	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.12	.49	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.49	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	125	156	mg/kg	NR-3 / 07-26-01	3/3		156	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.14	.58	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		0.58	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	ND	ND	mg/kg		0/3	.079-.1	0.1	NA	39	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	7440-22-4	Silver	ND	ND	mg/kg		0/3	.35-.43	0.43	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	51.95	55.1	mg/kg	NR-3 / 07-26-01	3/3		55.1	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	ND	ND	mg/kg		0/3	.036-.048	0.048	NA	0.52	NC	8	MCP Method 2 S-1	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.053	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/3	.2-.26	0.26	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	9.3 (J)	18.3 (J)	mg/kg	NR-3 / 07-26-01	3/3		18.3	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	0.079	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 & 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/3	.0021-.0029	0.0029	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	28.1 (B)	46.15	mg/kg	NR-1 & OW-401 & OW-502 / 07-26-01	3/3		46.15	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Neponset River West of South Street (Fisher and Wader)	83-32-9	Acenaphthene	.018	.29	mg/kg	NR-6 / 07-26-01	8/8		0.29	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.018	.11	mg/kg	NR-6 / 07-26-01	8/8		0.11	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	.056	.11	mg/kg	NR-7 / 12-18-02	2/7	.005-.012	0.11	NA	1400	NC	500	MCP Method 2 S-1	No	BSL
	7429-90-5	Aluminum [6]	1700	3700 (J)	mg/kg	NR-8 / 12-18-02	8/8		3700	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.035	.6	mg/kg	NR-6 / 07-26-01	8/8		0.6	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	.2	.2	mg/kg	NR-8 / 12-18-02	1/8	.18-.73	0.2	NA	3.1	NC	10	MCP Method 2 S-1	No	BSL
	7440-38-2	Arsenic	1.1	5.9	mg/kg	NR-5 / 12-18-02	8/8		5.9	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	11.3	30.8	mg/kg	NR-8 / 07-25-01	8/8		30.8	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.11	1.7	mg/kg	NR-6 / 07-26-01	8/8		1.7	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.088	1.9	mg/kg	NR-6 / 07-26-01	8/8		1.9	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.092	2.2	mg/kg	NR-6 / 07-26-01	8/8		2.2	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.03	.55	mg/kg	NR-6 / 07-26-01	8/8		0.55	NA	230	NC	100	MCP Method 2 S-1	No	BSL

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Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	207-08-9	Benzo(k)fluoranthene	.063	.89	mg/kg	NR-6 / 07-26-01	8/8		0.89	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.04 (J)	.079 (J)	mg/kg	NR-4 / 07-26-01	4/4		0.079	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/kg		0/8	.19-.25	0.25	NA	1800	NC	NA	NA	No	ND, DLBSL
	7440-41-7	Beryllium	.13	.24	mg/kg	NR-5 / 12-18-02	3/8	.25-.3	0.24	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/5	.04-.044	0.044	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.044 (J)	6.5	mg/kg	NR-4 / 07-26-01	5/8	.3-.42	6.5	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	.0026	.0072	mg/kg	NR-7 / 12-18-02	2/7	.0019-.0027	0.0072	NA	2200	NC	500	MCP Method 2 S-1	No	BSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.13	1.3 (J)	mg/kg	NR-5 / 12-18-02	8/8		1.3	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	548	1400 (JB)	mg/kg	NR-8 / 12-18-02	8/8		1400	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.05 (J)	.34	mg/kg	NR-6 / 07-26-01	4/8	.2-.24	0.34	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	36	NC	NA	NA	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	3.1 (J)	8.6	mg/kg	NR-5 / 12-18-02	8/8		8.6	NA	22	NC	200	MCP Method 2 S-1	No	BSL
	218-01-9	Chrysene	.099	1.9	mg/kg	NR-6 / 07-26-01	8/8		1.9	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2.4 (JB)	3.6	mg/kg	NR-7 / 07-25-01	8/8		3.6	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	3.8	34.4	mg/kg	NR-8 / 07-25-01	8/8		34.4	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/5	.44-.57	0.57	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	53-70-3	Dibenz(a,h)anthracene	.0099	.21	mg/kg	NR-6 / 07-26-01	8/8		0.21	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.12 (J)	.12 (J)	mg/kg	NR-5 / 07-26-01, NR-6 / 07-26-01	2/5	.23-.24	0.12	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg		0/8	.19-.25	0.25	NA	120	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/5	.57-.63	0.63	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	.053 (J)	.053 (J)	mg/kg	NR-4 / 07-26-01	1/8	.19-.25	0.053	NA	240	NC	NA	NA	No	BSL
	100-41-4	Ethylbenzene	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	190	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	206-44-0	Fluoranthene	.24	2.9	mg/kg	NR-7 / 12-18-02	8/8		2.9	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.019	.37 (J)	mg/kg	NR-6 / 07-26-01	8/8		0.37	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/5	.032-.035	0.035	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.034	.7	mg/kg	NR-6 / 07-26-01	8/8		0.7	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	4130	22200	mg/kg	NR-8 / 07-25-01	8/8		22200	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	10.2	84 (J)	mg/kg	NR-8 / 12-18-02	8/8		84	NA	400	NC	300	MCP Method 2 S-1	No	BSL
	7439-95-4	Magnesium [7]	900	2000 (B)	mg/kg	NR-8 / 12-18-02	8/8		2000	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	103	700 (J)	mg/kg	NR-7 / 12-18-02	8/8		700	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.0067	.04	mg/kg	NR-5 / 12-18-02	3/8	.028-.032	0.04	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/5	.0048-.0068	0.0068	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.0084	.24	mg/kg	NR-5 / 07-26-01	7/8	.0077	0.24	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg		0/8	.19-.25	0.25	NA	31	NC	NA	NA	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/7	.0019-.0027	0.0027	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.009	.73	mg/kg	NR-5 / 07-26-01	8/8		0.73	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	3.1 (J)	5.2 (J)	mg/kg	NR-8 / 07-25-01	5/8	3.2-3.7	5.2	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/8	.19-.25	0.25	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/5	.04-.044	0.044	NA	0.069	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	85-01-8	Phenanthrene	.19	1.8	mg/kg	NR-6 / 07-26-01	8/8		1.8	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	1800	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-09-7	Potassium [7]	134	230 (B)	mg/kg	NR-8 / 12-18-02	8/8		230	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.23	2.1	mg/kg	NR-6 / 07-26-01	8/8		2.1	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.11	.31	mg/kg	NR-5 / 12-18-02	3/8	.08-.097	0.31	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/8	.18-.44	0.44	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7440-23-5	Sodium [7]	41.7	76 (B)	mg/kg	NR-5 / 12-18-02	7/8	36.6	76	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	ND	ND	mg/kg		0/8	.037-.092	0.092	NA	0.52	NC	8	MCP Method 2 S-1	No	ND, DLBSL
	108-88-3	Toluene	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	66	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.053	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/5	.23-.25	0.25	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	6.8 (J)	17	mg/kg	NR-5 / 12-18-02, NR-8 / 12-18-02	8/8		17	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	0.079	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 & 106-42-3	Xylene (m,p-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/kg		0/5	.0019-.0027	0.0027	NA	27	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7440-66-6	Zinc	22.8 (B)	99.9	mg/kg	NR-8 / 07-25-01	8/8		99.9	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL
Former Mill Tailrace (Wader)	83-32-9	Acenaphthene	.025	.6	mg/kg	TR-4 / 07-25-01	6/6		0.6	NA	370	NC	1000	MCP Method 2 S-1	No	BSL
	208-96-8	Acenaphthylene	.03	1.3	mg/kg	TR-4 / 07-25-01	6/6		1.3	NA	370	NC	100	MCP Method 2 S-1	No	BSL
	67-64-1	Acetone	ND	ND	mg/kg		0/6	.0074-.025	0.025	NA	1400	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	7429-90-5	Aluminum [6]	5260	14000	mg/kg	TR-5 / 07-25-01	6/6		14000	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	.034	1.4	mg/kg	TR-4 / 07-25-01	6/6		1.4	NA	2200	NC	1000	MCP Method 2 S-1	No	BSL
	7440-36-0	Antimony	.245	.245	mg/kg	TR-3 & OW-409 / 12-16-02	1/6	.67-1.1	0.245	NA	3.1	NC	10	MCP Method 2 S-1	No	BSL
	7440-38-2	Arsenic	1.5	9.3	mg/kg	TR-3 / 07-25-01	6/6		9.3	NA	0.39	C	30	MCP Method 2 S-1	Yes	ASL
	7440-39-3	Barium	12.7	143	mg/kg	TR-3 / 07-25-01	6/6		143	NA	540	NC	1000	MCP Method 2 S-1	No	BSL
	56-55-3	Benz(a)anthracene	.03	4	mg/kg	TR-4 / 07-25-01	6/6		4	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.64	C	40	MCP Method 2 S-1	No	ND, DLBSL
	50-32-8	Benzo(a)pyrene	.025	3.2	mg/kg	TR-4 / 07-25-01	6/6		3.2	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.026	4.6	mg/kg	TR-4 / 07-25-01	6/6		4.6	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.018	1.6	mg/kg	TR-4 / 07-25-01	6/6		1.6	NA	230	NC	100	MCP Method 2 S-1	No	BSL
	207-08-9	Benzo(k)fluoranthene	.018	3.8	mg/kg	TR-4 / 07-25-01	6/6		3.8	NA	6.2	C	7	MCP Method 2 S-1	No	BSL
	65-85-0	Benzoic acid	.042 (J)	.62 (J)	mg/kg	TR-4 / 07-25-01	6/6		0.62	NA	24000	NC	NA	NA	No	BSL
	100-51-6	Benzyl Alcohol	.054 (J)	.066 (J)	mg/kg	TR-3 / 07-25-01	3/6	.19-.25	0.066	NA	1800	NC	NA	NA	No	BSL
	7440-41-7	Beryllium	.315	.59	mg/kg	TR-3 / 07-25-01	3/6	.23-.41	0.59	NA	15	NC	0.7	MCP Method 2 S-1	No	BSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	NA		NA	NA	No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/kg		0/5	.035-.051	0.051	NA	0.22	C	0.7	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	2.9	C	2	MCP Method 2 S-1	No	ND, DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	.046 (J)	.29	mg/kg	TR-3 / 07-25-01, TR-5 / 07-25-01	4/6	.2-.28	0.29	NA	35	C	200	MCP Method 2 S-1	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	NA		NA	NA	No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.82	C	20	MCP Method 2 S-1	No	ND, DLBSL
	75-25-2	Bromoform	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	62	C	100	MCP Method 2 S-1	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.39	NC	50	MCP Method 2 S-1	No	ND, DLBSL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	NA		NA	NA	No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/kg		0/6	.0019-.0087	0.0087	NA	2200	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	1200	NC	NA	NA	No	ND, DLBSL
	7440-43-9	Cadmium	.081	2.1	mg/kg	TR-3 / 07-25-01	5/6	.058	2.1	NA	3.7	NC	30	MCP Method 2 S-1	No	BSL
	7440-70-2	Calcium [7]	578	10700	mg/kg	TR-3 / 07-25-01	6/6		10700	NA	NA		NA	NA	No	NUT
	86-74-8	Carbazole	.17 (J)	.63	mg/kg	TR-4 / 07-25-01	3/6	.19-.25	0.63	NA	24	C	NA	NA	No	BSL
	75-15-0	Carbon disulfide	.0021 (J)	.015 (J)	mg/kg	TR-5 / 07-25-01	4/6	.0019-.0029	0.015	NA	36	NC	NA	NA	No	BSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.22	NC	7	MCP Method 2 S-1	No	ND, DLBSL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	NA		NA	NA	No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	24	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	15	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	3	C	NA	NA	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	NA		NA	NA	No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.22	C	200	MCP Method 2 S-1	No	ND, DLBSL
	74-87-3	Chloromethane	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	4.7	NC	NA	NA	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	490	NC	NA	NA	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	6.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	NA		NA	NA	No	ND, NSV
	7440-47-3	Chromium	5.7 (J)	38 (J)	mg/kg	TR-4 / 07-25-01	6/6		38	NA	22	NC	200	MCP Method 2 S-1	Yes	ASL
	218-01-9	Chrysene	.03	4.5	mg/kg	TR-4 / 07-25-01	6/6		4.5	NA	62	C	7	MCP Method 2 S-1	No	BSL
	7440-48-4	Cobalt [6]	2.1	12.5	mg/kg	TR-3 / 07-25-01	6/6		12.5	NA	NA		NA	NA	No	NSV, NTX
	7440-50-8	Copper [6]	4	53.3	mg/kg	TR-3 / 07-25-01	6/6		53.3	NA	NA		NA	NA	No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/kg		0/5	.49-1.7	1.7	NA	1.1	NC	100	MCP Method 2 S-1	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	.0063	.24	mg/kg	TR-4 / 07-25-01	6/6		0.24	NA	0.062	C	0.7	MCP Method 2 S-1	Yes	ASL
	132-64-9	Dibenzofuran	.082 (J)	.46	mg/kg	TR-4 / 07-25-01	3/5	.2-.25	0.46	NA	15	NC	NA	NA	No	BSL
	124-48-1	Dibromochloromethane	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	1.1	C	10	MCP Method 2 S-1	No	ND, DLBSL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	110	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	53	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	3.4	C	40	MCP Method 2 S-1	No	ND, DLBSL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	1.1	C	1	MCP Method 2 S-1	No	ND, DLBSL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	51	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.28	C	10	MCP Method 2 S-1	No	ND, DLBSL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	12	NC	2	MCP Method 2 S-1	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	4.3	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	6.9	NC	500	MCP Method 2 S-1	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	18	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.34	C	8	MCP Method 2 S-1	No	ND, DLBSL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.78	C	3	MCP Method 2 S-1	No	ND, DLBSL
	84-66-2	Diethylphthalate	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	4900	NC	100	MCP Method 2 S-1	No	ND, DLBSL

TABLE 2.9

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT/FUTURE FISHER AND WADER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	105-67-9	Dimethylphenol (2,4-)	.06 (J)	.072 (J)	mg/kg	TR-4 / 07-25-01	2/6	.19-.27	0.072	NA	120	NC	400	MCP Method 2 S-1	No	BSL
	131-11-3	Dimethylphthalate	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	61000	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	610	NC	NA	NA	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	NA		NA	NA	No	ND, NSV
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/kg		0/4	.5-.73	0.73	NA	12	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	12	NC	1	MCP Method 2 S-1	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	6.1	NC	NA	NA	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg		0/6	.19-.29	0.29	NA	240	NC	NA	NA	No	ND, DLBSL
	100-41-4	Ethylbenzene	.003	.0054	mg/kg	TR-3 / 07-25-01	3/5	.0055-.0087	0.0054	NA	190	NC	500	MCP Method 2 S-1	No	BSL
	206-44-0	Fluoranthene	.072	9	mg/kg	TR-4 / 07-25-01	6/6		9	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	86-73-7	Fluorene	.03	.87	mg/kg	TR-4 / 07-25-01	6/6		0.87	NA	270	NC	1000	MCP Method 2 S-1	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/kg		0/5	.028-.041	0.041	NA	0.3	C	0.7	MCP Method 2 S-1	No	ND, DLBSL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	1.8	NC	5	MCP Method 2 S-1	No	ND, DLBSL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	37	NC	NA	NA	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	6.1	NC	6	MCP Method 2 S-1	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	NA		NA	NA	No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	.017	1.8	mg/kg	TR-4 / 07-25-01	6/6		1.8	NA	0.62	C	0.7	MCP Method 2 S-1	Yes	ASL
	7439-89-6	Iron [8]	7320	19100	mg/kg	TR-3 / 07-25-01	6/6		19100	NA	NA		NA	NA	No	NUT
	78-59-1	Isophorone	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	510	C	NA	NA	No	ND, DLBSL
	7439-92-1	Lead	11.3	850	mg/kg	TR-4 / 07-25-01	6/6		850	NA	400	NC	300	MCP Method 2 S-1	Yes	ASL
	7439-95-4	Magnesium [7]	920	14500	mg/kg	TR-4 / 07-25-01	6/6		14500	NA	NA		NA	NA	No	NUT
	7439-96-5	Manganese	85.2	2500	mg/kg	TR-3 / 07-25-01	6/6		2500	NA	180	NC	NA	NA	Yes	ASL
	7439-97-6	Mercury	.036	.16	mg/kg	TR-5 / 07-25-01	4/6	.026-.028	0.16	NA	2.3	NC	20	MCP Method 2 S-1	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	530	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/kg		0/5	.0065-.022	0.022	NA	9.1	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-57-6	Methylnaphthalene (2-)	.073	.73	mg/kg	TR-4 / 07-25-01	6/6		0.73	NA	5.6	NC	500	MCP Method 2 S-1	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	310	NC	NA	NA	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	.15 (J)	.19 (J)	mg/kg	TR-4 / 07-25-01	3/6	.19-.25	0.19	NA	31	NC	NA	NA	No	BSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/kg		0/6	.0019-.0087	0.0087	NA	32	C	100	MCP Method 2 S-1	No	ND, DLBSL
	91-20-3	Naphthalene	.096	.92	mg/kg	TR-4 / 07-25-01	6/6		0.92	NA	5.6	NC	100	MCP Method 2 S-1	No	BSL
	7440-02-0	Nickel	3.4 (J)	93.1 (J)	mg/kg	TR-4 / 07-25-01	6/6		93.1	NA	160	NC	300	MCP Method 2 S-1	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	18	NC	NA	NA	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	1.8	NC	NA	NA	No	ND, DLBSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg		0/6	.19-.29	0.29	NA	18	NC	NA	NA	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	2	NC	NA	NA	No	ND, DLBSL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	NA		NA	NA	No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	NA		NA	NA	No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/kg		0/5	.035-.051	0.051	NA	0.069	C	NA	NA	No	ND, DLBSL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	99	C	NA	NA	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	3	C	7	MCP Method 2 S-1	No	ND, DLBSL
	85-01-8	Phenanthrene	.19	6.9	mg/kg	TR-4 / 07-25-01	6/6		6.9	NA	230	NC	1000	MCP Method 2 S-1	No	BSL
	108-95-2	Phenol	.07 (J)	.095 (J)	mg/kg	TR-3 / 07-25-01	3/5	.2-.25	0.095	NA	1800	NC	500	MCP Method 2 S-1	No	BSL
	7440-09-7	Potassium [7]	233	875	mg/kg	TR-5 / 07-25-01	6/6		875	NA	NA		NA	NA	No	NUT
	129-00-0	Pyrene	.076	8.5	mg/kg	TR-4 / 07-25-01	6/6		8.5	NA	230	NC	700	MCP Method 2 S-1	No	BSL
	7782-49-2	Selenium	.305	.61	mg/kg	TR-3 / 07-25-01	4/6	.075-.095	0.61	NA	39	NC	400	MCP Method 2 S-1	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg		0/6	.18-.67	0.67	NA	39	NC	100	MCP Method 2 S-1	No	ND, DLBSL

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CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

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Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value [4]	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [5]
	7440-23-5	Sodium [7]	804	3620	mg/kg	TR-5 / 07-25-01	6/6		3620	NA	NA		NA	NA	No	NUT
	100-42-5	Styrene	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	440	NC	20	MCP Method 2 S-1	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.41	C	0.5	MCP Method 2 S-1	No	ND, DLBSL
	127-18-4	Tetrachloroethene	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.48	C	20	MCP Method 2 S-1	No	ND, DLBSL
	7440-28-0	Thallium	.044 (J)	.19	mg/kg	TR-3 & OW-409 / 12-16-02	5/6	.044	0.19	NA	0.52	NC	8	MCP Method 2 S-1	No	BSL
	108-88-3	Toluene	.0026	.0058 (J)	mg/kg	TR-5 / 07-25-01	4/5	.0055	0.0058	NA	66	NC	500	MCP Method 2 S-1	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	6.2	NC	400	MCP Method 2 S-1	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	200	NC	100	MCP Method 2 S-1	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.73	C	2	MCP Method 2 S-1	No	ND, DLBSL
	79-01-6	Trichloroethene	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.053	C	70	MCP Method 2 S-1	No	ND, DLBSL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	39	NC	NA	NA	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	610	NC	1000	MCP Method 2 S-1	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/kg		0/5	.2-.29	0.29	NA	0.61	NC	40	MCP Method 2 S-1	No	ND, DLBSL
	7440-62-2	Vanadium	12 (J)	49.1 (J)	mg/kg	TR-3 / 07-25-01	6/6		49.1	NA	7.8	NC	400	MCP Method 2 S-1	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	43	NC	NA	NA	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/kg		0/5	.0019-.0087	0.0087	NA	0.079	C	0.3	MCP Method 2 S-1	No	ND, DLBSL
	108-38-3 & 106-42-3	Xylene (m,p-)	.0048	.0086	mg/kg	TR-3 / 07-25-01	3/5	.0055-.0087	0.0086	NA	27	NC	500	MCP Method 2 S-1	No	BSL
	95-47-6	Xylene (o-)	.0033	.0054	mg/kg	TR-3 / 07-25-01	3/5	.0055-.0087	0.0054	NA	27	NC	500	MCP Method 2 S-1	No	BSL
	7440-66-6	Zinc	24.6 (B)	264	mg/kg	TR-3 / 07-25-01	6/6		264	NA	2300	NC	2500	MCP Method 2 S-1	No	BSL

TABLE 2.9

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT/FUTURE FISHER AND WADER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:
Shaded chemicals are selected as COPCs.
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
C - Screening toxicity value based on cancer effects
NA - Not Applicable/Not Available
NC - Screening toxicity value based on non-cancer effects
ND - Not Detected
NC - Screening toxicity value based on non-cancer effects

(1) Minimum/Maximum detected concentration data qualifiers
J- The result is estimated (uncertain) due to QC exceedancE(s).
JB- The chemical was also detected in an associated non-matrix matched Blank and the result is estimated (uncertain) due to QC exceedance(s).
B- The chemical was also detected in an associated non-matrix matched Blank.

(2) Maximum detected concentration, or if never detected, maximum detection limit

(3) United States Environmental Protection Agency (USEPA) Region IX. 2004. Region IX Preliminary Remediation Goal table. PRGs for residential soil are used. Non-cancer PRGs are adjusted to account for a HI of 0.1.
The PRG for acenaphthene is used for acenaphthylene.
The PRG for pyrene is used for benzo(g,h,i)perylene.
The PRG for chromium VI is used for chromium.
The PRG for hydrogen cyanide is used for cyanide (weak acid dissociable).
The PRG for 1,3-dichloropropene is used for cis- and trans-1,3-dichloropropene.
The PRG for naphthalene is used for 2-methylnaphthalene.
The PRG for pyrene is used for phenanthrene.
The PRG for xylenes (total) is used for m,p-xylene and o-xylene.

(4) Massachusetts Department of Environmental Protection (MADEP). 2003. Massachusetts Contingency Plan (MCP). 310 CMR 40.0985(6). Table 5 – Method 2 Direct Contact S-1 Soil Concentrations.
The standard for chromium VI is used for chromium.
The standard for 1,3-dichloropropene is used for cis- and trans-dichloropropene.
The standard for xylenes (total) is used for m,p-xylenes and o-xylene.

(5) Rationale for Selection or Deletion:
ASL - Above Screening Level
BSL - Below Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below Screening Level
ND - Not Detected
NSV - No Screening Value
NTX - No Toxicity Information
NUT - Essential Nutrient
TX - Toxicity Information Available

(6) USEPA Region 1 does not endorse quantitative evaluation of risk for these chemicals (personal communication, USEPA Region 1 risk assessor, Sarah Levinson, 2004 and Region I Risk Update, September 1999) These chemicals will not be evaluated.

(7) USEPA Region 1 does not quantitatively evaluate these chemicals for human effects since they are considered essential nutrients and present little hazard to humans. These chemicals, if detected will be evaluated qualitatively.

(8) USEPA Region 1 does not endorse quantitative evaluation of risk for these chemicals (Region 1 Risk Update, September 1999). These chemicals, if detected, will be evaluated qualitatively

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		COPC Flag	Rationale for Contaminant Deletion or Selection [4]
Neponset River East of South Street (Fisher and Wader)	83-32-9	Acenaphthene	0.000028	0.000028	mg/L	SW-103 / 08-01-01	1/4	.00001-.000025	0.000028	NA	0.037	NC	No	BSL
	208-96-8	Acenaphthylene	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.037	NC	No	ND, DLBSL
	67-64-1	Acetone	.0011 (J)	.0011 (J)	mg/L	SW-102 / 08-01-01	1/4	.005	0.0011	NA	0.55	NC	No	BSL
	7429-90-5	Aluminum - Total [5]	0.0605	0.0607	mg/L	SW-103 / 04-04-01	2/4	.0556	0.0607	NA	NA		No	NSV, NTX
	120-12-7	Anthracene	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.18	NC	No	ND, DLBSL
	7440-36-0	Antimony - Total	ND	ND	mg/L		0/4	.0111	0.0111	NA	0.0015	NC	No	ND, DLASL
	7440-38-2	Arsenic - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.000045	C	No	ND, DLASL
	7440-39-3	Barium - Total	0.0148	0.0197	mg/L	SW-103 / 08-01-01	4/4		0.0197	NA	0.26	NC	No	BSL
	56-55-3	Benz(a)anthracene	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.000092	C	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/L		0/4	.002	0.002	NA	0.00035	C	No	ND, DLASL
	50-32-8	Benzo(a)pyrene	.0000028 (J)	.0000043 (J)	mg/L	SW-102 / 08-01-01	2/4	.00001-.000015	0.0000043	NA	0.0000092	C	No	BSL, DLASL
	205-99-2	Benzo(b)fluoranthene	.0000063 (J)	.0000063 (J)	mg/L	SW-102 / 08-01-01	1/4	.0000049-.000025	0.0000063	NA	0.000092	C	No	BSL
	191-24-2	Benzo(g,h,i)perylene	.0000062 (J)	.0000073 (J)	mg/L	SW-103 / 08-01-01	2/4	.000025	0.0000073	NA	0.018	NC	No	BSL
	207-08-9	Benzo(k)fluoranthene	ND	ND	mg/L		0/4	.0000048-.000025	0.000025	NA	0.00092	C	No	ND, DLBSL
	65-85-0	Benzoic acid	ND	ND	mg/L		0/3	.002-.01	0.01	NA	15	NC	No	ND, DLBSL
	100-51-6	Benzyl Alcohol	.001 (J)	.001 (J)	mg/L	SW-103 / 04-04-01	1/4	.002	0.001	NA	1.1	NC	No	BSL
	7440-41-7	Beryllium - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.0073	NC	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/4	.00035-.00086	0.00086	NA	0.00001	C	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/4	.002	0.002	NA	0.00027	C	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	.00049 (J)	.00057 (J)	mg/L	SW-102 / 04-05-01	2/4	.002	0.00057	NA	0.0048	C	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.00018	C	No	ND, DLASL
	75-25-2	Bromoform	ND	ND	mg/L		0/4	.002	0.002	NA	0.0085	C	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/L		0/4	.002-.005	0.005	NA	0.00087	NC	No	ND, DLASL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/4	.00035-.00086	0.00086	NA	NA		No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.7	NC	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/4	.002	0.002	NA	0.73	NC	No	ND, DLBSL
	7440-43-9	Cadmium - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.0018	NC	No	ND, DLBSL
	7440-70-2	Calcium - Total [6]	7.83	16.6	mg/L	SW-103 / 08-01-01	4/4		16.6	NA	NA		No	NUT
	86-74-8	Carbazole	ND	ND	mg/L		0/4	.002	0.002	NA	0.0034	C	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/4	.002	0.002	NA	0.1	NC	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/4	.002-.005	0.005	NA	0.00017	C	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.015	NC	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/4	.002	0.002	NA	0.011	NC	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.0046	C	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/L		0/4	.002	0.002	NA	0.00017	C	No	ND, DLASL
	74-87-3	Chloromethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.016	NC	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.049	NC	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.003	NC	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	7440-47-3	Chromium - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.011	NC	No	ND, DLBSL
	218-01-9	Chrysene	.0000054 (J)	.0000054 (J)	mg/L	SW-102 / 08-01-01	1/4	.0000048-.000025	0.0000054	NA	0.0092	C	No	BSL
	7440-48-4	Cobalt - Total [5]	ND	ND	mg/L		0/4	.0011	0.0011	NA	NA		No	NSV, NTX
	7440-50-8	Copper - Total [5]	0.0019	0.0021	mg/L	SW-103 / 04-04-01	4/4		0.0021	NA	NA		No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/4	.005	0.005	NA	0.00062	NC	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	mg/L		0/4	.0000043-.000025	0.000025	NA	0.0000092	C	No	ND, DLASL
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/4	.002	0.002	NA	0.0012	NC	No	ND, DLASL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.00013	C	No	ND, DLASL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.037	NC	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.018	NC	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0005	C	No	ND, DLASL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/4	.00035-.00086	0.00086	NA	0.00015	C	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.081	NC	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.00012	C	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.034	NC	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0061	NC	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.012	NC	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.011	NC	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.00016	C	No	ND, DLASL

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0004	C	No	ND, DLASL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0004	C	No	ND, DLASL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/4	.002	0.002	NA	2.9	NC	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.073	NC	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/L		0/2	.002	0.002	NA	36	NC	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/4	.002	0.002	NA	0.36	NC	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/4	.002-.01	0.01	NA	0.00036	NC	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/3	.005-.01	0.01	NA	0.0073	NC	No	ND, DLASL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0073	NC	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0036	NC	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/L		0/4	.002	0.002	NA	0.15	NC	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/4	.002	0.002	NA	0.13	NC	No	ND, DLBSL
	206-44-0	Fluoranthene	.0000096 (J)	0.000014	mg/L	SW-102 / 08-01-01	2/4	.000025	0.000014	NA	0.15	NC	No	BSL
	86-73-7	Fluorene	0.000017	0.000017	mg/L	SW-103 / 08-01-01	1/4	.00001-.000025	0.000017	NA	0.024	NC	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/4	.00035-.00086	0.00086	NA	0.000042	C	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/4	.002	0.002	NA	0.00086	C	No	ND, DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/4	.002-.01	0.01	NA	0.022	NC	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.0036	NC	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.000092	C	No	ND, DLBSL
	7439-89-6	Iron - Total [7]	0.175	.394 (J)	mg/L	SW-103 / 08-01-01	4/4		0.394	NA	NA		No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/4	.002	0.002	NA	0.071	C	No	ND, DLBSL
	7439-92-1	Lead - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.015		No	ND, DLBSL
	7439-95-4	Magnesium - Total [6]	2.16	4.2	mg/L	SW-103 / 08-01-01	4/4		4.2	NA	NA		No	NUT
	7439-96-5	Manganese - Total	0.0263	0.108	mg/L	SW-103 / 08-01-01	4/4		0.108	NA	0.088	NC	Yes	ASL
	7439-97-6	Mercury - Total	ND	ND	mg/L		0/4	.000005	0.000005	NA	0.0011	NC	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.2	NC	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/4	.005	0.005	NA	0.0043	C	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.00062	NC	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.18	NC	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.018	NC	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/4	.002	0.002	NA	0.011	C	No	ND, DLBSL
	91-20-3	Naphthalene	.0000082 (J)	0.000028	mg/L	SW-103 / 08-01-01	2/4	.000025	0.000028	NA	0.00062	NC	No	BSL
	7440-02-0	Nickel - Total	0.0013	0.0013	mg/L	SW-102 / 08-01-01, SW-	2/4	.0011	0.0013	NA	0.073	NC	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.011	NC	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0011	NC	No	ND, DLASL
	100-01-6	Nitroaniline (4-)	.00071 (J)	.00071 (J)	mg/L	SW-103 / 04-04-01	1/4	.002	0.00071	NA	0.0032	C	No	BSL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/4	.002	0.002	NA	0.00034	NC	No	ND, DLASL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/4	.00035-.00086	0.00086	NA	0.0000096	C	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.014	C	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/4	.002-.005	0.005	NA	0.00056	C	No	ND, DLASL
	85-01-8	Phenanthrene	0.000012	0.000028	mg/L	SW-103 / 08-01-01	2/4	.000025	0.000028	NA	0.018	NC	No	BSL
	108-95-2	Phenol	ND	ND	mg/L		0/4	.002	0.002	NA	1.1	NC	No	ND, DLBSL
	9/7/7440	Potassium - Total [6]	1.42	3.19	mg/L	SW-102 / 08-01-01	4/4		3.19	NA	NA		No	NUT
	129-00-0	Pyrene	.0000061 (J)	0.000011	mg/L	SW-102 / 08-01-01	2/4	.000025	0.000011	NA	0.018	NC	No	BSL
	7782-49-2	Selenium - Total	0.0023	0.0023	mg/L	SW-102 / 04-05-01	1/4	.0011	0.0023	NA	0.018	NC	No	BSL
	7440-22-4	Silver - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.018	NC	No	ND, DLBSL
	7440-23-5	Sodium - Total [6]	32.6	45.5	mg/L	SW-103 / 08-01-01	4/4		45.5	NA	NA		No	NUT
	100-42-5	Styrene	ND	ND	mg/L		0/4	.002	0.002	NA	0.16	NC	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.000055	C	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/4	.002	0.002	NA	0.0001	C	No	ND, DLASL
	7440-28-0	Thallium - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.00024	NC	No	ND, DLASL
	108-88-3	Toluene	ND	ND	mg/L		0/4	.002	0.002	NA	0.072	NC	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.00072	NC	No	ND, DLBSL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.32	NC	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0002	C	No	ND, DLASL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/4	.002	0.002	NA	0.000028	C	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.13	NC	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.36	NC	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.00036	NC	No	ND, DLASL
	7440-62-2	Vanadium - Total	ND	ND	mg/L		0/4	.0111	0.0111	NA	0.0036	NC	No	ND, DLASL

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/4	.002	0.002	NA	0.041	NC	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/4	.002	0.002	NA	0.00002	C	No	ND, DLASL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/L		0/4	.00059-.0006	0.0006	NA	0.021	NC	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.021	NC	No	ND, DLBSL
	7440-66-6	Zinc - Total	0.024	0.024	mg/L	SW-102 / 08-01-01	1/4	.0111	0.024	NA	1.1	NC	No	BSL
Neponset River West of South Street (Fisher and Wader)	83-32-9	Acenaphthene	0.000019	0.000025	mg/L	SW-105 / 08-01-01	2/4	.000025	0.000025	NA	0.037	NC	No	BSL
	208-96-8	Acenaphthylene	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.037	NC	No	ND, DLBSL
	67-64-1	Acetone	.0012 (J)	.0012 (J)	mg/L	SW-105 / 08-01-01	1/4	.005	0.0012	NA	0.55	NC	No	BSL
	7429-90-5	Aluminum - Total [5]	0.0559	0.0683	mg/L	SW-105 / 04-04-01	3/4	.0556	0.0683	NA	NA		No	NSV, NTX
	120-12-7	Anthracene	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.18	NC	No	ND, DLBSL
	7440-36-0	Antimony - Total	ND	ND	mg/L		0/4	.0111	0.0111	NA	0.0015	NC	No	ND, DLASL
	7440-38-2	Arsenic - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.000045	C	No	ND, DLASL
	7440-39-3	Barium - Total	0.0147	0.0227	mg/L	SW-105 / 08-01-01	4/4		0.0227	NA	0.26	NC	No	BSL
	56-55-3	Benz(a)anthracene	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.000092	C	No	ND, DLBSL
	71-43-2	Benzene	ND	ND	mg/L		0/4	.002	0.002	NA	0.00035	C	No	ND, DLASL
	50-32-8	Benzo(a)pyrene	.0000039 (J)	.000006 (J)	mg/L	SW-108 / 08-01-01	2/4	.00001	0.000006	NA	0.0000092	C	No	BSL, DLASL
	205-99-2	Benzo(b)fluoranthene	.000006 (J)	.0000062 (J)	mg/L	SW-108 / 08-01-01	2/4	.000025	0.0000062	NA	0.000092	C	No	BSL
	191-24-2	Benzo(g,h,i)perylene	0.000011	0.000012	mg/L	SW-108 / 08-01-01	2/4	.000025	0.000012	NA	0.018	NC	No	BSL
	207-08-9	Benzo(k)fluoranthene	.0000052 (J)	.0000052 (J)	mg/L	SW-108 / 08-01-01	1/4	.0000048-.000025	0.0000052	NA	0.00092	C	No	BSL
	65-85-0	Benzoic acid	ND	ND	mg/L		0/4	.002-.01	0.01	NA	15	NC	No	ND, DLBSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/4	.002	0.002	NA	1.1	NC	No	ND, DLBSL
	7440-41-7	Beryllium - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.0073	NC	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/4	.00035-.00087	0.00087	NA	0.00001	C	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/4	.002	0.002	NA	0.00027	C	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	.00075 (J)	.0015 (J)	mg/L	SW-108 / 04-04-01	2/4	.002	0.0015	NA	0.0048	C	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.00018	C	No	ND, DLASL
	75-25-2	Bromoform	ND	ND	mg/L		0/4	.002	0.002	NA	0.0085	C	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/L		0/4	.002-.005	0.005	NA	0.00087	NC	No	ND, DLASL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/4	.00035-.00087	0.00087	NA	NA		No	ND, NSV
	78-93-3	Butanone (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.7	NC	No	ND, DLBSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/4	.002	0.002	NA	0.73	NC	No	ND, DLBSL
	7440-43-9	Cadmium - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.0018	NC	No	ND, DLBSL
	7440-70-2	Calcium - Total [6]	8.18	17.1	mg/L	SW-105 / 08-01-01	4/4		17.1	NA	NA		No	NUT
	86-74-8	Carbazole	ND	ND	mg/L		0/4	.002	0.002	NA	0.0034	C	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/4	.002	0.002	NA	0.1	NC	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/4	.002-.005	0.005	NA	0.00017	C	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.015	NC	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/4	.002	0.002	NA	0.011	NC	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.0046	C	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/L		0/4	.002	0.002	NA	0.00017	C	No	ND, DLASL
	74-87-3	Chloromethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.016	NC	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.049	NC	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.003	NC	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	7440-47-3	Chromium - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.011	NC	No	ND, DLBSL
	218-01-9	Chrysene	ND	ND	mg/L		0/4	.0000048-.000025	0.000025	NA	0.0092	C	No	ND, DLBSL
	7440-48-4	Cobalt - Total [5]	ND	ND	mg/L		0/4	.0011	0.0011	NA	NA		No	NSV, NTX
	7440-50-8	Copper - Total [5]	0.0021	0.0025	mg/L	SW-108 / 04-04-01	4/4		0.0025	NA	NA		No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/4	.005	0.005	NA	0.00062	NC	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.0000092	C	No	ND, DLASL
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/4	.002	0.002	NA	0.0012	NC	No	ND, DLASL
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.00013	C	No	ND, DLASL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.037	NC	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.018	NC	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0005	C	No	ND, DLASL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/4	.00035-.00087	0.00087	NA	0.00015	C	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.081	NC	No	ND, DLBSL

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.00012	C	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.034	NC	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0061	NC	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.012	NC	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.011	NC	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.00016	C	No	ND, DLASL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0004	C	No	ND, DLASL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0004	C	No	ND, DLASL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/4	.002	0.002	NA	2.9	NC	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.073	NC	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/L		0/2	.002	0.002	NA	36	NC	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/4	.002	0.002	NA	0.36	NC	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/4	.002-.01	0.01	NA	0.00036	NC	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/4	.005-.01	0.01	NA	0.0073	NC	No	ND, DLASL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0073	NC	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0036	NC	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/L		0/4	.002	0.002	NA	0.15	NC	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/4	.002	0.002	NA	0.13	NC	No	ND, DLBSL
	206-44-0	Fluoranthene	.0000076 (J)	.0000097 (J)	mg/L	SW-105 / 08-01-01	2/4	.000025	0.0000097	NA	0.15	NC	No	BSL
	86-73-7	Fluorene	0.00001	0.000013	mg/L	SW-105 / 08-01-01	2/4	.000025	0.000013	NA	0.024	NC	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/4	.00035-.00087	0.00087	NA	0.000042	C	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/4	.002	0.002	NA	0.00086	C	No	ND, DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/4	.002-.01	0.01	NA	0.022	NC	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.0036	NC	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.000092	C	No	ND, DLBSL
	7439-89-6	Iron - Total [7]	0.193	.555 (J)	mg/L	SW-105 / 08-01-01	4/4		0.555	NA	NA		No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/4	.002	0.002	NA	0.071	C	No	ND, DLBSL
	7439-92-1	Lead - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.015		No	ND, DLBSL
	7439-95-4	Magnesium - Total [6]	2.27	4.3	mg/L	SW-105 / 08-01-01	4/4		4.3	NA	NA		No	NUT
	7439-96-5	Manganese - Total	0.0285	0.194	mg/L	SW-105 / 08-01-01	4/4		0.194	NA	0.088	NC	Yes	ASL
	7439-97-6	Mercury - Total	ND	ND	mg/L		0/4	.000005	0.000005	NA	0.0011	NC	No	ND, DLBSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.2	NC	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/4	.005	0.005	NA	0.0043	C	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/L		0/4	.00001-.000025	0.000025	NA	0.00062	NC	No	ND, DLBSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.18	NC	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.018	NC	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/4	.002	0.002	NA	0.011	C	No	ND, DLBSL
	91-20-3	Naphthalene	0.000025	0.00003	mg/L	SW-105 / 08-01-01	2/4	.000025	0.00003	NA	0.00062	NC	No	BSL
	7440-02-0	Nickel - Total	0.0011	0.0011	mg/L	SW-105 / 08-01-01, SW-	2/4	.0011	0.0011	NA	0.073	NC	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.011	NC	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0011	NC	No	ND, DLASL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0032	C	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/4	.002	0.002	NA	0.00034	NC	No	ND, DLASL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/4	.002	0.002	NA	NA		No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/4	.00035-.00087	0.00087	NA	0.0000096	C	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.014	C	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/4	.002-.005	0.005	NA	0.00056	C	No	ND, DLASL
	85-01-8	Phenanthrene	0.000024	0.000026	mg/L	SW-105 / 08-01-01	2/4	.000025	0.000026	NA	0.018	NC	No	BSL
	108-95-2	Phenol	ND	ND	mg/L		0/4	.002	0.002	NA	1.1	NC	No	ND, DLBSL
	9/7/7440	Potassium - Total [6]	1.36	3.08	mg/L	SW-105 / 08-01-01	4/4		3.08	NA	NA		No	NUT
	129-00-0	Pyrene	.0000063 (J)	.0000063 (J)	mg/L	SW-105 / 08-01-01	1/4	.00001-.000025	0.0000063	NA	0.018	NC	No	BSL
	7782-49-2	Selenium - Total	0.0019	0.0019	mg/L	SW-108 / 04-04-01	1/4	.0011	0.0019	NA	0.018	NC	No	BSL
	7440-22-4	Silver - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.018	NC	No	ND, DLBSL
	7440-23-5	Sodium - Total [6]	31.5	42.7	mg/L	SW-105 / 08-01-01	4/4		42.7	NA	NA		No	NUT
	100-42-5	Styrene	ND	ND	mg/L		0/4	.002	0.002	NA	0.16	NC	No	ND, DLBSL
	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.000055	C	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/4	.002	0.002	NA	0.0001	C	No	ND, DLASL
	7440-28-0	Thallium - Total	ND	ND	mg/L		0/4	.0011	0.0011	NA	0.00024	NC	No	ND, DLASL
	108-88-3	Toluene	ND	ND	mg/L		0/4	.002	0.002	NA	0.072	NC	No	ND, DLBSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.00072	NC	No	ND, DLASL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.32	NC	No	ND, DLBSL

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.0002	C	No	ND, DLASL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/4	.002	0.002	NA	0.000028	C	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/4	.002	0.002	NA	0.13	NC	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.36	NC	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.00036	NC	No	ND, DLASL
	7440-62-2	Vanadium - Total	ND	ND	mg/L		0/4	.0111	0.0111	NA	0.0036	NC	No	ND, DLASL
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/4	.002	0.002	NA	0.041	NC	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/4	.002	0.002	NA	0.00002	C	No	ND, DLASL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/L		0/4	.00059-.0006	0.0006	NA	0.021	NC	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/4	.002	0.002	NA	0.021	NC	No	ND, DLBSL
	7440-66-6	Zinc - Total	0.0112	0.0112	mg/L	SW-108 / 04-04-01	1/4	.0111	0.0112	NA	1.1	NC	No	BSL
Former Mill Tailrace (Wader)	83-32-9	Acenaphthene	0.0002	0.00039	mg/L	SW-107 / 08-01-01	5/6	.000025	0.00039	NA	0.037	NC	No	BSL
	208-96-8	Acenaphthylene	.000044 (J)	0.00027	mg/L	OW-302 / 08-01-01, SW-	6/6		0.00027	NA	0.037	NC	No	BSL
	67-64-1	Acetone	.0041 (J)	.0061 (J)	mg/L	SW-106 / 08-01-01	3/6	.005	0.0061	NA	0.55	NC	No	BSL
	7429-90-5	Aluminum - Total [5]	1.34 (J)	18	mg/L	SW-107 / 08-01-01	6/6		18	NA	NA		No	NSV, NTX
	120-12-7	Anthracene	0.00003	0.00019	mg/L	SW-106 / 08-01-01	6/6		0.00019	NA	0.18	NC	No	BSL
	7440-36-0	Antimony - Total	ND	ND	mg/L		0/6	.0111	0.0111	NA	0.0015	NC	No	ND, DLASL
	7440-38-2	Arsenic - Total	0.0057	0.028	mg/L	OW-302 / 08-01-01	6/6		0.028	NA	0.000045	C	Yes	ASL
	7440-39-3	Barium - Total	.0175 (J)	0.219	mg/L	SW-107 / 08-01-01	6/6		0.219	NA	0.26	NC	No	BSL
	56-55-3	Benz(a)anthracene	0.000085	0.0006	mg/L	SW-106 / 08-01-01	5/6	.000027	0.0006	NA	0.000092	C	Yes	ASL
	71-43-2	Benzene	ND	ND	mg/L		0/6	.002	0.002	NA	0.00035	C	No	ND, DLASL
	50-32-8	Benzo(a)pyrene	.000041 (J)	0.00089	mg/L	SW-106 / 08-01-01	6/6		0.00089	NA	0.0000092	C	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	.000033 (J)	0.0009	mg/L	SW-106 / 08-01-01	6/6		0.0009	NA	0.000092	C	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	.00003 (J)	0.0005	mg/L	OW-302 / 08-01-01	6/6		0.0005	NA	0.018	NC	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.000078	0.00047	mg/L	SW-106 / 08-01-01	5/6	.000027	0.00047	NA	0.00092	C	No	BSL
	65-85-0	Benzoic acid	ND	ND	mg/L		0/6	.002-.01	0.01	NA	15	NC	No	ND, DLBSL
	100-51-6	Benzyl Alcohol	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	1.1	NC	No	ND, DLBSL
	7440-41-7	Beryllium - Total	ND	ND	mg/L		0/6	.0011	0.0011	NA	0.0073	NC	No	ND, DLBSL
	111-91-1	bis(2-Chloroethoxy)methane	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	NA		No	ND, NSV
	111-44-4	bis(2-Chloroethyl)ether	ND	ND	mg/L		0/6	.00035-.00085	0.00085	NA	0.00001	C	No	ND, DLASL
	108-60-1	bis(2-Chloroisopropyl)ether	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.00027	C	No	ND, DLASL
	117-81-7	bis(2-Ethylhexyl)phthalate	.00065 (J)	.0012 (J)	mg/L	SW-107 / 04-04-01	3/6	.002	0.0012	NA	0.0048	C	No	BSL
	74-97-5	Bromochloromethane	ND	ND	mg/L		0/6	.002	0.002	NA	NA		No	ND, NSV
	75-27-4	Bromodichloromethane	ND	ND	mg/L		0/6	.002	0.002	NA	0.00018	C	No	ND, DLASL
	75-25-2	Bromoform	ND	ND	mg/L		0/6	.002	0.002	NA	0.0085	C	No	ND, DLBSL
	74-83-9	Bromomethane	ND	ND	mg/L		0/6	.002-.005	0.005	NA	0.00087	NC	No	ND, DLASL
	101-55-3	Bromophenyl-phenylether (4-)	ND	ND	mg/L		0/6	.00035-.00085	0.00085	NA	NA		No	ND, NSV
	78-93-3	Butanone (2-)	.0019 (J)	.0019 (J)	mg/L	SW-107 / 08-01-01	1/6	.002	0.0019	NA	0.7	NC	No	BSL
	85-68-7	Butylbenzylphthalate	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.73	NC	No	ND, DLBSL
	7440-43-9	Cadmium - Total	0.0015	0.0015	mg/L	SW-107 / 08-01-01	1/6	.0011	0.0015	NA	0.0018	NC	No	BSL
	7440-70-2	Calcium - Total [6]	9.73	25.4	mg/L	SW-106 / 04-04-01	6/6		25.4	NA	NA		No	NUT
	86-74-8	Carbazole	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.0034	C	No	ND, DLBSL
	75-15-0	Carbon disulfide	ND	ND	mg/L		0/6	.002	0.002	NA	0.1	NC	No	ND, DLBSL
	56-23-5	Carbon tetrachloride	ND	ND	mg/L		0/6	.002-.005	0.005	NA	0.00017	C	No	ND, DLASL
	59-50-7	Chloro-3-methylphenol (4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	NA		No	ND, NSV
	106-47-8	Chloroaniline (4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.015	NC	No	ND, DLBSL
	108-90-7	Chlorobenzene	ND	ND	mg/L		0/6	.002	0.002	NA	0.011	NC	No	ND, DLBSL
	75-00-3	Chloroethane	ND	ND	mg/L		0/6	.002	0.002	NA	0.0046	C	No	ND, DLBSL
	110-75-8	Chloroethylvinyl ether (2-)	ND	ND	mg/L		0/6	.002	0.002	NA	NA		No	ND, NSV
	67-66-3	Chloroform	ND	ND	mg/L		0/6	.002	0.002	NA	0.00017	C	No	ND, DLASL
	74-87-3	Chloromethane	ND	ND	mg/L		0/6	.002	0.002	NA	0.016	NC	No	ND, DLBSL
	91-58-7	Chloronaphthalene (2-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.049	NC	No	ND, DLBSL
	95-57-8	Chlorophenol (2-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.003	NC	No	ND, DLBSL
	7005-72-3	Chlorophenyl-phenylether (4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	NA		No	ND, NSV
	7440-47-3	Chromium - Total	.0032 (J)	0.0383	mg/L	SW-107 / 08-01-01	4/6	.0075-.0087	0.0383	NA	0.011	NC	Yes	ASL
	218-01-9	Chrysene	.000036 (J)	0.00098	mg/L	SW-106 / 08-01-01	6/6		0.00098	NA	0.0092	C	No	BSL
	7440-48-4	Cobalt - Total [5]	0.0018	0.009	mg/L	SW-107 / 08-01-01	5/6	.0011	0.009	NA	NA		No	NSV, NTX
	7440-50-8	Copper - Total [5]	.0085 (J)	0.0905	mg/L	SW-107 / 08-01-01	6/6		0.0905	NA	NA		No	NUT
	WAD CN	Cyanide (weak acid dissociable)	ND	ND	mg/L		0/6	.005	0.005	NA	0.00062	NC	No	ND, DLASL
	53-70-3	Dibenz(a,h)anthracene	0.000065	0.00012	mg/L	OW-302 / 08-01-01	3/6	.000025-.000026	0.00012	NA	0.0000092	C	Yes	ASL
	132-64-9	Dibenzofuran	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.0012	NC	No	ND, DLASL

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Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		COPC Flag	Rationale for Contaminant Deletion or Selection [4]
	124-48-1	Dibromochloromethane	ND	ND	mg/L		0/6	.002	0.002	NA	0.00013	C	No	ND, DLASL
	95-50-1	Dichlorobenzene (1,2-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.037	NC	No	ND, DLBSL
	541-73-1	Dichlorobenzene (1,3-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.018	NC	No	ND, DLBSL
	106-46-7	Dichlorobenzene (1,4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.0005	C	No	ND, DLASL
	91-94-1	Dichlorobenzidine (3,3'-)	ND	ND	mg/L		0/6	.00035-.00085	0.00085	NA	0.00015	C	No	ND, DLASL
	75-34-3	Dichloroethane (1,1-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.081	NC	No	ND, DLBSL
	107-06-2	Dichloroethane (1,2-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.00012	C	No	ND, DLASL
	75-35-4	Dichloroethene (1,1-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.034	NC	No	ND, DLBSL
	156-59-2	Dichloroethene (cis-1,2-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.0061	NC	No	ND, DLBSL
	156-60-5	Dichloroethene (trans-1,2-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.012	NC	No	ND, DLBSL
	120-83-2	Dichlorophenol (2,4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.011	NC	No	ND, DLBSL
	78-87-5	Dichloropropane (1,2-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.00016	C	No	ND, DLASL
	10061-01-5	Dichloropropene (cis-1,3-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.0004	C	No	ND, DLASL
	10061-02-6	Dichloropropene (trans-1,3-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.0004	C	No	ND, DLASL
	84-66-2	Diethylphthalate	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	2.9	NC	No	ND, DLBSL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.073	NC	No	ND, DLBSL
	131-11-3	Dimethylphthalate	ND	ND	mg/L		0/3	.002	0.002	NA	36	NC	No	ND, DLBSL
	84-74-2	Di-n-butylphthalate	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.36	NC	No	ND, DLBSL
	534-52-1	Dinitro-2-methylphenol (4,6-)	ND	ND	mg/L		0/6	.002-.01	0.01	NA	0.00036	NC	No	ND, DLASL
	51-28-5	Dinitrophenol (2,4-)	ND	ND	mg/L		0/6	.005-.01	0.01	NA	0.0073	NC	No	ND, DLASL
	121-14-2	Dinitrotoluene (2,4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.0073	NC	No	ND, DLBSL
	606-20-2	Dinitrotoluene (2,6-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.0036	NC	No	ND, DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.15	NC	No	ND, DLBSL
	100-41-4	Ethylbenzene	ND	ND	mg/L		0/6	.002	0.002	NA	0.13	NC	No	ND, DLBSL
	206-44-0	Fluoranthene	.00007 (J)	0.0013	mg/L	SW-106 / 08-01-01	6/6		0.0013	NA	0.15	NC	No	BSL
	86-73-7	Fluorene	0.00008	0.00026	mg/L	SW-107 / 08-01-01	5/6	.000025	0.00026	NA	0.024	NC	No	BSL
	118-74-1	Hexachlorobenzene	ND	ND	mg/L		0/6	.00035-.00085	0.00085	NA	0.000042	C	No	ND, DLASL
	87-68-3	Hexachlorobutadiene	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.00086	C	No	ND, DLASL
	77-47-4	Hexachlorocyclopentadiene	ND	ND	mg/L		0/6	.002-.01	0.01	NA	0.022	NC	No	ND, DLBSL
	67-72-1	Hexachloroethane	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.0036	NC	No	ND, DLBSL
	591-78-6	Hexanone (2-)	ND	ND	mg/L		0/6	.002	0.002	NA	NA		No	ND, NSV
	193-39-5	Indeno(1,2,3-cd)pyrene	0.000064	0.00043	mg/L	OW-302 / 08-01-01, SW-	5/6	.000025	0.00043	NA	0.000092	C	Yes	ASL
	7439-89-6	Iron - Total [7]	1.05 (J)	13.8 (J)	mg/L	SW-107 / 08-01-01	6/6		13.8	NA	NA		No	NUT
	78-59-1	Isophorone	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.071	C	No	ND, DLBSL
	7439-92-1	Lead - Total	.02 (J)	0.576	mg/L	SW-107 / 08-01-01	6/6		0.576	NA	0.015		No	[5]
	7439-95-4	Magnesium - Total [6]	1	9.17	mg/L	SW-107 / 08-01-01	6/6		9.17	NA	NA		No	NUT
	7439-96-5	Manganese - Total	.0468 (J)	0.95	mg/L	SW-107 / 08-01-01	6/6		0.95	NA	0.088	NC	Yes	ASL
	7439-97-6	Mercury - Total	0.000018	.000044 (J)	mg/L	SW-107 / 04-04-01	5/6	.000005	0.000044	NA	0.0011	NC	No	BSL
	108-10-1	Methyl-2-pentanone (4-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.2	NC	No	ND, DLBSL
	75-09-2	Methylene chloride	ND	ND	mg/L		0/6	.005	0.005	NA	0.0043	C	No	ND, DLASL
	91-57-6	Methylnaphthalene (2-)	.000048 (J)	0.0006	mg/L	SW-107 / 08-01-01	4/6	.000025	0.0006	NA	0.00062	NC	No	BSL
	95-48-7	Methylphenol (2-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.18	NC	No	ND, DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.018	NC	No	ND, DLBSL
	1634-04-4	Methyl-tert Butyl Ether	ND	ND	mg/L		0/6	.002	0.002	NA	0.011	C	No	ND, DLBSL
	91-20-3	Naphthalene	.00005 (J)	0.0012	mg/L	SW-107 / 08-01-01	4/6	.000025	0.0012	NA	0.00062	NC	Yes	ASL
	7440-02-0	Nickel - Total	.0045 (J)	0.0613	mg/L	SW-107 / 08-01-01	6/6		0.0613	NA	0.073	NC	No	BSL
	88-74-4	Nitroaniline (2-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.011	NC	No	ND, DLBSL
	99-09-2	Nitroaniline (3-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.0011	NC	No	ND, DLASL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.0032	C	No	ND, DLBSL
	98-95-3	Nitrobenzene	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.00034	NC	No	ND, DLASL
	88-75-5	Nitrophenol (2-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	NA		No	ND, NSV
	100-02-7	Nitrophenol (4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	NA		No	ND, NSV
	621-64-7	Nitroso-di-n-propylamine (N-)	ND	ND	mg/L		0/6	.00035-.00085	0.00085	NA	0.0000096	C	No	ND, DLASL
	86-30-6	Nitrosodiphenylamine (N-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.014	C	No	ND, DLBSL
	87-86-5	Pentachlorophenol	ND	ND	mg/L		0/6	.002-.0052	0.0052	NA	0.00056	C	No	ND, DLASL
	85-01-8	Phenanthrene	0.00011	0.00096	mg/L	SW-106 / 08-01-01	6/6		0.00096	NA	0.018	NC	No	BSL
	108-95-2	Phenol	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	1.1	NC	No	ND, DLBSL
	9/7/7440	Potassium - Total [6]	1.73	4.67	mg/L	SW-107 / 08-01-01	6/6		4.67	NA	NA		No	NUT
	129-00-0	Pyrene	.00011 (J)	0.0016	mg/L	SW-106 / 08-01-01	6/6		0.0016	NA	0.018	NC	No	BSL
	7782-49-2	Selenium - Total	0.0012	0.0029	mg/L	OW-301 / 04-04-01, SW-	5/6	.0011	0.0029	NA	0.018	NC	No	BSL
	7440-22-4	Silver - Total	ND	ND	mg/L		0/6	.0011	0.0011	NA	0.018	NC	No	ND, DLBSL
	7440-23-5	Sodium - Total [6]	43.3	433	mg/L	OW-302 / 08-01-01	6/6		433	NA	NA		No	NUT
	100-42-5	Styrene	ND	ND	mg/L		0/6	.002	0.002	NA	0.16	NC	No	ND, DLBSL

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	79-34-5	Tetrachloroethane (1,1,2,2-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.000055	C	No	ND, DLASL
	127-18-4	Tetrachloroethene	ND	ND	mg/L		0/6	.002	0.002	NA	0.0001	C	No	ND, DLASL
	7440-28-0	Thallium - Total	ND	ND	mg/L		0/6	.0011	0.0011	NA	0.00024	NC	No	ND, DLASL
	108-88-3	Toluene	.0012 (J)	.0012 (J)	mg/L	SW-107 / 08-01-01	1/6	.002	0.0012	NA	0.072	NC	No	BSL
	120-82-1	Trichlorobenzene (1,2,4-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.00072	NC	No	ND, DLASL
	71-55-6	Trichloroethane (1,1,1-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.32	NC	No	ND, DLBSL
	79-00-5	Trichloroethane (1,1,2-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.0002	C	No	ND, DLASL
	79-01-6	Trichloroethene	ND	ND	mg/L		0/6	.002	0.002	NA	0.000028	C	No	ND, DLASL
	75-69-4	Trichlorofluoromethane	ND	ND	mg/L		0/6	.002	0.002	NA	0.13	NC	No	ND, DLBSL
	95-95-4	Trichlorophenol (2,4,5-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.36	NC	No	ND, DLBSL
	88-06-2	Trichlorophenol (2,4,6-)	ND	ND	mg/L		0/6	.002-.0021	0.0021	NA	0.00036	NC	No	ND, DLASL
	7440-62-2	Vanadium - Total	0.0221	0.122	mg/L	SW-107 / 08-01-01	5/6	.0111	0.122	NA	0.0036	NC	Yes	ASL
	108-05-4	Vinyl acetate	ND	ND	mg/L		0/6	.002	0.002	NA	0.041	NC	No	ND, DLBSL
	75-01-4	Vinyl chloride	ND	ND	mg/L		0/6	.002	0.002	NA	0.00002	C	No	ND, DLASL
	108-38-3 106-42-3	Xylene (m,p-)	ND	ND	mg/L		0/6	.00059-.0006	0.0006	NA	0.021	NC	No	ND, DLBSL
	95-47-6	Xylene (o-)	ND	ND	mg/L		0/6	.002	0.002	NA	0.021	NC	No	ND, DLBSL
	7440-66-6	Zinc - Total	0.0331	0.34	mg/L	SW-107 / 08-01-01	6/6		0.34	NA	1.1	NC	No	BSL

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CURRENT/FUTURE FISHER AND WADER
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:
Shaded chemicals are selected as COPCs.
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
C - Screening toxicity value based on cancer effects
NA - Not Available/Not Applicable
NC - Screening toxicity value based on non-cancer effects
ND - Not Detected
(1) Minimum/Maximum detected concentration data qualifiers:
J- The result is estimated (uncertain) due to QC exceedance(s).
(2) The maximum detected concentration, or if never detected, the maximum detection limit.
(3) United States Environmental Protection Agency (USEPA) Region IX. 2004. Region IX Preliminary Remediation Goal Table. PRGs for tap water are used. Non-cancer PRGs are adjusted to account for a Hazard Index of 0.1.
The PRG for acenaphthene is used for acenaphthylene.
The PRG for pyrene is used for benzo(g,h,i)perylene.
The PRG for chromium VI is used for chromium.
The PRG for hydrogen cyanide is used for cyanide.
The PRG for 1,3-dichloropropene is used for cis- and trans-1,3-dichloropropene.
The Maximum Contaminant Level for lead is used since there is no Region IX PRG for lead.
The PRG for naphthalene is used for 2-methylnaphthalene.
The PRG for pyrene is used for phenanthrene.
The PRG for xylenes (total) is used for m,p-xylene and o-xylene.
(4) Rationale for Selection or Deletion:
ASL - Above Screening Level
BSL - Below (or Equal to) Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below (or Equal to) Screening Level
ND - Not Detected
NSV - No Screening Value
NUT - Nutrient
NTX - No Toxicity Information
TX - Toxicity Information available
(5) USEPA Region I does not endorse quantitative evaluation of risk for these chemicals (personal communication, USEPA Region 1 risk assessor, Sarah Levinson, 2004 and Region I Risk Update, September 1999). These chemicals will not be evaluated.
(6) USEPA Region I does not quantitatively evaluate these chemicals for human effects since they are considered essential nutrients and present little hazard to humans. These chemicals, if detected, will be evaluated qualitatively.
(7) USEPA Region I does not endorse quantitative evaluation of risk for these chemicals (Region 1 Risk Update, September 1999). These chemicals, if detected, will be evaluated qualitatively.
(8) Lead is not well absorbed dermally; in fact, estimates of dermal absorption range from 0.006% to less than 0.3% (Moore et al., 1980). Since dermal exposure is the only exposure pathway that will be quantified for surface water, lead is not a COPC in this exposure medium.

TABLE 2.11

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT/FUTURE FISHER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Tissue

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [4]
Lewis Pond	83-32-9	Acenaphthene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	8.1	NC	NA	NA	No	ND,DLBSL
	208-96-8	Acenaphthylene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	8.1	NC	NA	NA	No	ND,DLBSL
	7429-90-5	Aluminum [5]	0.4 (J)	1.9 (J)	mg/kg	LPF-4	5/5	0.18 - 0.21	1.9	NA	NA		NA	NA	No	NSV, NTX
	120-12-7	Anthracene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	41	NC	NA	NA	No	ND,DLBSL
	7440-38-2	Arsenic	0.028 (J)	0.1	mg/kg	LPF-1	5/5	0.0018 - 0.0019	0.1	NA	0.0021	C	NA	NA	Yes	ASL
	7440-39-3	Barium	0.047 (J)	0.94 (J)	mg/kg	LPF-1	5/5	0.03 - 0.033	0.94	NA	9.5	NC	NA	NA	No	BSL
	56-55-3	Benz[a]anthracene	0.0029 (J)	0.0043 (J)	mg/kg	LPF-1	4/5	0.002 - 0.0021	0.0043	NA	0.0043	C	NA	NA	No	BSL
	50-32-8	Benzo[a]pyrene	0.0048 (J)	0.0063 (J)	mg/kg	LPF-3	4/5	0.002 - 0.0021	0.0063	NA	0.00043	C	NA	NA	Yes	ASL
	205-99-2	Benzo[b]fluoranthene	0.008 (J)	0.011 (J)	mg/kg	LPF-1	4/5	0.002 - 0.0021	0.011	NA	0.0043	C	NA	NA	Yes	ASL
	191-24-2	Benzo[g,h,i]perylene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	4.1	NC	NA	NA	No	ND,DLBSL
	207-08-9	Benzo[k]fluoranthene	0.005 (J)	0.007 (J)	mg/kg	LPF-1	4/5	0.002 - 0.0021	0.007	NA	0.043	C	NA	NA	No	BSL
	65-85-0	Benzoic acid	R	R	mg/kg	NA	NA	10 - 10	R	NA	540	N	NA	NA	No	
	100-51-6	Benzyl alcohol	ND	ND	mg/kg	NA	0/5	0.51 - 0.52	0.52	NA	41	NC	NA	NA	No	ND,DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg	NA	0/5	0.03 - 0.033	0.033	NA	0.27	NC	NA	NA	No	ND,DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	4.1 (J)	16 (J)	mg/kg	LPF-4	3/5	0.002 - 0.0021	16	NA	0.23	C	NA	NA	Yes	ASL
	7440-43-9	Cadmium	0.0097	0.0097	mg/kg	LPF-1	1/5	0.0059 - 0.0067	0.0097	NA	0.14	NC	NA	NA	No	BSL
	86-74-8	Carbazole	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	0.16	C	NA	NA	No	ND,DLBSL
	7440-47-3	Chromium	0.21 (J)	0.32 (J)	mg/kg	LPF-4	5/5	0.03 - 0.033	0.32	NA	200	NC	NA	NA	No	BSL
	218-01-9	Chrysene	0.0027 (J)	0.0045 (J)	mg/kg	LPF-3	4/5	0.002 - 0.0021	0.0045	NA	0.43	C	NA	NA	No	BSL
	7440-50-8	Copper [5]	0.29	1.7	mg/kg	LPF-5	5/5	0.03 - 0.033	1.7	NA	NA		NA	NA	No	NUT
	53-70-3	Dibenz[a,h]anthracene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	0.00043	C	NA	NA	No	ND,DLASL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg	NA	0/5	4 - 4.2	4.2	NA	2.7	NC	NA	NA	No	ND,DLASL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg	NA	0/5	0.51 - 0.52	0.52	NA	5.4	NC	NA	NA	No	ND,DLBSL
	206-44-0	Fluoranthene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	5.4	NC	NA	NA	No	ND,DLBSL
	86-73-7	Fluorene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	5.4	NC	NA	NA	No	ND,DLBSL
	193-39-5	Indeno[1,2,3-cd]pyrene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	0.0043	C	NA	NA	No	ND,DLBSL
	7439-89-6	Iron [6]	7.5	30	mg/kg	LPF-1	5/5	0.59 - 0.67	30	NA	NA		NA	NA	No	NUT
	7439-92-1	Lead	0.063 (J)	0.48 (J)	mg/kg	LPF-1	5/5	0.03 - 0.033	0.48	NA	NA		NA	NA	Yes	TX
	7439-96-5	Manganese	0.85 (J)	17 (J)	mg/kg	LPF-1	5/5	0.59 - 0.67	17	NA	19	NC	NA	NA	No	BSL
	7439-97-6	Mercury	0.064	0.16	mg/kg	LPF-2	5/5	0.0048 - 0.0062	0.16	NA	0.014	NC	NA	NA	Yes	ASL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	0.54	NC	NA	NA	No	ND,DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg	NA	0/5	0.51 - 0.52	0.52	NA	0.68	NC	NA	NA	No	ND,DLBSL
	91-20-3	Naphthalene	0.0024	0.0031	mg/kg	LPF-3	3/5	0.002 - 0.0021	0.0031	NA	2.7	NC	NA	NA	No	BSL
	7440-02-0	Nickel	0.076 (J)	0.41 (J)	mg/kg	LPF-4	5/5	0.03 - 0.033	0.41	NA	2.7	NC	NA	NA	No	BSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg	NA	0/5	0.51 - 0.52	0.52	NA	0.16	C	NA	NA	No	ND,DLASL
	85-01-8	Phenanthrene	0.0022	0.0022	mg/kg	LPF-3	1/5	0.002 - 0.0021	0.0022	NA	41	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.0028 (J)	0.0028 (J)	mg/kg	LPF-3	1/5	0.002 - 0.0021	0.0028	NA	4.1	NC	NA	NA	No	BSL
	7782-49-2	Selenium	0.32 (J)	0.5 (J)	mg/kg	LPF-3	5/5	0.0065 - 0.0073	0.5	NA	0.68	NC	NA	NA	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg	NA	0/5	0.03 - 0.033	0.033	NA	0.68	NC	NA	NA	No	ND,DLBSL
	7440-28-0	Thallium	0.0014 (B)	0.0051 (B)	mg/kg	LPF-1	5/5	0.00065 - 0.00073	0.0051	NA	0.0095	NC	NA	NA	No	BSL
	7440-62-2	Vanadium	0.036	0.053	mg/kg	LPF-1	2/5	0.03 - 0.033	0.053	NA	0.14	NC	NA	NA	No	BSL
	7440-66-6	Zinc	13	20	mg/kg	LPF-2	5/5	0.59 - 0.67	20	NA	41	NC	NA	NA	No	BSL

TABLE 2.11

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT/FUTURE FISHER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Tissue

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) [1]	Maximum Concentration (Qualifier) [1]	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening [2]	Background Value	Screening Toxicity Value [3]		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion [4]
Neponset River	7429-90-5	Aluminum [5]	0.46 (J)	2 (J)	mg/kg	NRF-5	5/5	0.2 - 0.24	2	NA	NA		NA	NA	No	NSV, NTX
	83-32-9	Acenaphthene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	8.1	NC	NA	NA	No	ND,DLBSL
	208-96-8	Acenaphthylene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	8.1	NC	NA	NA	No	ND,DLBSL
	120-12-7	Anthracene	0.0023	0.0023	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0023	NA	41	NC	NA	NA	No	BSL
	7440-38-2	Arsenic	0.024 (J)	0.039	mg/kg	NRF-2	5/5	0.0016 - 0.0019	0.039	NA	0.0021	C	NA	NA	Yes	ASL
	7440-39-3	Barium	0.19 (J)	0.32 (J)	mg/kg	NRF-2	5/5	0.033 - 0.039	0.32	NA	9.5	NC	NA	NA	No	BSL
	56-55-3	Benz[a]anthracene	0.003	0.003	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.003	NA	0.0043	C	NA	NA	No	BSL
	50-32-8	Benzo[a]pyrene	0.0032	0.0032	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0032	NA	0.00043	C	NA	NA	Yes	ASL
	205-99-2	Benzo[b]fluoranthene	0.0032	0.0032	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0032	NA	0.0043	C	NA	NA	No	BSL
	191-24-2	Benzo[g,h,i]perylene	0.0026	0.0026	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0026	NA	4.1	NC	NA	NA	No	BSL
	207-08-9	Benzo[k]fluoranthene	0.0036	0.0036	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0036	NA	0.043	C	NA	NA	No	BSL
	65-85-0	Benzoic acid	ND	ND	mg/kg	NA	0/5	10 - 11	11	NA	540	NC	NA	NA	No	ND,DLBSL
	100-51-6	Benzyl alcohol	ND	ND	mg/kg	NA	0/5	0.51 - 0.53	0.53	NA	41	NC	NA	NA	No	ND,DLBSL
	7440-41-7	Beryllium	ND	ND	mg/kg	NA	0/5	0.033 - 0.039	0.039	NA	0.27	NC	NA	NA	No	ND,DLBSL
	117-81-7	bis(2-Ethylhexyl)phthalate	3.8 (J)	51	mg/kg	NRF-5	3/5	0.002 - 0.53	51	NA	0.23	C	NA	NA	Yes	ASL
	7440-43-9	Cadmium	ND	ND	mg/kg	NA	0/5	0.0065 - 0.0078	0.0078	NA	0.14	NC	NA	NA	No	ND,DLBSL
	86-74-8	Carbazole	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	0.16	C	NA	NA	No	ND,DLBSL
	7440-47-3	Chromium	0.098 (J)	0.25 (J)	mg/kg	NRF-1	5/5	0.033 - 0.039	0.25	NA	200	NC	NA	NA	No	BSL
	218-01-9	Chrysene	0.0047	0.0047	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0047	NA	0.43	C	NA	NA	No	BSL
	7440-48-4	Cobalt	ND	ND	mg/kg	NA	0/5	0.033 - 0.039	0.039	NA	NA		NA	NA	No	ND, NSV
	7440-50-8	Copper [5]	0.37	2.4	mg/kg	NRF-1	5/5	0.033 - 0.039	2.4	NA	NA		NA	NA	No	NUT
	53-70-3	Dibenz[a,h]anthracene	0.0029	0.0029	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0029	NA	0.00043	C	NA	NA	Yes	ASL
	105-67-9	Dimethylphenol (2,4-)	ND	ND	mg/kg	NA	0/5	0.51 - 0.53	0.53	NA	2.7	NC	NA	NA	No	ND,DLBSL
	117-84-0	Di-n-octylphthalate	ND	ND	mg/kg	NA	0/5	0.51 - 0.53	0.53	NA	5.4	NC	NA	NA	No	ND,DLBSL
	206-44-0	Fluoranthene	0.0024	0.0024	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0024	NA	5.4	NC	NA	NA	No	BSL
	86-73-7	Fluorene	0.0021	0.0021	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0021	NA	5.4	NC	NA	NA	No	BSL
	193-39-5	Indeno[1,2,3-cd]pyrene	0.0029	0.0029	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0029	NA	0.0043	C	NA	NA	No	BSL
	7439-89-6	Iron [6]	8.8	19	mg/kg	NRF-3	5/5	0.65 - 0.78	19	NA	NA		NA	NA	No	NUT
	7439-92-1	Lead	0.11 (J)	0.61 (J)	mg/kg	NRF-5	3/5	0.033 - 0.039	0.61	NA	NA		NA	NA	Yes	TX
	7439-96-5	Manganese	1.3 (J)	9.1 (J)	mg/kg	NRF-4	5/5	0.65 - 0.78	9.1	NA	19	NC	NA	NA	No	BSL
	7439-97-6	Mercury	0.17	0.32	mg/kg	NRF-5	5/5	0.0054 - 0.0061	0.32	NA	0.014	NC	NA	NA	Yes	ASL
	91-57-6	Methylnaphthalene (2-)	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	0.54	NC	NA	NA	No	ND,DLBSL
	106-44-5	Methylphenol (4-)	ND	ND	mg/kg	NA	0/5	0.51 - 0.53	0.53	NA	0.68	NC	NA	NA	No	ND,DLBSL
	91-20-3	Naphthalene	ND	ND	mg/kg	NA	0/5	0.002 - 0.0021	0.0021	NA	2.7	NC	NA	NA	No	ND,DLBSL
	7440-02-0	Nickel	0.083 (J)	0.2 (J)	mg/kg	NRF-1	5/5	0.033 - 0.039	0.2	NA	2.7	NC	NA	NA	No	BSL
	100-01-6	Nitroaniline (4-)	ND	ND	mg/kg	NA	0/5	0.51 - 0.53	0.53	NA	0.16	C	NA	NA	No	ND,DLASL
	85-01-8	Phenanthrene	0.0028	0.0028	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0028	NA	41	NC	NA	NA	No	BSL
	129-00-0	Pyrene	0.0023	0.0023	mg/kg	NRF-4	1/5	0.002 - 0.0021	0.0023	NA	4.1	NC	NA	NA	No	BSL
	7782-49-2	Selenium	0.25 (J)	0.41 (J)	mg/kg	NRF-4	5/5	0.0072 - 0.0086	0.41	NA	0.68	NC	NA	NA	No	BSL
	7440-22-4	Silver	ND	ND	mg/kg	NA	0/5	0.033 - 0.039	0.039	NA	0.68	NC	NA	NA	No	ND,DLBSL
	7440-28-0	Thallium	0.0012 (B)	0.0054 (B)	mg/kg	NRF-3	4/5	0.00072 - 0.00086	0.0054	NA	0.0095	NC	NA	NA	No	BSL
	7440-62-2	Vanadium	ND	ND	mg/kg	NA	0/5	0.033 - 0.039	0.039	NA	0.14	NC	NA	NA	No	ND,DLBSL
	7440-66-6	Zinc	7.9	42	mg/kg	NRF-5	5/5	0.65 - 0.78	42	NA	41	NC	NA	NA	Yes	ASL

TABLE 2.11

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

CURRENT/FUTURE FISHER

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:
Shaded chemicals are selected as COPCs.
C - Screening toxicity value based on cancer effects
NA - Not Applicable/Not Available
NC - Screening toxicity value based on non-cancer effects
ND - Not Detected
ARAR/TBC - Applicable or Relevant and Appropriate Requirement/To Be Considered
(1) Minimum/Maximum detected concentration data qualifiers:
J- The result is estimated (uncertain) due to QC exceedance(s).
B- The chemical was also detected in an associated non-matrix matched Blank.
(2) Maximum detected concentration, or if never detected, maximum detection limit.
(3) United States Environmental Protection Agency (USEPA) Region III. 2004. Region III Risk-Based Concentration Table. RBCs for fish tissue are used. Non-cancer RBCs are adjusted to account for a HI of 0.1.
The RBC for acenapthene is used for acenaphthylene.
The RBC for pyrene is used for benzo(g,h,i)perylene.
The RBC for chromium III is used for chromium.
The RBC for anthracene is used for phenanthrene.
(4) Rationale for Selection or Deletion:
ASL - Above Screening Level
BSL - Below or Equal to Screening Level
DLASL - Detection Limit Above Screening Level
DLBSL - Detection Limit Below or Equal to Screening Level
ND - Not Detected
NSV - No Screening Value
NTX - No Toxicity Information
NUT - Essential Nutrient
TX - Toxicity Information Available
(5) USEPA Region I does not endorse quantitative evaluation of risk for these chemicals (personal communication, USEPA Region I risk assessor, Sarah Levinson, 2004 and Region I Risk Update, September 1999). These chemicals will not be evaluated.
(6) USEPA Region I does not endorse quantitative evaluation of risk for this chemical (Region I Risk Update, September 1999). This chemical, if detected, will be evaluated qualitatively.

APPENDIX D
Plant Tissue Modeling from Soil

Appendix D
Plant Tissue Modeling

Concentrations in plant tissue were modeled by multiplying the soil concentration at each residential exposure point by bioconcentration factors from USEPA's Soil Screening Guidance (SSG) (USEPA, 1996). As suggested in the SSG, the geometric mean bioconcentration factor (Br) values for leafy vegetables were selected to represent the Br value for exposed fruits and exposed vegetables. Bioconcentration factors are not available for chromium or lead in the SSG. Therefore, we used the chromium uptake factor applied by MADEP (2001) in development of the Proposed MCP Numerical Standards. Although MADEP does provide a plant uptake factor for lead, there is considerable uncertainty associated with this uptake factors; therefore, we did not model plant lead concentrations (see Uncertainty Section 6.0 for discussion). The following table summarizes the bioconcentration factors for homegrown produce that were used in this assessment.

Chemical	**Soil Screening Guidance Bioconcentration Factor [a] Kg- soil dry wt/Kg-plant dry wt**		**MADEP Uptake Factor Kg- soil dry wt/ Kg-plant dry wt [b]**
	Leafy Vegetables	**Root Vegetables**	
Arsenic	0.036	0.008	[c]
Cadmium	0.364	0.064	[c]
Chromium	NA	NA	0.095
Mercury	0.008	0.014	[c]
Nickel	0.032	0.008	[c]
Zinc	0.25	0.044	[c]

NA = Not Available
[a] Geometric mean bioconcentration factor from the Soil Screening Guidance.
[b] The value selected is the median uptake factor for all produce types from the "Proposed MCP Numerical Standards" (http://www.state.ma.us/dep/bwsc/files/workgrps/numbers/numbers.htm, December 2001).
[c] Soil Screening Guidance bioconcentration factor is used.

There are no uptake factors available for PAHs and other SVOCs in the SSG. In addition, through recent development of the Proposed MCP Numerical Standards, MADEP has concluded that there is uncertainty regarding the current plant uptake factors for PAHs available in the literature. Therefore, we did not model plant PAH concentrations.

As per the SSG, we used the uptake factors for leafy vegetables to model plant tissue concentrations for above-ground fruits and above-ground vegetables.

Tables 3 and 5 in the main report present the soil samples used to estimate current and future homegrown produce EPCs. RAGS supporting Tables 3.3 and 3.4 in Appendix F present the modeled homegrown produce exposure point concentrations.

REFERENCES

United States Environmental Protection Agency (USEPA), **1996**. Soil Screening Guidance: Technical Background Document. OSWER. May 1996. EPA/540/R95/128.

APPENDIX E
Air Modeling

Appendix E1
Indoor Air Modeling

The EPCs for exposure to contaminants migrating from soil or groundwater to indoor air were modeled using the Johnson and Ettinger (J&E) vapor intrusion models (USEPA, 2003, 2004a). The J&E models relate contaminant concentrations in soil, soil gas, and groundwater to indoor air concentrations through calculation of a volatilization factor. The volatilization factor incorporates chemical specific parameters (e.g., Henry's Law, diffusivity in air, diffusivity in water) and site-specific parameters (e.g., soil type and depth to contaminated soil or groundwater), accounting for both pressure-driven convection and passive diffusion processes.

In accordance with the User's Guide for the J&E model (USEPA, 2004b) and USEPA's Draft Vapor Intrusion Guidance (USEPA, 2002), a chemical is considered sufficiently volatile if it has a Henry's Law Constant (HLC) of 1E-05 atm-m^3/mol or greater. Therefore, for exposure points where the indoor air pathway is evaluated, all chemicals detected in soil, soil gas, and groundwater that meet the HLC criterion are included in the COPC selection. Mercury and cyanide were not included in the indoor air pathway evaluation because mercury in Site soil and groundwater is not likely to be in the elemental form and cyanide is not likely to be in the form of hydrogen cyanide, the volatile chemical forms of these chemicals assumed in the J&E models.

Groundwater and shallow soil gas screening values from Table 2c of USEPA's Draft Vapor Intrusion Guidance (USEPA, 2002) were used to select groundwater and soil gas COPCs for the indoor air pathway. However, there are no comparable soil screening values for the indoor air pathway. Therefore, we used the J&E model, applying conservative site-specific parameters, to develop target soil screening values for the indoor air pathway.

E1.1 Target Soil Screening Values for the Indoor Air Pathway

Target soil screening values for the indoor air pathway were developed for chemicals detected at least once in soil, in a current or future soil to indoor air exposure point, and which have chemical properties consistent with volatility as described above. Soil screening values were back-calculated from target indoor air concentrations in Table 2c of EPA's Draft Vapor Intrusion Guidance (USEPA, 2002), by applying the J&E SL-SCREEN model (USEPA, 2003).

We reviewed toxicity values in the J&E model to be sure they were at least as conservative as those used in the baseline risk assessment. Toxicity values were changed as follows.

- For **2-methylnaphthalene**, we used an RfC of 3E-03 mg/m^3 (USEPA's IRIS RfC for naphthalene, per USEPA Region 1 guidance) rather than 0.07 mg/m^3 in the J&E model.
- For **xylenes**, we used the IRIS RfC of 0.1 mg/m^3 rather than 7 mg/m^3 in the J&E model.
- For **chrysene**, we added an RfC of 3E-03 mg/m^3 (IRIS RfC for naphthalene, per USEPA Region 1 guidance).

Soil samples from all portions of the site are fairly shallow (within 10 feet of the ground surface in most places; see Tables 8 and 10), and at this depth are generally categorized as sand (Sanborn, Head & Associates personal communication). Therefore, we assume contamination in sand is just beneath the basement floor (200 cm "depth below grade to top of contamination" default in the J&E model). Using these parameters along with other model default parameters, soil concentrations were entered into the J&E SL-SCREEN model (USEPA, 2003) until the modeled infinite source building concentration corresponded to the target risk-based indoor air concentrations in Table 2c of EPA's Draft Vapor Intrusion Guidance (USEPA, 2002). Tables E1.4 and E1.8 show the J&E model inputs and chemical parameters used in the SL-SCREEN model. Target indoor air concentrations and corresponding target soil concentrations are shown in Table E1.1. Target soil concentrations derived based on non-cancer effects were adjusted to account for a hazard index of 0.1 for COPC screening. Note that a screening value could not be calculated for some chemicals because the model output was "NOC" (Not of Concern), because the contaminant is a solid at the model temperature used (10°C) (USEPA, 2003).

Screening values in Table E1.1 were used to select soil COPCs as shown in RAGS Tables 2.3 and 2.4 in Appendix C for the indoor air pathway.

Note that use of the 2004 version of the Johnson and Ettinger model (version 3.1) (USEPA, 2004a) would not increase our list of COPCs, nor change the risk conclusions.

E1.2 Indoor Air EPCs

The J&E SOIL-SCREEN and SOIL-ADVANCED models (USEPA, 2004a) were used to calculate indoor air concentrations from soil, the J&E SG-ADVANCED model (USEPA, 2004a) was used to estimate indoor air concentrations from soil gas, and the J&E GW-SCREEN model (USEPA, 2003) was used to estimate indoor air concentrations from groundwater. Since indoor air EPCs from soil have been recalculated since the October 2004 deliverable, the 2004 version of the model was used to calculate all indoor air EPCs from soil. Indoor air EPCs from groundwater have not been recalculated since October 2004; therefore, the indoor air EPCs from groundwater were calculated using the 2003 version of the model, but would not change if the 2004 version had been used. Soil gas data were collected during the summer of 2006; therefore, all indoor air EPCs predicted from soil gas were calculated using the 2004 version of the J&E model.

E1.2.1 J&E Soil Model

The parameters used to model indoor air EPCs were equivalent to the parameters and defaults used in the SL-SCREEN model discussed above, with two exceptions: 1) In the ADVANCED model, the infinite source was replaced with a finite source, applying the depth of the groundwater table in the area as the bottom of the contaminated soil, where sufficient groundwater data were available to define the depth to groundwater (See Table E1.2); (2) In the ADVANCED model, site-specific building dimensions were used for three buildings (i.e. Buildings 3, 4, and 5) at East of South Street On-Facility to account for building area and slab-on-grade construction (See Table E1.3); and 3) In the ADVANCED and SCREEN model, site-specific total organic carbon (TOC) data were used where appropriate (See Table E1.2a and related discussion below). The ADVANCED model was used for all areas where the depth to groundwater data were sufficient to define the lower extent of soil contamination (see Table E1.2). For all areas where an infinite source was assumed, the SCREEN model was used. See Table E1.4, E1.6, and E1.8 for all other the J&E model inputs and chemical parameters used in the SL-SCREEN and SL-ADVANCED models.

Modeled indoor air concentrations (RME and CT) from soil EPCs are summarized in Appendix F in RAGS supporting Table 3.5 for current EPCs and RAGS supporting Table 3.6 for future EPCs.

Site-specific Total Organic Carbon

In general, TOC data from fill soil samples were considered most appropriate for use in the Johnson and Ettinger modeling for two principal reasons; 1) essentially all elevated concentrations of compounds in soil responsible for driving inhalation risk were detected in soil samples described as fill or a combination of fill and native soils, and 2) because the fill is the shallowest soil layer and ubiquitous across the On-Facility portion of the Site, and present over most of the rest of the Site, with a typical thickness of approximately 4 to 10 feet, soil vapor generally has to migrate through the fill prior to entry into structures. See Table 7A and 7B of the RI (SHA, 2005) for a summary of all TOC soil and sediment data for the site.

TOC values assumed for the modeling of indoor air and trench air using the Johnson and Ettinger Model were the 95% lower confidence limit (LCL) of the mean for TOC values for fill soil samples from those areas of the Site that had a relatively large number of such data (i.e., East of South Street On-Facility [TOC data for 5 fill samples], West of South Street On-Facility [TOC data for 7 fill samples]). See Table E1.2a for these data and a summary of LCL calculations.

For other areas that had fewer (or no) relevant fill TOC data, we assumed:

- For the Old Railroad Area, with TOC data for 2 fill samples, a TOC value equal to the lower of the detected TOC concentrations in fill was used.

- For the Orlando Property, Lot 257 and Lot 360, each with three soil samples analyzed for TOC (not identified as fill), a TOC value equal to the lowest of the detected TOC concentrations (from the deepest samples) from each area was used

- For areas with only one TOC result and generally isolated from zones of elevated volatile contaminant concentrations in soil (Lot 208, Lot 283, Lot 350), the default TOC value of 0.002 was assumed.

- For areas with no TOC data, and also no contaminant data, but located near (i.e., within 100 feet) zones of elevated volatile contaminant concentrations, the LCL of the mean for TOC values from either the East of South Street On-Facility (current resident Off-Site Residential Building 3) or West of South Street On-Facility Areas (current resident Off-Site Residential Buildings 1 and 2, and future resident Lots South of the AOC) were used, corresponding to the areas from which the soil sample contaminant concentration data used in the air modeling were located.

E1.2.2 J&E Soil Gas Model

We used the SG-ADVANCED J&E model (USEPA, 2004a) to estimate indoor air concentrations from soil gas data collected near soil sample SB-09 at the East of South Street On-Facility area (referred to as the "SB-09 area"), where TCE was detected in soil at a concentration more than one-hundred times its average concentration in soil from the surrounding area. Given this elevated TCE concentration in soil at sampling location SB-09, SHA conducted a soil gas sampling program to better define the potential for subsurface vapor intrusion in this area. The SG-ADVANCED model was used for all current and future exposure scenarios in the "SB-09 area" using the same default assumptions used in the SL-SCREEN model except for current site worker exposure to indoor air in two buildings (Buildings 1 and 2) at East of South Street On-Facility area to account for site-specific soil gas sample depth, building dimensions, and slab-on-grade construction (See Table E.1.3). Tables E1.7 and E1.8 show the J&E model inputs and chemical parameters used in the SG-ADVANCED model.

Modeled indoor air concentrations (RME and CT) from soil gas EPCs are summarized in Appendix F in RAGS supporting Table 3.5 for current EPCs and RAGS supporting Table 3.6 for future EPCs.

E1.2.3 J&E Groundwater Model

We used the GW-SCREEN J&E model (USEPA, 2003) to estimate indoor air concentrations from groundwater at the site. The depth to groundwater at the site is relatively shallow (less than 20 feet below ground surface), as shown in Tables 17 and 18. Therefore, it is assumed that the water table is just below the basement of a building. Sand is used as the soil type in the GW-SCREEN model as it was in the SL-SCREEN and SL-ADVANCED models. Tables following this section (Tables E1.5 and E1.8) show the J&E model inputs and chemical parameters used in the GW-SCREEN model to estimate future indoor air EPCs from groundwater EPCs shown in RAGS Table 3.9.RME and Table 3.9.CT in Appendix F. Modeled indoor air concentrations (RME and CT) from groundwater EPCs are summarized in RAGS supporting Table 3.9 in Appendix F. Note that indoor air concentration of 2-hexanone is modeled even though it is not a chemical in the J&E model. See Table E1.8 for the chemical parameters used for 2-hexanone. The RfC value for 2-hexanone is a provisional RfC of 5E-03 mg/m^3 from STSC.

REFERENCES

SHA (Sanborn, Head & Associates, Inc.). 2005. Version 02 DRAFT Blackburn & Union Privileges Superfund Site Remedial Investigation Report.

United States Environmental Protection Agency (USEPA), **2002**. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. November 29, 2002.

United States Environmental Protection Agency (USEPA), **2003**. Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings. Version 3.0. February 2003.

United States Environmental Protection Agency (USEPA), **2004a**. Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings. Version 3.1. February 2004. http://www.epa.gov/oswer/riskassessment/airmodel/johnson_ettinger.htm.

United States Environmental Protection Agency (USEPA), **2004b**. User's Guide For Evaluating Subsurface Vapor Intrusion Into Buildings (Revised February 22, 2004). http://www.epa.gov/oswer/riskassessment/airmodel/pdf/2004_0222_3phase_users_guide.pdf.

TABLE E1.1
TARGET SOIL SCREENING LEVELS FOR THE INDOOR AIR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

CAS No.	Chemical	Target Indoor Air Concentration (HI=1) (ug/m^3) [1]		Target Soil Concentration (HI=0.1) (mg/kg) [2]	
83-32-9	Acenaphthene	210	NC	NOC	
67-64-1	Acetone	350	NC	0.43	NC
309-00-2	Aldrin	0.0005	C	0.7	C
71-43-2	Benzene	0.31	C	0.00014	C
205-99-2	Benzo(b)fluoranthene	0.012	C	NOC	
319-84-6	BHC (alpha-)	0.0014	C	0.016	C
58-89-9	BHC (gamma-)	0.0066	C	0.049	C
78-93-3	Butanone (2-)	1000	NC	1	NC
75-15-0	Carbon disulfide	700	NC	0.0079	NC
5103-71-9	Chlordane (alpha-) [3]	0.024	C	5	C
5103-74-2	Chlordane (gamma-) [3]	0.024	C	5	C
67-66-3	Chloroform	0.11	C	0.000054	C
218-01-9	Chrysene	1.2	C	NOC	
72-55-9	DDE (4,4'-)	0.025	C	560	C
132-64-9	Dibenzofuran	14	NC	NOC	
95-50-1	Dichlorobenzene (1,2-)	200	NC	0.27	NC
106-46-7	Dichlorobenzene (1,4-)	800	NC	0.83	NC
156-59-2	Dichloroethene (cis-1,2-)	35	NC	0.0015	NC
60-57-1	Dieldrin	0.00053	C	0.098	C
959-98-8	Endosulfan I [4]	21	NC	NOC	
33213-65-9	Endosulfan II [4]	21	NC	NOC	
1031-07-8	Endosulfan sulfate [4]	21	NC	NOC	
100-41-4	Ethylbenzene	2.2	C	0.0039	C
86-73-7	Fluorene	140	NC	NOC	
76-44-8	Heptachlor	0.0019	C	0.00014	C
75-09-2	Methylene chloride	5.2	C	0.0021	C
91-57-6	Methylnaphthalene (2-)	70	NC	2.3	NC
91-20-3	Naphthalene	3	NC	0.057	NC
129-00-0	Pyrene	110	NC	NOC	
100-42-5	Styrene	1000	NC	1.1	NC
108-88-3	Toluene	400	NC	0.041	NC
71-55-6	Trichloroethane (1,1,1-)	2200	NC	0.06	NC
79-01-6	Trichloroethene	0.022	C	0.000013	C
75-69-4	Trichlorofluoromethane	700	NC	0.013	NC
108-38-3 106-42-3	Xylene (m,p-) [5]	7000	NC	1.4	NC
95-47-6	Xylene (o-)	7000	NC	1.9	NC

Notes:

NOC = Not of Concern. The contaminant is a solid at the model temperature (10°C), and not of concern for the vapor intrusion pathway, per the Johnson & Ettinger Model Version 3.0 (USEPA, 2003).

[1] Target indoor air concentration is from Table 2c of EPA's Draft Vapor Intrusion Guidance (EPA, 2002).

[2] Target soil concentrations corresponding to target indoor air concentrations based on 1E-06 cancer risk or a hazard index of one were derived using the Johnson & Ettinger model. Soil concentrations based on noncancer were adjusted to correspond to a hazard index of 0.1 for screening purposes.

[3] Target soil concentration is for chlordane.

[4] Target soil concentration is for endosulfan.

[5] Target soil concentration is for p-xylene.

Table E1.2
SUMMARY OF SITE-SPECIFIC MODIFICATIONS TO THE JOHNSON & ETTINGER SOIL MODEL
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Depth to water (DTW) for the soil to indoor air finite source model					Depth below grade to bottom of enclosed space floor (cm) [a]	Site-specific Total Organic Carbon (TOC) [b]			
							TOC Data		TOC Fraction used in J&E Model	Notes
	Sample Location	Average depth to water below ground surface (feet)	Depth to use in J&E Model (cm)	Depth to use in J&E Model (feet)	Notes		Sample Location	TOC (mg/kg)		
Old Railroad and Former Lower Mill Pond Area	SH-23S	5.16	77	2.5	Includes wells in area	15	SS-07 / 03-15-01	14,000	0.014	use Old Railroad lowest TOC value for fill
	WP-01	1.32					SS-04 / 03-21-01	130,000		
	WP-02	1.08								
East of South Street On-Facility	SH-19S	9.50	277	9.09	Includes wells in area	15; 200	see Table E1.2a		0.019005	use ESS TOC LCL [c]
	SH-20S	9.41								
	SH-21S	6.40								
	SH-22S	11.06								
Orlando Property	no DTW, use infinite source model (SCREEN)					200	FP-06 / 10-10-01	21,000	0.006	use lowest FP-06 TOC data
							FP-06 / 0-1 / 08-05-03	32,000		
							FP-06 / 1-3 / 08-05-03	6,200		
West of South St. On-Facility	SH-04S	3.66	162	5.3	Includes wells in area and wells SH-06s, SH 07s, and SH-08s, which are located close to this area	15	see Table E1.2a		0.02371	use WSS TOC LCL [c]
	SH-05S	3.36								
	SH-06S	5.82								
	SH-07S	9.46								
	SH-08S	7.04								
	SH-14S	2.19								
	SH-16S	1.81								
	SH-17S	7.73								
	SH-18S	13.63								
	SH-25S	2.23								
	WP-03	1.51								
Off-Site Residential Building 1	SH-16S	1.41	43	1.4	Used closest well to area (SH-16s)	15	see Table E1.2a		0.02371	use WSS TOC LCL [c]
Off-Site Residential Building 2	SH-17S	7.73	236	7.7	Closest well to soil samples in EP	200	see Table E1.2a		0.02371	use WSS TOC LCL [c]
Off-Site Residential Building 3	SH-18S	13.63	416	13.6	Used DTW from nearby SH-18S	200	see Table E1.2a		0.019005	use ESS TOC LCL [c]
Lots South of the AOC	SH-10S	15.52	455	14.9	Uses DTWs from nearby wells on AOC	200	see Table E1.2a		0.02371	use WSS TOC LCL [c]
	SH-11S	12.68								
	SH-12S	16.60								
	SH-13S	14.92								
Lot 208	SH-26S	1.82	56	1.82	Includes well in area	15	use default TOC		0.002	only one TOC sample
Lot 257	no DTW, use infinite source model (SCREEN)					200	FP-05 / 10-10-01	56,000	0.021	use lowest FP-05 TOC data
							FP-05 / 0-1 / 08-05-03	61,000		
							FP-05 / 1-3 / 08-05-03	21,000		
Lot 283	SH-24S	2.08	63	2.1	Used DTW from SH-24S	15	use default TOC		0.002	only one TOC sample
Lot 350	no DTW, use infinite source model (SCREEN)					200	use default TOC		0.002	only one TOC sample
Lot 360	no DTW, use infinite source model (SCREEN)					200	FP-09 / 10-10-01	133,000	0.024	use lowest FP-09 TOC data
							FP-09 / 0-1 / 08-05-03	150,000		
							FP-09 / 1-3 / 08-05-03	24,000		

Notes:

[a] A depth of 15 cm was assumed where a shallow water table would preclude construction of a basement (i.e. Old Railroad and Former Lower Mill Pond Area, West of South Street On-Facility, Off-Site Residential Building 1, Lot 208, and Lot 283) and where buildings are known to be built on slabs (i.e. Buildings 1, 2,3, 4, and 5 at East of South Street On-Facility).

[b] See text in this appendix for the rationale for TOC data used. See RI report (SHA, 2005) Tables 7A and 7B for all soil and sediment TOC data for the site

[c] See Table E1.2a for a summary of WSS and ESS data and LCL calculations.

DTW = depth to water
TOC = total organic carbon
ESS = East of South Street
WSS = West of South Street
LCL = 95% lower confidence limit on the mean

Table E1.2a
Total Organic Carbon (TOC) Site Data
Blackburn and Union Privileges Site
Walpole, MA

Exposure Area	Sample Location	TOC Data (mg/kg)	LogNormality Test	LogNormal 95% LCL (mg/kg)	Lowest TOC (mg/kg)	TOC used in J&E Model (mg/kg)	TOC Fraction used in J&E Model
West of South Street On-Facility	SB-42 / S-3-4 / 07-27-01	208,151	TRUE	23,710	610	23,710	0.02371
	SB-53 / S-3-4 / 07-13-01	78,000					
	SB-41 / S-1-2 / 03-20-01	52,000					
	SS-28 / 07-23-01	31,339					
	SB-46 / S-1-2 / 07-18-01	20,000					
	SB-47 / S-1-2 / 07-25-01	17,713					
	SB-56 / S-1 / 05-03-01	610					
East of South Street On-Facility	SS-25 / 03-29-01	100,000	TRUE	19,005	12,000	19,005	0.019005
	SS-26 / 03-30-01	38,000					
	SS-21 / 04-02-01	16,000					
	SS-09 / 04-23-01	15,000					
	SB-26 / S-2-3 / 03-30-01	12,000					

Notes:
TOC = total organic carbon
LCL = 95% lower confidence limit on the mean

Table E1.3
BUILDING DIMENSIONS FOR THE JOHNSON & ETTINGER SL-ADV AND SG-ADV MODELS
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario/Exposure Point	Building Area (square feet)	Building Area (square cm)	Values used in J&E model			
			Enclosed space floor length (cm)	Enclosed space floor width (cm)	Enclosed space height (cm)	Notes
Current Site Worker						
East of South Street On-Facility Building 1	14,389.32	1.34E+07	6401	2089	244	Site-specific
East of South Street On-Facility Building 2	7,451.46	6.92E+06	2631	2631	244	length and width;
East of South Street On-Facility Building 3	14,176.14	1.32E+07	7193	1831	244	height is model
East of South Street On-Facility Building 4	6,984.71	6.49E+06	3353	1935	244	default for slab
East of South Street On-Facility Building 5	10,157.28	9.44E+06	3353	2814	244	construction
Future Site Worker						
All Exposure Points	---	1.00E+06	1000	1000	366	Model defaults
Current Resident						
All Exposure Points	---	1.00E+06	1000	1000	366	Model defaults
Future Resident						
All Exposure Points	---	1.00E+06	1000	1000	366	Model defaults

TABLE E1.4
INPUTS FOR THE JOHNSON AND ETTINGER SL-SCREEN MODEL
Blackburn and Union Privileges Site
Walpole, Massachusetts

SL-SCREEN
Version 3.1; 02/04

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)		Chemical

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
200	200	10	S		

MORE ↓

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Vadose zone soil organic carbon fraction, f_{oc}^V (unitless)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	0.002	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1
				Used to calculate risk-based soil concentration.	

END

TABLE E1.5
INPUTS FOR THE JOHNSON AND ETTINGER GW-SCREEN MODEL
Blackburn and Union Privileges Site
Walpole, Massachusetts

GW-SCREEN
Version 3.0; 04/03

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
200	217.05	S	10	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
S			S	1.66	0.375	0.054

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

END

TABLE E1.6
INPUTS FOR THE JOHNSON AND ETTINGER SL-ADV MODEL
Blackburn and Union Privileges Site
Walpole, Massachusetts

SL-ADV Version 3.1; 02/04

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemical

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	[a]	[b]	[a]	[b]					1.00E-08

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	[a]										

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	[c]	[c]	[c]	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	[d]	[d]	[d]	1.0E-06	1
				Used to calculate risk-based soil concentration.	

END

Note:

[a] See Appendix E Table E1.2 for depth below grade to bottom of enclosed space floor, depth to groundwater and organic carbon fraction used at each exposure point.

[b] Assumed to be equal to depth below grade to bottom of enclosed space floor in Appendix E Table E1.2.

[c] See Appendix E Table E1.3 for building dimensions used at each exposure point.

[d] See Appendix G for averaging time (for noncarcinogens), exposure duration, and exposure frequency for each receptor.

TABLE E1.7
INPUTS FOR THE JOHNSON AND ETTINGER SG-ADV MODEL
Blackburn and Union Privileges Site
Walpole, Massachusetts

SG-ADV
Version 3.1; 02/04

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
200[a]	200[b]	10	200	0	0			1.00E-08

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054								

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10[c]	40	[d]	[d]	[d]	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	[e]	[e]	[e]

Note:

[a] A site-specific slab thickness of 15 cm is used to model current indoor air concentrations in East of South Street On-Facility Buildings 1 and 2.

[b] The site-specific sampling depth that led to the higher indoor air concentration (23 cm) is used to model current indoor air concentrations in East of South Street On-Facility Buildings 1 and 2.

[c] The site-specific slab thickness that leads to the higher indoor air concentration (15 cm) is used to model current indoor air concentrations in East of South Street On-Facility Buildings 1 and 2.

[d] See Appendix E Table E1.3 for building dimensions used at each exposure point.

[e] See Appendix G for averaging time (for noncarcinogens), exposure duration, and exposure frequency for each receptor.

TABLE E1.8
OTHER INPUTS FOR THE JOHNSON AND ETTINGER MODELS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α_1 (1/cm)	N (unitless)	M (unitless)	n (cm^3/cm^3)	θ_r (cm^3/cm^3)	Mean Grain Diameter (cm)	Bulk Density (g/cm^3)	θ_w (cm^3/cm^3)	SCS Soil Name
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044	1.66	0.054	Sand

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.24E+00	3.03E-02	25	349.90	556.60	7,127	1.5E-05	0.0E+00
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.0E-04	7.0E-04
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	7.30E+00	5.73E-04	1.40E-05	25	596.55	839.36	15,000	3.7E-04	1.1E-03
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.18E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	1.8E-04
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.87E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.79E+03	2.27E-01	5.54E-03	25	353.24	562.16	7,342	7.8E-06	3.0E-02
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.03E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	2.2E+00
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.59E-04	2.09E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.96E-02	2.18E-03	25	313.00	510.00	6,706	4.7E-07	3.0E+00
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01
75694	Trichlorofluoromethane	4.97E+02	8.70E-02	9.70E-06	1.10E+03	3.97E+00	9.68E-02	25	296.70	471.00	5,999	0.0E+00	7.0E-01
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	6.05E+01	1.48E+00	25	603.69	846.31	13,000	1.3E-03	1.8E-03
78933	Methylethylketone (2-butanone	2.30E+00	8.08E-02	9.80E-06	2.23E+05	2.29E-03	5.58E-05	25	352.50	536.78	7,481	0.0E+00	1.0E+00
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.47E+03	4.21E-01	1.03E-02	25	360.36	544.20	7,505	1.1E-04	4.0E-02
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	3.57E+00	6.34E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.60E-03	6.34E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.82E-04	25	491.14	748.40	10,373	0.0E+00	3.0E-03
91576	2-Methylnaphthalene	2.81E+03	5.22E-02	7.75E-06	2.46E+01	2.12E-02	5.17E-04	25	514.26	761.00	12,600	0.0E+00	3.0E-03
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.12E-01	5.18E-03	25	417.60	630.30	8,661	0.0E+00	1.0E-01
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.77E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01
95636	1,2,4-Trimethylbenzene	1.35E+03	6.06E-02	7.92E-06	5.70E+01	2.52E-01	6.14E-03	25	442.30	649.17	9,369	0.0E+00	6.0E-03
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.22E-01	7.86E-03	25	409.34	617.20	8,501	1.1E-06	1.0E+00
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.12E-01	2.74E-03	25	418.31	636.00	8,737	0.0E+00	1.0E+00
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.13E-01	7.64E-03	25	411.52	616.20	8,525	0.0E+00	1.0E-01
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.90E+01	9.82E-02	2.39E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.00E-01	7.32E-03	25	412.27	617.05	8,523	0.0E+00	1.0E-01
108678	1,3,5-Trimethylbenzene	1.35E+03	6.02E-02	8.67E-06	2.00E+00	2.41E-01	5.87E-03	25	437.89	637.25	9,321	0.0E+00	6.0E-03
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.62E-03	25	383.78	591.79	7,930	0.0E+00	4.0E-01
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.58E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.53E-01	1.84E-02	25	394.40	620.20	8,288	3.0E-06	0.0E+00
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E+00	4.50E-04	1.10E-05	25	667.95	936	14370	0.0E+00	1.1E-01
132649	Dibenzofuran	5.15E+03	2.38E-02	6.00E-06	3.10E+00	5.15E-04	1.26E-05	25	560	824	66400	0.0E+00	1.4E-02
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544	7192	0.0E+00	3.5E-02
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.54E-03	1.11E-04	25	715.9	969.27	17000	2.1E-04	0.0E+00
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	6.30E-03	3.87E-03	9.44E-05	25	714.15	979	16455	2.1E-06	3.0E-03
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.70E-02	6.95E-03	1.70E-04	25	603.01	839.37	15000	4.9E-03	1.1E-04
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.34E-04	1.06E-05	25	596.55	839.36	15000	1.8E-03	0.0E+00
591786	2-Hexanone[1]	1.32E+01	7.20E-02	8.00E-06	1.80E+04	3.82E-03	9.32E-05	25	400.89	587.09	8753.28	0.0E+00	5.0E-03

[1] Parameters for 2-hexanone are from the following sources: D_a and S are from http://www.epa.gov/ORD/WebPubs/projsum/600sr95039.pdf; D_w and T_R are from http://www.deq.state.mi.us/documents/deq-rrd-part201-rules-Rule752table.pdf; $\Delta H_{v,b}$, T_B, and T_c are from http://www/gpengineeringsoft.com/pages/pdtphysprops.html; and H and K_{oc} are from USEPA's Exposure Assessment Tools and Models pages of their website http://www.epa.gov/oppt/exposure/docs/episuitedl.htm

Appendix E2
Trench Vapor Modeling

The J&E model calculates the concentration of vapors in a building that enter by two mechanisms: diffusion and pressure-driven advection, and through two media: soil and the building foundation. The following equation expresses the steady-state attenuation coefficient for the dilution of soil gas to indoor air:

$$\alpha = \frac{\left[\left(\frac{D_T^{eff} A_B}{Q_{building} L_T}\right) \times \exp\left(\frac{Q_{soil} L_{crack}}{D^{crack} A_{crack}}\right)\right]}{\left[\exp\left(\frac{Q_{soil} L_{crack}}{D^{crack} A_{crack}}\right) + \left(\frac{D_T^{eff} A_B}{Q_{building} L_T}\right) + \left(\frac{D_T^{eff} A_B}{Q_{soil} L_T}\right)\left[\exp\left(\frac{Q_{soil} L_{crack}}{D^{crack} A_{crack}}\right) - 1\right]\right]}$$

where:

α	=	Steady-state attenuation coefficient, unitless
D_T^{eff}	=	Total overall effective diffusion coefficient, cm^2/s
A_B	=	Area of the enclosed space below grade, cm^2
$Q_{building}$	=	Building ventilation rate, cm^3/s
L_T	=	Source-building separation, cm
Q_{soil}	=	Volumetric flow rate of soil gas into the enclosed space, cm^3/s
L_{crack}	=	Enclosed space foundation or slab thickness, cm
A_{crack}	=	Area of total cracks, cm^2
D^{crack}	=	Effective diffusion coefficient through the cracks, cm^2/s

Johnson (Johnson, 2002) identified three key parameters that can be used to simplify the equation for the attenuation coefficient and identified the parameters that the model is sensitive to depending on which vapor intrusion mechanisms are most important. Diffusion through soil is the rate-limiting mechanism for vapor intrusion into a trench. If $Q_{soil} = 0$, which indicates that diffusion is the dominant mechanism across the foundation and that diffusion though soil is the over-all rate-limiting process, the equation for the attenuation coefficient simplifies to $\alpha = x/(1+x)$, where $x = D_T^{eff} A_B/(Q_{building} L_T)$ (Johnson, 2002).

Consistent with Johnson (Johnson, 2002), the J&E vapor intrusion models for groundwater (GW-ADV) and soil (SL-ADV) (USEPA, 2003a) were adapted to a diffusion-dominant model by assuming no significant pressure-driven advection into the building ($Q_{soil} \sim 0$). We used this model for trench vapor, assuming a construction worker is working in the basement portion of the model, with no floor, walls, or building above. (See model input parameters in the table following this discussion.) In the J&E model, setting Q_{soil} to 0 causes an error, so we entered a very small number (e.g. 10^{-100}) to approximate 0. The enclosed space floor thickness (L_{crack}) and the soil-building pressure

differential (? P) are zero for a trench and are set to 0 in the model. Since the crack width (w) drops out of the equation, the model is insensitive to this parameter if Q_{soil} is very small. With these assumptions, diffusion though soil is the rate-limiting mechanism for air intrusion into a trench.

The other parameters needed for the trench model that should differ from a default building scenario are the trench dimensions and the air exchange rate. Since air exchange rates are not available for a trench, we calculate this exchange rate by assuming the trench is relatively shallow compared to its length parallel to the wind, so that air flows predominantly down the length of the trench. We assume the wind speed within the trench is 10% of an above ground wind speed. This assumption is based on the observation that wind speeds in trenches will usually be somewhat lower than wind speeds over open terrain. The lower the assumed wind speed in J&E modeling, the higher the EPC prediction. Therefore, while we found no data to support a specific wind speed inside of a construction trench, we selected 10% as a value far closer to zero wind speed than aboveground wind speed so that we did not underestimate exposure for a construction worker. Assuming a wind speed of zero in the J&E model would not be logical as there is some movement of air even within a trench and, in addition, this assumption produces an error message.

We assume a conservative aboveground wind speed of 1.5 m/s (approximately 4 times lower than the average wind speed in Boston Massachusetts as indicated by the American Wind Energy Association http://www.awea.org/faq/usresource.html) and therefore a trench wind speed of 0.15 m/s. The air exchange rate equals the wind speed divided by the length of the trench. The most conservative assumptions about trench dimensions are a long length parallel to the wind, a narrow width but wide enough for a person to work in, and a shallow depth in which a person could continuously breathe the air within the trench. For a set exchange rate, trench depth, and floor area, vapor concentrations are greatest in a trench that is longer than it is wide. The trench is therefore assumed to be 30 feet long by 3 feet wide by 4 feet deep, resulting in a calculated air exchange rate of 60 per hour. These dimensions are realistic for an excavation trench while at the same time maintains the smallest trench volume to calculate a conservative attenuation coefficient, and the longest trench length for a conservative air exchange rate (the longer the trench, the longer it takes for one mass of air to move completely through the trench).

Since there are no groundwater, soil, or soil gas screening values available for the construction worker trench vapor pathway to use for COPC selection, we used the modified J&E model described above (model inputs and chemical parameters are in tables following this section), applying conservative site-specific parameters, to develop target soil, soil gas, and groundwater screening values for the trench vapor pathway.

E2.1 Target Screening Values for the Trench Vapor Pathway

Target soil, soil gas, and groundwater screening values for the trench vapor pathway were developed for chemicals detected at least once in soil, soil gas, or groundwater, in a future soil or groundwater to trench vapor exposure point, and for which chemical properties are consistent with volatility as described in (USEPA, 2002; USEPA, 2003b) (a chemical is considered sufficiently volatile if it has a Henry's Law Constant (HLC) of 1E-05 atm-m^3/mol or greater); target groundwater concentrations were developed for chemicals meeting the above criteria and that first screened in based on comparison to Region IX tap water standards (see main report Section 2.2.2.5). Soil and groundwater screening values were back-calculated from the J&E SL-ADV or GW-ADV model, modified for trench vapor as discussed above, and selecting the "Risk-Based Soil or Groundwater Concentration" option within the model. Soil gas screening values were calculated iteratively because SG-ADV does not back-calculate risk-based soil gas concentrations. We assumed an exposure frequency of 156 days/year, for 1 year (consistent with the construction worker exposure assumptions presented in Table 4.6.RME in Appendix G). Screening values were not developed for mercury and cyanide because mercury in site soil and groundwater is not likely to be in the elemental form and cyanide is not likely to be in the form of hydrogen cyanide, the volatile chemical forms of these chemicals assumed in the J&E models (USEPA, 2003a).

We applied the same toxicity value for the trench screening values as we did for the indoor air screening values.

- For **2-methylnaphthalene**, we used an RfC of 3E-03 mg/m^3 (IRIS RfC for naphthalene, per USEPA Region 1 guidance) rather than 0.07 mg/m^3 in the J&E model.
- For **Xylenes**, we used the IRIS RfC of 0.1 mg/m^3 rather than 7 mg/m^3 in the J&E model.
- For **Chrysene**, we added an RfC of 3E-03 mg/m^3 (IRIS RfC for naphthalene, per USEPA Region 1 guidance)

Soil Screening Values

Soil samples from all portions of the site are shallow (within 10 feet of the ground surface in most places; see Tables 8 and 10), and at this depth are generally categorized as sand (Sanborn, Head & Associates personal communication). Therefore, sand is the soil type we used in the model. Using these parameters along with other model default parameters, target soil concentrations were calculated from the trench vapor model. Target soil concentrations were derived based on a non-cancer hazard index of 0.1. Tables following this section (Tables E2.4 and E2.7) show the J&E model inputs and chemical parameters used in the trench vapor SL-ADV model. Target soil concentrations are shown in Table E2.1. Note that a screening value could not be calculated for some chemicals because the model output was "NOC" (Not of Concern), because the contaminant is a solid at the model temperature used (USEPA, 2003a).

Screening values in Table E2.1 were used to select soil COPCs as shown in RAGS Tables 2.4 in Appendix C for the trench vapor pathway.

Note that use of the 2004 version of the Johnson and Ettinger model (version 3.1) (USEPA, 2004) would not increase our list of COPCs, nor change the risk conclusions. The benzene screening value was updated to reflect the RfC for benzene that was in version 3.1 of the model, but not in the previous version (3.0), but this new value did not change the COPC screening.

Groundwater Screening Values

The depth to groundwater at the site is relatively shallow (less than 20 feet below ground surface), as shown in Tables 17 and 18. Therefore, it is assumed that the water table is as close to the trench as the model allows (140 cm; see Table E2.5 in this appendix). We used sand as the soil type, as we did for the soil screening values. Tables following this section (Tables E2.5 and E2.7) show the J&E model inputs and chemical parameters used in the trench vapor GW-ADV model. Target groundwater concentrations are shown in Table E2.2. Note that a screening value could not be calculated for some chemicals because the model output was "NOC" (Not of Concern), because the target groundwater concentration is at or above solubility limits for that chemical (USEPA, 2003a). Note that 2-hexanone is included even though it is not a chemical in the J&E model using a provisional RfC of 5E-03 mg/m^3 from STSC. See Table E2.7 for the chemical parameters used for 2-hexanone.

Screening values in Table E2.2 were used to select groundwater COPCs as shown in RAGS Table 2.8a in Appendix C for the trench vapor pathway.

Note that use of the 2004 version of the Johnson and Ettinger model (version 3.1) (USEPA, 2004) would not increase our list of COPCs, nor change the risk conclusions.

Soil Gas Screening Values

Soil gas samples were collected from the "SB-09 area" at East of South Street On-Facility at soil depths generally categorized as sand (Sanborn, Head & Associates personal communication). Therefore, sand is the soil type we used in the model. Using these parameters along with other model default parameters, target soil gas concentrations were calculated from the trench vapor model iteratively. Target soil gas concentrations were derived based on a non-cancer hazard index of 0.1 or a cancer risk of 1E-06. Tables following this section (Tables E2.6 and E2.7) show the J&E model inputs and chemical parameters used in the trench vapor SG-ADV model (EPA, 2004). Target soil gas concentrations are shown in Table E2.3.

Screening values in Table E2.3 were used to select soil COPCs as shown in RAGS Tables 2.4 in Appendix C for the trench vapor pathway.

E2.2 Trench Vapor EPCs

The J&E trench vapor SL-ADV model was applied, with the site-specific and default parameters discussed above (and shown in tables following this section) to model future trench vapor EPCs from soil EPCs. In addition, site-specific TOC values, equal to those used in the indoor air modeling (see Table E1.2 and E1.2a), were used to model trench vapor EPCs. Soil EPCs used to model trench vapor EPCs are shown in RAGS Table 3.6.RME and Table 3.6.CT in Appendix F. Modeled trench vapor concentrations (RME and CT) are summarized in RAGS supporting Table 3.6 in Appendix F.

Groundwater to trench vapor EPCs were not calculated because, as shown in RAGS Table 2.8a in Appendix C, there were no groundwater COPCs remaining after the final groundwater to trench vapor COPC screen.

The J&E trench vapor SG-ADV model was applied, with the site-specific and default parameters discussed above (and shown in tables following this section) to model future trench vapor EPCs from soil gas EPCs. Soil gas EPCs used to model trench vapor EPCs are shown in RAGS Table 3.6.RME and Table 3.6.CT in Appendix F. Modeled trench vapor concentrations (RME and CT) are summarized in RAGS supporting Table 3.6 in Appendix F.

REFERENCES

Johnson, P. 2002. Identification of Critical Parameters for the Johnson and Ettinger (1991) Vapor Intrusion Model. Summary of Research Results from American Petroleum Institute's Soil & Groundwater Technical Task Force, American Petroleum Institute.

United States Environmental Protection Agency (USEPA), 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils. November 29, 2002.

United States Environmental Protection Agency (USEPA), 2003a. Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings. Version 3.0. February 2003.

United States Environmental Protection Agency (USEPA), 2003b. User's Guide For The Johnson and Ettinger (1991) Model For Subsurface Vapor Intrusion Into Buildings (Revised), http://www.epa.gov/superfund/programs/risk/airmodel/johnson_ettinger.htm.

United States Environmental Protection Agency (USEPA), 2004. Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings. Version 3.1. February 2004.

TABLE E2.1
TARGET SOIL SCREENING LEVELS FOR THE TRENCH VAPOR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

CAS No.	Chemical	Target Soil Concentration (mg/kg) [1]
83-32-9	Acenaphthene	34
67-64-1	Acetone	0.087
309-00-2	Aldrin	27
71-43-2	Benzene	0.00039
205-99-2	Benzo(b)fluoranthene	NOC
319-84-6	BHC (alpha-)	0.72
58-89-9	BHC (gamma-)	1.3
78-93-3	Butanone (2-)	0.31
75-15-0	Carbon disulfide	0.0019
5103-71-9	Chlordane (alpha-) [2]	NOC
5103-74-2	Chlordane (gamma-) [2]	NOC
67-66-3	Chloroform	0.00036
218-01-9	Chrysene	NOC
72-55-9	DDE (4,4'-)	NOC
132-64-9	Dibenzofuran	NOC
95-50-1	Dichlorobenzene (1,2-)	0.098
106-46-7	Dichlorobenzene (1,4-)	0.3
156-59-2	Dichloroethene (cis-1,2-)	0.0005
60-57-1	Dieldrin	5.3
959-98-8	Endosulfan I [3]	NOC
33213-65-9	Endosulfan II [3]	NOC
1031-07-8	Endosulfan sulfate [3]	NOC
100-41-4	Ethylbenzene	0.037
86-73-7	Fluorene	NOC
76-44-8	Heptachlor	0.0082
75-09-2	Methylene chloride	0.015
91-57-6	Methylnaphthalene (2-)	0.047
91-20-3	Naphthalene	0.024
129-00-0	Pyrene	NOC
100-42-5	Styrene	0.37
108-88-3	Toluene	0.012
71-55-6	Trichloroethane (1,1,1-)	0.019
79-01-6	Trichloroethene	0.00012
75-69-4	Trichlorofluoromethane	0.0038
108-38-3 106-42-3	Xylene (m,p-) [4]	0.0063
95-47-6	Xylene (o-)	0.0078

Notes:

NOC = Not of Concern. The contaminant is a solid at the model temperature (10°C), and not of concern for the trench vapor pathway, per the Johnson & Ettinger Model Version 3.1 (USEPA, 2004) modified for the trench vapor pathway.

[1] Target soil concentration is derived using the Johnson & Ettinger model, modified for exposure of a construction worker in a trench. Target soil concentrations correspond to a Hazard Index of 0.1 or a cancer risk of 1E-06.

[2] Target soil concentration is for chlordane.

[3] Target soil concentration is for endosulfan.

[4] Target soil concentration is for p-xylene.

TABLE E2.2
TARGET GROUNDWATER SCREENING LEVELS FOR THE TRENCH VAPOR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

CAS No.	Chemical	Target Groundwater Concentration (mg/L) [1]
71-43-2	Benzene	0.94
205-99-2	Benzo(b)fluoranthene	NOC
67-66-3	Chloroform	1.2
591-78-6	Hexanone (2-)	7.9
91-57-6	Methylnaphthalene (2-)	2.7
1634-04-4	Methyl-tert Butyl Ether	620
91-20-3	Naphthalene	2
79-01-6	Trichloroethene	0.13
108-38-3 106-42-3	Xylene (m,p-) [2]	3.1

Notes:
NOC = Not of Concern. The target groundwater concentration is above the solubility limit per Version 3.1 of the Johnson & Ettinger model (UESPA, 2004), modified for the trench vapor pathway (Appendix E2).

[1] Target groundwater concentration is derived using the Johnson & Ettinger model, modified for exposure of a construction worker in a trench. Target groundwater concentrations correspond to a Hazard Index of 0.1 or a cancer risk of 1E-06.

[2] Target groundwater concentration is for p-xylene.

TABLE E2.3
TARGET SOIL GAS SCREENING LEVELS FOR THE TRENCH VAPOR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

CAS No.	Chemical	Target Soil Gas Concentration (mg/m^3) [1]
67-64-1	Acetone	2.2
71-43-2	Benzene	0.27
78-93-3	Butanone (2-)	49
75-15-0	Carbon disulfide	5.4
56-23-5	Carbon tetrachloride	0.47
67-66-3	Chloroform	0.23
541-73-1	Dichlorobenzene (1,3-)	1.2
156-59-2	Dichloroethene (cis-1,2-)	0.38
100-41-4	Ethylbenzene	10
110-54-3	Hexane (n-)	0.83
108-10-1	Methyl-2-pentanone (4-)	32
75-09-2	Methylene chloride	11
91-57-6	Methylnaphthalene (2-)	0.045
91-20-3	Naphthalene	0.040
100-42-5	Styrene	11
127-18-4	Tetrachloroethene	1.3
108-88-3	Toluene	3.6
71-55-6	Trichloroethane (1,1,1-)	22
79-01-6	Trichloroethene	0.064
75-69-4	Trichlorofluoromethane	6.4
95-63-6	Trimethylbenzene (1,2,4-)	0.078
108-67-8	Trimethylbenzene (1,3,5-)	0.078
108-38-3 106-42-3	Xylene (m,p-) [2]	1.0
95-47-6	Xylene (o-)	0.92

Notes:

[1] Target soil gas concentration is derived using the Johnson & Ettinger model, modified for exposure of a construction worker in a trench. Target soil gas concentrations correspond to a Hazard Index of 0.1 or a cancer risk of 1E-06.

[2] Target soil gas concentration is for p-xylene.

TABLE E2.4
INPUTS FOR THE JOHNSON AND ETTINGER SL-ADV MODEL - MODIFIED FOR THE TRENCH VAPOR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

SL-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemical

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	122	122	0	122	0	0			1.00E-08

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	(a)										

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
0	0	914	91	122	0.1	60	1.00E-100

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	1	1	156	1.0E-06	0.1
				Used to calculate risk-based soil concentration.	

END

Note:
(a) See Appendix E Table E1.2 for organic carbon fraction used at each exposure point. The default organic carbon fraction (0.002) was used to develop soil screening values shown in Table E2.1.

TABLE E2.5
INPUTS FOR THE JOHNSON AND ETTINGER GW-ADV MODEL - MODIFIED FOR THE TRENCH VAPOR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

GW-ADV Version 3.0; 02/03

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_w (µg/L)
	Chemical

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of L_{WT} (cell G28)							
10	122	140	140	0	0	A	S			1.00E-08

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054								

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
0	0	914	91	122	914	60	1E-100

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	1	1	156	1.0E-06	0.1
				Used to calculate risk-based groundwater concentration.	

END

TABLE E2.6
INPUTS FOR THE JOHNSON AND ETTINGER SG-ADV MODEL - MODIFIED FOR THE TRENCH VAPOR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

SG-ADV
Version 3.1; 02/04

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of Ls (cell F24)					
122	122	10	122	0	0			1.00E-08

MORE ↓

ENTER Stratum A SCS soil type	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054								

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
0	0	914	91	122	0.1	60	1.00E-100

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	1	1	156

TABLE E2.7
OTHER INPUTS FOR THE JOHNSON AND ETTINGER MODELS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α_1 (1/cm)	N (unitless)	M (unitless)	n (cm^3/cm^3)	θ_r (cm^3/cm^3)	Mean Grain Diameter (cm)	Bulk Density (g/cm^3)	θ_w (cm^3/cm^3)	SCS Soil Name
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044	1.66	0.054	Sand

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.0E-04	7.0E-04
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	7.30E+00	5.73E-04	1.40E-05	25	596.55	839.36	15,000	3.7E-04	1.1E-03
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.18E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	1.8E-04
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.87E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.79E+03	2.27E-01	5.54E-03	25	353.24	562.16	7,342	7.8E-06	3.0E-02
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.03E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	2.2E+00
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.59E-04	2.09E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.96E-02	2.18E-03	25	313.00	510.00	6,706	4.7E-07	3.0E+00
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01
75694	Trichlorofluoromethane	4.97E+02	8.70E-02	9.70E-06	1.10E+03	3.97E+00	9.68E-02	25	296.70	471.00	5,999	0.0E+00	7.0E-01
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	6.05E+01	1.48E+00	25	603.69	846.31	13,000	1.3E-03	1.8E-03
78933	Methylethylketone (2-butanon	2.30E+00	8.08E-02	9.80E-06	2.23E+05	2.29E-03	5.58E-05	25	352.50	536.78	7,481	0.0E+00	1.0E+00
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.47E+03	4.21E-01	1.03E-02	25	360.36	544.20	7,505	1.1E-04	4.0E-02
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	3.57E+00	6.34E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.60E-03	6.34E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.82E-04	25	491.14	748.40	10,373	0.0E+00	3.0E-03
91576	2-Methylnaphthalene	2.81E+03	5.22E-02	7.75E-06	2.46E+01	2.12E-02	5.17E-04	25	514.26	761.00	12,600	0.0E+00	3.0E-03
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.12E-01	5.18E-03	25	417.60	630.30	8,661	0.0E+00	1.0E-01
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.77E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.22E-01	7.86E-03	25	409.34	617.20	8,501	1.1E-06	1.0E+00
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.12E-01	2.74E-03	25	418.31	636.00	8,737	0.0E+00	1.0E+00
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.13E-01	7.64E-03	25	411.52	616.20	8,525	0.0E+00	1.0E-01
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.90E+01	9.82E-02	2.39E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.00E-01	7.32E-03	25	412.27	617.05	8,523	0.0E+00	1.0E-01
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.62E-03	25	383.78	591.79	7,930	0.0E+00	4.0E-01
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.58E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E+00	4.50E-04	1.10E-05	25	667.95	936	14370	0.0E+00	1.1E-01
132649	Dibenzofuran	5.15E+03	2.38E-02	6.00E-06	3.10E+00	5.15E-04	1.26E-05	25	560	824	66400	0.0E+00	1.4E-02
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544	7192	0.0E+00	3.5E-02
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.54E-03	1.11E-04	25	715.9	969.27	17000	2.1E-04	0.0E+00
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	6.30E-03	3.87E-03	9.44E-05	25	714.15	979	16455	2.1E-06	3.0E-03
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.70E-02	6.95E-03	1.70E-04	25	603.01	839.37	15000	4.9E-03	1.1E-04
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.34E-04	1.06E-05	25	596.55	839.36	15000	1.8E-03	0.0E+00
591786	2-Hexanone[1]	1.32E+01	7.20E-02	8.00E-06	1.80E+04	3.82E-03	9.32E-05	25	400.89	587.09	8753.28	0.0E+00	5.0E-03
1634044	MTBE	7.26E+00	1.02E-01	1.05E-05	5.10E+04	2.56E-02	6.23E-04	25	328.3	497.1	6677.66	0.0E+00	3.0E+00

[1] Parameters for 2-hexanone are from the following sources: D_a and S are from http://www.epa.gov/ORD/WebPubs/projsum/600sr95039.pdf; D_w and T_R are from http://www.deq.state.mi.us/documents/deq-rrd-part201-rules-Rule752table.pdf; $\Delta H_{v,b}$, T_B, and T_c are from http://www/gpengineeringsoft.com/pages/pdtphysprops.html; and H and K_{oc} are from USEPA's Exposure Assessment Tools and Models pages of their website http://www.epa.gov/oppt/exposure/docs/episuitedl.htm

APPENDIX F
RAGS Table 3 Series (Exposure Point Concentration Summaries) and Modeled Plant and Air EPCs

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1')

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
East of South Street On-Facility (Site Worker)	Arsenic	mg/kg	3.48	4.94 (N)	5.1	4.94	mg/kg	95% UCL (N)	W-Test (3)
	Benz(a)anthracene	mg/kg	7.41	18.3 (N)	20	18.3	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(a)pyrene	mg/kg	6.35	14.7 (N)	15	14.7	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(b)fluoranthene	mg/kg	7.35	16.8 (N)	17	16.8	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(k)fluoranthene	mg/kg	3.75	8.43 (N)	8.6	8.43	mg/kg	95% UCL (N)	W-Test (3)
	Chrysene	mg/kg	7.18	17.5 (N)	19	17.5	mg/kg	95% UCL (N)	W-Test (3)
	Dibenz(a,h)anthracene	mg/kg	0.74	1.78 (N)	1.9 J	1.78	mg/kg	95% UCL (N)	W-Test (3)
	Indeno(1,2,3-cd)pyrene	mg/kg	3.53	8.94 (N)	9.9	8.94	mg/kg	95% UCL (N)	W-Test (3)
	Lead	mg/kg	202	383 (N)	372 J	202	mg/kg	MEAN	(14)
	Trichloroethene	mg/kg	NA	NC	0.17 J	0.17	mg/kg	MAX	(12)
Old Railroad and Former Lower Mill Pond Area (Trespasser)	Antimony	mg/kg	1.21	2.86 (G)	4.4 J	2.86	mg/kg	95% UCL (G)	K-S Test (5)
	Arsenic	mg/kg	27.8	86.5 (G)	106	86.5	mg/kg	95% UCL (G)	K-S Test (5)
	Benz(a)anthracene	mg/kg	4.39	36.1 (G)	22	22	mg/kg	MAX	(4)
	Benzo(a)pyrene	mg/kg	3.88	31 (G)	18	18	mg/kg	MAX	(4)
	Benzo(b)fluoranthene	mg/kg	6.53	56.6 (G)	30	30	mg/kg	MAX	(4)
	Benzo(k)fluoranthene	mg/kg	2.98	23.1 (G)	14	14	mg/kg	MAX	(4)
	Chromium	mg/kg	12.4	32.9 (NP)	45	32.9	mg/kg	95% UCL (NP)	W-Test (6)
	Chrysene	mg/kg	5.02	39.6 (G)	24	24	mg/kg	MAX	(4)
	Dibenz(a,h)anthracene	mg/kg	0.623	5.1 (G)	3.4	3.4	mg/kg	MAX	(4)
	Indeno(1,2,3-cd)pyrene	mg/kg	2.35	18.5 (G)	13	13	mg/kg	MAX	(4)
	Manganese	mg/kg	224	310 (N)	379 J	310	mg/kg	95% UCL (N)	W-Test (3)
	Vanadium	mg/kg	20.1	29.3 (G)	44.3 J	29.3	mg/kg	95% UCL (G)	K-S Test (5)

TABLE 3.1.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current

Medium: Soil

Exposure Medium: Surface soil (0-1')

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
Gleason Court Vacant Lot (Resident)	Arsenic	mg/kg	11.8	NC	19.3	19.3	mg/kg	MAX	(11)
	Benzo(a)pyrene	mg/kg	0.275	NC	0.29	0.29	mg/kg	MAX	(11)
	Manganese	mg/kg	208	NC	232 J	232	mg/kg	MAX	(11)
	Vanadium	mg/kg	28.0	NC	29	29	mg/kg	MAX	(11)
Gleason Court Lot 122 (Resident)	Arsenic	mg/kg	9.28	NC	14.3	14.3	mg/kg	MAX	(11)
	Benzo(a)pyrene	mg/kg	0.313	NC	0.385	0.385	mg/kg	MAX	(11)
	Manganese	mg/kg	190	NC	203 J	203	mg/kg	MAX	(11)
	Vanadium	mg/kg	33.8	NC	36.7	36.7	mg/kg	MAX	(11)
Gleason Court Lot 124 (Resident)	Benzo(a)pyrene	mg/kg	0.4	NC	0.64	0.64	mg/kg	MAX	(11)
	Benzo(b)fluoranthene	mg/kg	0.52	NC	0.87	0.87	mg/kg	MAX	(11)
	Dibenz(a,h)anthracene	mg/kg	0.046	NC	0.075 J	0.075	mg/kg	MAX	(11)
	Vanadium	mg/kg	27.6	NC	32	32	mg/kg	MAX	(11)
Gleason Court Lot 125 (Resident)	Arsenic	mg/kg	1.85	NC	2	2	mg/kg	MAX	(11)
	Benz(a)anthracene	mg/kg	0.608	NC	1.2	1.2	mg/kg	MAX	(11)
	Benzo(a)pyrene	mg/kg	0.708	NC	1.4	1.4	mg/kg	MAX	(11)
	Benzo(b)fluoranthene	mg/kg	0.858	NC	1.7	1.7	mg/kg	MAX	(11)
	Dibenz(a,h)anthracene	mg/kg	0.0614	NC	0.12 J	0.12	mg/kg	MAX	(11)
	Manganese	mg/kg	252	NC	252	252	mg/kg	MAX	(11)
	Vanadium	mg/kg	21.7	NC	26.9	26.9	mg/kg	MAX	(11)
West of South of South Street On-Facility and Vacant Lot 209 (Trespasser)	Arsenic	mg/kg	6.07	18.1 (NP)	35.7 J	18.1	mg/kg	95% UCL (NP)	W Test (6)
	Benz(a)anthracene	mg/kg	0.826	3.32 (G)	6.4	3.32	mg/kg	95% UCL (G)	K-S Test (13)
	Benzo(a)pyrene	mg/kg	0.914	3.82 (G)	7.3	3.82	mg/kg	95% UCL (G)	K-S Test (13)
	Benzo(b)fluoranthene	mg/kg	0.954	3.84 (G)	6.7	3.84	mg/kg	95% UCL (G)	K-S Test (13)
	Chrysene	mg/kg	0.985	3.89 (G)	7.6	3.89	mg/kg	95% UCL (G)	K-S Test (13)
	Dibenz(a,h)anthracene	mg/kg	0.110	0.400 (G)	0.88	0.400	mg/kg	95% UCL (G)	K-S Test (13)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.436	1.62 (G)	3.3	1.62	mg/kg	95% UCL (G)	K-S Test (13)
	Manganese	mg/kg	166	197 (N)	284	197	mg/kg	95% UCL (N)	W Test (3)
	Vanadium	mg/kg	23.1	26.9 (N)	37.8	26.9	mg/kg	95% UCL (N)	W Test (3)

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1')

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value [2]	Units	Statistic	Rationale
Lot 208 (Resident)	Arsenic	mg/kg	2.85	NC	3.4		3.4	mg/kg	MAX	(11)
	Benzo(a)pyrene	mg/kg	0.051	NC	0.064		0.064	mg/kg	MAX	(11)
	Cyanide	mg/kg	1.64	NC	3.2	J	3.2	mg/kg	MAX	(11)
	Manganese	mg/kg	220	NC	286		286	mg/kg	MAX	(11)
	Vanadium	mg/kg	20.3	NC	21.5		21.5	mg/kg	MAX	(11)
Lot 283 (Resident)	Arsenic	mg/kg	NA	NC	4.9		4.9	mg/kg	MAX	(12)
	Benz(a)anthracene	mg/kg	NA	NC	0.78		0.78	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.72		0.72	mg/kg	MAX	(12)
	Benzo(b)fluoranthene	mg/kg	NA	NC	0.62		0.62	mg/kg	MAX	(12)
	Dibenz(a,h)anthracene	mg/kg	NA	NC	0.059		0.059	mg/kg	MAX	(12)
	Lead	mg/kg	NA	NC	308	J	308	mg/kg	MAX	(12)
	Manganese	mg/kg	NA	NC	811		811	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	34.4	J	34.4	mg/kg	MAX	(12)
Lot 282 (Resident)	Arsenic	mg/kg	NA	NC	8.9		8.9	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.17		0.17	mg/kg	MAX	(12)
	Manganese	mg/kg	NA	NC	391		391	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	36.5	J	36.5	mg/kg	MAX	(12)
Lot 210 (Resident)	Arsenic	mg/kg	NA	NC	3.6		3.6	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.61		0.61	mg/kg	MAX	(12)
	Benzo(b)fluoranthene	mg/kg	NA	NC	0.8		0.8	mg/kg	MAX	(12)
	Manganese	mg/kg	NA	NC	347		347	mg/kg	MAX	(12)
	Nickel	mg/kg	NA	NC	165		165	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	33.6	J	33.6	mg/kg	MAX	(12)

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1')

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
Lot 230 (Resident)	Arsenic	mg/kg	NA	NC	6.8 J	6.8	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.42	0.42	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	28.3 J	28.3	mg/kg	MAX	(12)
Lot 257 (Resident)	Arsenic	mg/kg	7.18	NC	10.5	10.5	mg/kg	MAX	(11)
	Benz(a)anthracene	mg/kg	0.765	NC	0.79	0.79	mg/kg	MAX	(11)
	Benzo(a)pyrene	mg/kg	0.713	NC	0.765	0.765	mg/kg	MAX	(11)
	Benzo(b)fluoranthene	mg/kg	0.925	NC	1.04	1.04	mg/kg	MAX	(11)
	Chromium	mg/kg	22.8	NC	26	26	mg/kg	MAX	(11)
	Dibenz(a,h)anthracene	mg/kg	0.102	NC	0.145	0.145	mg/kg	MAX	(11)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.458	NC	0.715	0.715	mg/kg	MAX	(11)
	Lead	mg/kg	566	NC	657 J	566	mg/kg	MEAN	(14)
	Manganese	mg/kg	345	NC	415 J	415	mg/kg	MAX	(11)
	Vanadium	mg/kg	29.5	NC	35.9 J	35.9	mg/kg	MAX	(11)
Orlando Property (Resident)	Arsenic	mg/kg	2.69	3.31 (G)	4.5	3.31	mg/kg	95% UCL (G)	K-S Test (5)
	Benz(a)anthracene	mg/kg	0.434	1.57 (T)	3.6	1.57	mg/kg	99% UCL (T)	W-Test (7)
	Benzo(a)pyrene	mg/kg	0.339	1.29 (T)	2.7	1.29	mg/kg	99% UCL (T)	W-Test (7)
	Benzo(b)fluoranthene	mg/kg	0.397	1.49 (T)	3.2	1.49	mg/kg	99% UCL (T)	W-Test (7)
	Chromium	mg/kg	12.1	16.4 (G)	23	16.4	mg/kg	95% UCL (G)	A-D Test (8)
	Dibenz(a,h)anthracene	mg/kg	0.0296	0.074 (G)	0.16	0.074	mg/kg	95% UCL (G)	K-S Test (5)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.13	0.326 (T)	0.72	0.326	mg/kg	95% UCL (T)	W-Test (9)
	Lead	mg/kg	92.5	204 (T)	474 J	92.5	mg/kg	MEAN	(14)
	Manganese	mg/kg	308	404 (N)	615	404	mg/kg	95% UCL (N)	W-Test (3)
	Vanadium	mg/kg	24.9	32.4 (G)	56.7	32.4	mg/kg	95% UCL (G)	K-S Test (5)

TABLE 3.1.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1')

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
Lot 342 (Resident)	Arsenic	mg/kg	NA	NC	5.7 J	5.7	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.1	0.1	mg/kg	MAX	(12)
	Chromium	mg/kg	NA	NC	25.3	25.3	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	39.2 J	39.2	mg/kg	MAX	(12)
Lot 360 (Resident)	Antimony	mg/kg	4.55	NC	6.7 J	6.7	mg/kg	MAX	(11)
	Arsenic	mg/kg	7.96	18.0 (G)	28.3 J	18.0	mg/kg	95% UCL (G)	K-S Test (5)
	Benz(a)anthracene	mg/kg	0.339	0.514 (N)	0.7 J	0.514	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(a)pyrene	mg/kg	0.295	0.455 (N)	0.62	0.455	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(b)fluoranthene	mg/kg	0.432	0.656 (N)	0.86	0.656	mg/kg	95% UCL (N)	W-Test (3)
	Chromium	mg/kg	67.4	NC	96.8	96.8	mg/kg	MAX	(11)
	Dibenz(a,h)anthracene	mg/kg	0.0602	0.0899 (N)	0.13	0.0899	mg/kg	95% UCL (N)	W-Test (3)
	Lead	mg/kg	222	561 (G)	730 J	222	mg/kg	MEAN	(14)
	Vanadium	mg/kg	47.3	NC	48.6 J	48.6	mg/kg	MAX	(11)
Lot 350 (Trespasser)	Antimony	mg/kg	NA	NC	4 J	4	mg/kg	MAX	(12)
	Arsenic	mg/kg	NA	NC	7.6 J	7.6	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.15	0.15	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	45.4 J	45.4	mg/kg	MAX	(12)

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:

NA = Not applicable.

NC = Not calculated.

(G) = gamma

(N) = normal

(NP) = non-parametric

(T) = log-normal (value based on log-transformed data)

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.

(3) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).

(4) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the maximum detected concentration is used for the RME EPC.

(5) Kolmogorov-Smirnov test indicates the data are gamma distributed and k^>0.5. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).

(6) Shapiro-Wilk W test indicates the data are non-parametric and $0.5<\sigma<1.0$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).

(7) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.5<\sigma<2.0$, and $n<20$. Therefore, a 99% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(8) Anderson-Darling test indicates the data are gamma distributed and k^>0.5. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).

(9) Shapiro-Wilk W test indicates the data are log-normally distributed, $1<\sigma<1.5$, and $n<25$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(10) Shapiro-Wilk W test indicates the data are non-parametric and $0<\sigma<0.5$. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).

(11) Maximum concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.

(12) Only one sample is included in this exposure point concentration. Therefore, an arithmetic mean is not calculated and the maximum concentration is used as the RME EPC.

(13) Kolmogorov-Smirnov test indicates the data are gamma distributed and $0.1 < k^ < 0.5$. Therefore, an adjusted gamma 95% UCL was calculated (USEPA, 2004).

(14) The arithmetic mean is used in the IEUBK and Adult Lead Models.

TABLE 3.1.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current

Medium: Soil

Exposure Medium: Surface soil (0-1')

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value[2]	Units	Statistic	Rationale
East of South Street On-Facility (Site Worker)	Arsenic	mg/kg	3.48	4.94	(N)	5.1		4.94	mg/kg	95% UCL (N)	W-Test (3)
	Benz(a)anthracene	mg/kg	7.41	18.3	(N)	20		18.3	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(a)pyrene	mg/kg	6.35	14.7	(N)	15		14.7	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(b)fluoranthene	mg/kg	7.35	16.8	(N)	17		16.8	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(k)fluoranthene	mg/kg	3.75	8.43	(N)	8.6		8.43	mg/kg	95% UCL (N)	W-Test (3)
	Chrysene	mg/kg	7.18	17.5	(N)	19		17.5	mg/kg	95% UCL (N)	W-Test (3)
	Dibenz(a,h)anthracene	mg/kg	0.74	1.78	(N)	1.9	J	1.78	mg/kg	95% UCL (N)	W-Test (3)
	Indeno(1,2,3-cd)pyrene	mg/kg	3.53	8.94	(N)	9.9		8.94	mg/kg	95% UCL (N)	W-Test (3)
	Lead	mg/kg	202	383	(N)	372	J	202	mg/kg	MEAN	(4)
	Trichloroethene	mg/kg	NA	NC		0.17	J	0.17	mg/kg	MAX	(11)
Old Railroad and Former Lower Mill Pond Area (Trespasser)	Antimony	mg/kg	1.21	2.86	(G)	4.4	J	2.86	mg/kg	95% UCL (G)	K-S Test (5)
	Arsenic	mg/kg	27.8	86.5	(G)	106		86.5	mg/kg	95% UCL (G)	K-S Test (5)
	Benz(a)anthracene	mg/kg	4.39	36.1	(G)	22		4.39	mg/kg	MEAN	(4)
	Benzo(a)pyrene	mg/kg	3.88	31	(G)	18		3.88	mg/kg	MEAN	(4)
	Benzo(b)fluoranthene	mg/kg	6.53	56.6	(G)	30		6.53	mg/kg	MEAN	(4)
	Benzo(k)fluoranthene	mg/kg	2.98	23.1	(G)	14		2.98	mg/kg	MEAN	(4)
	Chromium	mg/kg	12.4	32.9	(NP)	45		32.9	mg/kg	95% UCL (NP)	W Test (6)
	Chrysene	mg/kg	5.02	39.6	(G)	24		5.02	mg/kg	MEAN	(4)
	Dibenz(a,h)anthracene	mg/kg	0.623	5.1	(G)	3.4		0.623	mg/kg	MEAN	(4)
	Indeno(1,2,3-cd)pyrene	mg/kg	2.35	18.5	(G)	13		2.35	mg/kg	MEAN	(4)
	Manganese	mg/kg	224	310	(N)	379	J	310	mg/kg	95% UCL (N)	W-Test (3)
	Vanadium	mg/kg	20.1	29.3	(G)	44.3	J	29.3	mg/kg	95% UCL (G)	K-S Test (5)

TABLE 3.1.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1')

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Gleason Court Vacant Lot (Resident)	Arsenic	mg/kg	11.8	NC	19.3	11.8	mg/kg	MEAN	(11)
	Benzo(a)pyrene	mg/kg	0.275	NC	0.29	0.275	mg/kg	MEAN	(11)
	Manganese	mg/kg	208	NC	232 J	208	mg/kg	MEAN	(11)
	Vanadium	mg/kg	28.0	NC	29	28.0	mg/kg	MEAN	(11)
Gleason Court Lot 122 (Resident)	Arsenic	mg/kg	9.28	NC	14.3	9.28	mg/kg	MEAN	(11)
	Benzo(a)pyrene	mg/kg	0.313	NC	0.385	0.313	mg/kg	MEAN	(11)
	Manganese	mg/kg	190	NC	203 J	190	mg/kg	MEAN	(11)
	Vanadium	mg/kg	33.8	NC	36.7	33.8	mg/kg	MEAN	(11)
Gleason Court Lot 124 (Resident)	Benzo(a)pyrene	mg/kg	0.4	NC	0.64	0.4	mg/kg	MEAN	(11)
	Benzo(b)fluoranthene	mg/kg	0.52	NC	0.87	0.52	mg/kg	MEAN	(11)
	Dibenz(a,h)anthracene	mg/kg	0.046	NC	0.075 J	0.046	mg/kg	MEAN	(11)
	Vanadium	mg/kg	27.6	NC	32	27.6	mg/kg	MEAN	(11)
Gleason Court Lot 125 (Resident)	Arsenic	mg/kg	1.85	NC	2	1.85	mg/kg	MEAN	(11)
	Benz(a)anthracene	mg/kg	0.608	NC	1.2	0.608	mg/kg	MEAN	(11)
	Benzo(a)pyrene	mg/kg	0.708	NC	1.4	0.708	mg/kg	MEAN	(11)
	Benzo(b)fluoranthene	mg/kg	0.858	NC	1.7	0.858	mg/kg	MEAN	(11)
	Dibenz(a,h)anthracene	mg/kg	0.0614	NC	0.12 J	0.0614	mg/kg	MEAN	(11)
	Manganese	mg/kg	252	NC	252	252	mg/kg	MEAN	(11)
	Vanadium	mg/kg	21.7	NC	26.9	21.7	mg/kg	MEAN	(11)
West of South of South Street On-Facility and Vacant Lot 209 (Trespasser)	Arsenic	mg/kg	6.07	18.1 (NP)	35.7 J	18.1	mg/kg	95% UCL (NP)	W Test (6)
	Benz(a)anthracene	mg/kg	0.826	3.32 (G)	6.4	3.32	mg/kg	95% UCL (G)	K-S Test (13)
	Benzo(a)pyrene	mg/kg	0.914	3.82 (G)	7.3	3.82	mg/kg	95% UCL (G)	K-S Test (13)
	Benzo(b)fluoranthene	mg/kg	0.954	3.84 (G)	6.7	3.84	mg/kg	95% UCL (G)	K-S Test (13)
	Chrysene	mg/kg	0.985	3.89 (G)	7.6	3.89	mg/kg	95% UCL (G)	K-S Test (13)
	Dibenz(a,h)anthracene	mg/kg	0.110	0.400 (G)	0.88	0.400	mg/kg	95% UCL (G)	K-S Test (13)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.436	1.62 (G)	3.3	1.62	mg/kg	95% UCL (G)	K-S Test (13)
	Manganese	mg/kg	166	197 (N)	284	197	mg/kg	95% UCL (N)	W Test (3)
	Vanadium	mg/kg	23.1	26.9 (N)	37.8	26.9	mg/kg	95% UCL (N)	W Test (3)

TABLE 3.1.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1')

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value[2]	Units	Statistic	Rationale
Lot 208 (Resident)	Arsenic	mg/kg	2.85	NC	3.4		2.85	mg/kg	MEAN	(11)
	Benzo(a)pyrene	mg/kg	0.051	NC	0.064		0.051	mg/kg	MEAN	(11)
	Cyanide	mg/kg	1.64	NC	3.2	J	1.64	mg/kg	MEAN	(11)
	Manganese	mg/kg	220	NC	286		220	mg/kg	MEAN	(11)
	Vanadium	mg/kg	20.3	NC	21.5		20.3	mg/kg	MEAN	(11)
Lot 283 (Resident)	Arsenic	mg/kg	NA	NC	4.9		4.9	mg/kg	MAX	(12)
	Benz(a)anthracene	mg/kg	NA	NC	0.78		0.78	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.72		0.72	mg/kg	MAX	(12)
	Benzo(b)fluoranthene	mg/kg	NA	NC	0.62		0.62	mg/kg	MAX	(12)
	Dibenz(a,h)anthracene	mg/kg	NA	NC	0.059		0.059	mg/kg	MAX	(12)
	Lead	mg/kg	NA	NC	308	J	308	mg/kg	MAX	(12)
	Manganese	mg/kg	NA	NC	811		811	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	34.4	J	34.4	mg/kg	MAX	(12)
Lot 282 (Resident)	Arsenic	mg/kg	NA	NC	8.9		8.9	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.17		0.17	mg/kg	MAX	(12)
	Manganese	mg/kg	NA	NC	391		391	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	36.5	J	36.5	mg/kg	MAX	(12)
Lot 210 (Resident)	Arsenic	mg/kg	NA	NC	3.6		3.6	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.61		0.61	mg/kg	MAX	(12)
	Benzo(b)fluoranthene	mg/kg	NA	NC	0.8		0.8	mg/kg	MAX	(12)
	Manganese	mg/kg	NA	NC	347		347	mg/kg	MAX	(12)
	Nickel	mg/kg	NA	NC	165		165	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	33.6	J	33.6	mg/kg	MAX	(12)

TABLE 3.1.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1')

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Lot 230 (Resident)	Arsenic	mg/kg	NA	NC	6.8 J	6.8	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.42	0.42	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	28.3 J	28.3	mg/kg	MAX	(12)
Lot 257 (Resident)	Arsenic	mg/kg	7.18	NC	10.5	7.18	mg/kg	MEAN	(11)
	Benz(a)anthracene	mg/kg	0.765	NC	0.79	0.765	mg/kg	MEAN	(11)
	Benzo(a)pyrene	mg/kg	0.713	NC	0.765	0.713	mg/kg	MEAN	(11)
	Benzo(b)fluoranthene	mg/kg	0.925	NC	1.04	0.925	mg/kg	MEAN	(11)
	Chromium	mg/kg	22.8	NC	26	22.8	mg/kg	MEAN	(11)
	Dibenz(a,h)anthracene	mg/kg	0.102	NC	0.145	0.102	mg/kg	MEAN	(11)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.458	NC	0.715	0.458	mg/kg	MEAN	(11)
	Lead	mg/kg	566	NC	657 J	566	mg/kg	MEAN	(11)
	Manganese	mg/kg	345	NC	415 J	345	mg/kg	MEAN	(11)
	Vanadium	mg/kg	29.5	NC	35.9 J	29.5	mg/kg	MEAN	(11)
Orlando Property (Resident)	Arsenic	mg/kg	2.69	3.31 (G)	4.5	3.31	mg/kg	95% UCL (G)	K-S Test (5)
	Benz(a)anthracene	mg/kg	0.434	1.57 (T)	3.6	1.57	mg/kg	99% UCL (T)	W-Test (7)
	Benzo(a)pyrene	mg/kg	0.339	1.29 (T)	2.7	1.29	mg/kg	99% UCL (T)	W-Test (7)
	Benzo(b)fluoranthene	mg/kg	0.397	1.49 (T)	3.2	1.49	mg/kg	99% UCL (T)	W-Test (7)
	Chromium	mg/kg	12.1	16.4 (G)	23	16.4	mg/kg	95% UCL (G)	A-D Test (8)
	Dibenz(a,h)anthracene	mg/kg	0.0296	0.074 (G)	0.16	0.074	mg/kg	95% UCL (G)	K-S Test (5)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.13	0.326 (T)	0.72	0.326	mg/kg	95% UCL (T)	W-Test (9)
	Lead	mg/kg	92.5	204 (T)	474 J	92.5	mg/kg	MEAN	(14)
	Manganese	mg/kg	308	404 (N)	615	404	mg/kg	95% UCL (N)	W-Test (3)
	Vanadium	mg/kg	24.9	32.4 (G)	56.7	32.4	mg/kg	95% UCL (G)	K-S Test (5)

TABLE 3.1.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1')

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Lot 342 (Resident)	Arsenic	mg/kg	NA	NC	5.7 J	5.7	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.1	0.1	mg/kg	MAX	(12)
	Chromium	mg/kg	NA	NC	25.3	25.3	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	39.2 J	39.2	mg/kg	MAX	(12)
Lot 360 (Resident)	Antimony	mg/kg	4.55	NC	6.7 J	4.55	mg/kg	MEAN	(11)
	Arsenic	mg/kg	7.96	18.0 (G)	28.3 J	18.0	mg/kg	95% UCL (G)	K-S Test (5)
	Benz(a)anthracene	mg/kg	0.339	0.514 (N)	0.7 J	0.514	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(a)pyrene	mg/kg	0.295	0.455 (N)	0.62	0.455	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(b)fluoranthene	mg/kg	0.432	0.656 (N)	0.86	0.656	mg/kg	95% UCL (N)	W-Test (3)
	Chromium	mg/kg	67.4	NC	96.8	67.4	mg/kg	MEAN	(11)
	Dibenz(a,h)anthracene	mg/kg	0.0602	0.0899 (N)	0.13	0.0899	mg/kg	95% UCL (N)	W-Test (3)
	Lead	mg/kg	222	561 (G)	730 J	222	mg/kg	MEAN	(14)
	Vanadium	mg/kg	47.3	NC	48.6 J	47.3	mg/kg	MEAN	(11)
Lot 350 (Trespasser)	Antimony	mg/kg	NA	NC	4 J	4	mg/kg	MAX	(12)
	Arsenic	mg/kg	NA	NC	7.6 J	7.6	mg/kg	MAX	(12)
	Benzo(a)pyrene	mg/kg	NA	NC	0.15	0.15	mg/kg	MAX	(12)
	Vanadium	mg/kg	NA	NC	45.4 J	45.4	mg/kg	MAX	(12)

TABLE 3.1.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:

NA = Not applicable.
NC = Not calculated.
(G) = gamma
(N) = normal
(NP) = non-parametric
(T) = log-normal (value based on log-transformed data)
(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).
(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in section 3.1.2 of the report.
(3) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).
(4) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the arithmetic mean concentration is used for the CT EPC.
(5) Kolmogorov-Smirnov test indicates the data are gamma distributed and k^>0.5. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).
(6) Shapiro-Wilk W test indicates the data are non-parametric and 0.5<σ<1.0. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).
(7) Shapiro-Wilk W test indicates the data are log-normally distributed, 1.5<σ<2.0, and n<20. Therefore, a 99% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).
(8) Anderson-Darling test indicates the data are gamma distributed and k^>0.5. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).
(9) Shapiro-Wilk W test indicates the data are log-normally distributed, 1<σ<1.5, and n<25. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).
(10) Shapiro-Wilk W test indicates the data are non-parametric and 0<σ<0.5. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).
(11) Arithmetic mean concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.
(12) Only one sample is included in this exposure point concentration. Therefore, an arithmetic mean is not calculated and the maximum concentration is used as the CT EPC.
(13) Kolmogorov-Smirnov test indicates the data are gamma distributed and 0.1 < k^ < 0.5. Therefore, an adjusted gamma 95% UCL was calculated (USEPA, 2004).
(14) The arithmetic mean is used in the IEUBK and Adult Lead Models.

TABLE 3.2.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
East of South Street On-Facility (Resident)	Antimony	mg/kg	0.776	2.55 (NP)	15 J	2.55	mg/kg	95% UCL (NP)	W-Test (4)
	Arsenic	mg/kg	3.1	3.92 (G)	15.5 J	3.92	mg/kg	95% UCL (G)	K-S Test (6)
	Benz(a)anthracene	mg/kg	6.74	29.5 (NP)	83	29.5	mg/kg	99% UCL (NP)	W-Test (3)
	Benzo(a)pyrene	mg/kg	6.7	27.6 (NP)	72	27.6	mg/kg	99% UCL (NP)	W-Test (3)
	Benzo(b)fluoranthene	mg/kg	7.61	32.4 (NP)	89	32.4	mg/kg	99% UCL (NP)	W-Test (3)
	Benzo(k)fluoranthene	mg/kg	4.66	18.3 (NP)	45	18.3	mg/kg	99% UCL (NP)	W-Test (3)
	Chromium	mg/kg	13.1	15.7 (N)	58	15.7	mg/kg	95% UCL (N)	W-Test (5)
	Chrysene	mg/kg	6.67	27.4 (NP)	71	27.4	mg/kg	99% UCL (NP)	W-Test (3)
	Dibenz(a,h)anthracene	mg/kg	0.612	2.45 (NP)	6.1	2.45	mg/kg	99% UCL (NP)	W-Test (3)
	Dibenzofuran	mg/kg	1.85	10.9 (NP)	28	10.9	mg/kg	99% UCL (NP)	W-Test (3)
	Indeno(1,2,3-cd)pyrene	mg/kg	2.36	9.17 (NP)	21	9.17	mg/kg	99% UCL (NP)	W-Test (3)
	Lead	mg/kg	291	576 (T)	5620	291	mg/kg	MEAN	(16)
	Manganese	mg/kg	188	219 (NP)	723 J	219	mg/kg	95% UCL (NP)	W-Test (10)
	Mercury	mg/kg	0.889	5.36 (NP)	14	5.36	mg/kg	99% UCL (NP)	W-Test (3)
	Methylnaphthalene (2-)	mg/kg	1.61	9.52 (NP)	31	9.52	mg/kg	99% UCL (NP)	W-Test (3)
	Napthalene	mg/kg	3.09	21.8 (NP)	82	21.8	mg/kg	99% UCL (NP)	W-Test (3)
	Trichloroethene	mg/kg	0.957	9.00 (NP)	24	9.00	mg/kg	99% UCL (NP)	W-Test (3)
	Vanadium	mg/kg	25.9	34.5 (NP)	199	34.5	mg/kg	95% UCL (NP)	W-Test (10)
	Zinc	mg/kg	365	1750 (NP)	4370	1750	mg/kg	99% UCL (NP)	W-Test (3)
East of South Street On-Facility (Site Worker and Construction Worker)	Antimony	mg/kg	0.776	2.55 (NP)	15 J	2.55	mg/kg	95% UCL (NP)	W-Test (4) (17)
	Arsenic	mg/kg	3.1	3.92 (G)	15.5 J	3.92	mg/kg	95% UCL (G)	K-S Test (6) (17)
	Benz(a)anthracene	mg/kg	6.74	29.5 (NP)	83	29.5	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benzo(a)pyrene	mg/kg	6.7	27.6 (NP)	72	27.6	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benzo(b)fluoranthene	mg/kg	7.61	32.4 (NP)	89	32.4	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benzo(k)fluoranthene	mg/kg	4.66	18.3 (NP)	45	18.3	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Chrysene	mg/kg	6.67	27.4 (NP)	71	27.4	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Dibenz(a,h)anthracene	mg/kg	0.612	2.45 (NP)	6.1	2.45	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Indeno(1,2,3-cd)pyrene	mg/kg	2.36	9.17 (NP)	21	9.17	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Lead	mg/kg	291	576 (T)	5620	291	mg/kg	MEAN	(16) (17)

TABLE 3.2.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
East of South Street On-Facility (Site Worker and Construction Worker) Cont.	Methylnaphthalene (2-)	mg/kg	1.61	9.52 (NP)	31	9.52	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Napthalene	mg/kg	3.09	21.8 (NP)	82	21.8	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Trichloroethene	mg/kg	0.957	9.00 (NP)	24	9.00	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Vanadium	mg/kg	25.9	34.5 (NP)	199	34.5	mg/kg	95% UCL (NP)	W-Test (10) (17)
	Zinc	mg/kg	365	1750 (NP)	4370	1750	mg/kg	99% UCL (NP)	W-Test (3) (17)
Old Railroad and Former Lower Mill Pond Area (Resident)	Antimony	mg/kg	0.774	3.85 (NP)	4.4 J	3.85	mg/kg	99% UCL (NP)	W-Test (3)
	Arsenic	mg/kg	16.5	96.1 (NP)	106	96.1	mg/kg	99% UCL (NP)	W-Test (3)
	Benz(a)anthracene	mg/kg	2.58	19.4 (T)	22	19.4	mg/kg	99% UCL (T)	W-Test (9)
	Benzo(a)pyrene	mg/kg	2.28	8.75 (G)	18	8.75	mg/kg	95% UCL (G)	K-S Test (14)
	Benzo(b)fluoranthene	mg/kg	3.83	15.4 (G)	30	15.4	mg/kg	95% UCL (G)	K-S Test (14)
	Benzo(k)fluoranthene	mg/kg	1.76	6.65 (G)	14	6.65	mg/kg	95% UCL (G)	K-S Test (14)
	Chromium	mg/kg	10.9	22.5 (NP)	45	22.5	mg/kg	95% UCL (NP)	W-Test (4)
	Chrysene	mg/kg	2.95	11.3 (G)	24	11.3	mg/kg	95% UCL (G)	K-S Test (14)
	Dibenz(a,h)anthracene	mg/kg	0.367	2.14 (T)	3.4	2.14	mg/kg	99% UCL (T)	W-Test (9)
	Indeno(1,2,3-cd)pyrene	mg/kg	1.38	10.8 (NP)	13	10.8	mg/kg	99% UCL (NP)	W-Test (3)
	Manganese	mg/kg	203	254 (N)	379 J	254	mg/kg	95% UCL (N)	W-Test (5)
	Vanadium	mg/kg	19.6	23.5 (NP)	44.3 J	23.5	mg/kg	95% UCL (NP)	W-Test (10)
Old Railroad and Former Lower Mill Pond Area (Construction Worker)	Arsenic	mg/kg	16.5	96.1 (NP)	106	96.1	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benz(a)anthracene	mg/kg	2.58	19.4 (T)	22	19.4	mg/kg	99% UCL (T)	W-Test (9) (17)
	Benzo(a)pyrene	mg/kg	2.28	8.75 (G)	18	8.75	mg/kg	95% UCL (G)	K-S Test (14) (17)
	Benzo(b)fluoranthene	mg/kg	3.83	15.4 (G)	30	15.4	mg/kg	95% UCL (G)	K-S Test (14) (17)
	Benzo(k)fluoranthene	mg/kg	1.76	6.65 (G)	14	6.65	mg/kg	95% UCL (G)	K-S Test (14) (17)
	Chrysene	mg/kg	2.95	11.3 (G)	24	11.3	mg/kg	95% UCL (G)	K-S Test (14) (17)
	Dibenz(a,h)anthracene	mg/kg	0.367	2.14 (T)	3.4	2.14	mg/kg	99% UCL (T)	W-Test (9)(17)
	Indeno(1,2,3-cd)pyrene	mg/kg	1.38	10.8 (NP)	13	10.8	mg/kg	99% UCL (NP)	W-Test (3) (17)
Gleason Court Vacant Lot (Resident)	Arsenic	mg/kg	6.31	16.7 (N)	19.3	16.7	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(a)pyrene	mg/kg	0.141	0.324 (N)	0.29	0.29	mg/kg	MAX	(7)
	Manganese	mg/kg	210	242 (N)	235 J	235	mg/kg	MAX	(7)
	Vanadium	mg/kg	24.0	29.6 (N)	29	29	mg/kg	MAX	(7)

TABLE 3.2.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
Gleason Court Vacant Lot (Construction Worker)	Arsenic	mg/kg	6.31	16.7 (N)	19.3	16.7	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benzo(a)pyrene	mg/kg	0.141	0.324 (N)	0.29	0.29	mg/kg	MAX	(7) (17)
Gleason Court Lot 122 (Resident)	Arsenic	mg/kg	6.36	13 (N)	14.3	13	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(a)pyrene	mg/kg	0.176	0.376 (N)	0.385	0.376	mg/kg	95% UCL (N)	W-Test (5)
	Manganese	mg/kg	154	633 (NP)	210	210	mg/kg	MAX	(7)
	Vanadium	mg/kg	32.3	36.0 (N)	36.7	36.0	mg/kg	95% UCL	W-Test (5)
Gleason Court Lot 122 (Construction Worker)	Arsenic	mg/kg	6.36	13 (N)	14.3	13	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benzo(a)pyrene	mg/kg	0.176	0.376 (N)	0.385	0.376	mg/kg	95% UCL (N)	W-Test (5) (17)
Gleason Court Lot 124 (Resident)	Arsenic	mg/kg	2.6	3.77 (N)	3.6	3.6	mg/kg	MAX	(7)
	Benzo(a)pyrene	mg/kg	0.207	0.556 (N)	0.64	0.556	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(b)fluoranthene	mg/kg	0.267	0.748 (N)	0.87	0.748	mg/kg	95% UCL (N)	W-Test (5)
	Dibenz(a,h)anthracene	mg/kg	0.0251	0.0649 (N)	0.075 J	0.0649	mg/kg	95% UCL (N)	W-Test (5)
	Manganese	mg/kg	187	218 (N)	213	213	mg/kg	MAX	(7)
	Vanadium	mg/kg	24.6	30.6 (N)	32	30.6	mg/kg	95% UCL (N)	W-Test (5)
Gleason Court Lot 124 (Construction Worker)	Arsenic	mg/kg	2.6	3.77 (N)	3.6	3.6	mg/kg	MAX	(7) (17)
	Benzo(a)pyrene	mg/kg	0.207	0.556 (N)	0.64	0.556	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benzo(b)fluoranthene	mg/kg	0.267	0.748 (N)	0.87	0.748	mg/kg	95% UCL (N)	W-Test (5) (17)
Gleason Court Lot 125 (Resident)	Arsenic	mg/kg	3.95	8.11 (N)	9.2	8.11	mg/kg	95% UCL (N)	W-Test (5)
	Barium	mg/kg	174	1650 (NP)	618	618	mg/kg	MAX	(7)
	Benz(a)anthracene	mg/kg	0.373	1.04 (N)	1.2	1.04	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(a)pyrene	mg/kg	0.416	5.24 (G)	1.4	1.4	mg/kg	MAX	(7)
	Benzo(b)fluoranthene	mg/kg	0.498	6.38 (G)	1.7	1.7	mg/kg	MAX	(7)
	Dibenz(a,h)anthracene	mg/kg	0.0358	0.39 (G)	0.12 J	0.12	mg/kg	MAX	(7)
	Lead	mg/kg	298	3090 (NP)	1140	298	mg/kg	MEAN	(16)
	Manganese	mg/kg	269	352 (N)	369	352	mg/kg	95% UCL (N)	W-Test (5)
	Vanadium	mg/kg	21.8	28.2 (N)	26.9	26.9	mg/kg	MAX	(7)

TABLE 3.2.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
Gleason Court Lot 125 (Construction Worker)	Arsenic	mg/kg	3.95	8.11 (N)	9.2	8.11	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benz(a)anthracene	mg/kg	0.373	1.04 (N)	1.2	1.04	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benzo(a)pyrene	mg/kg	0.416	5.24 (G)	1.4	1.4	mg/kg	MAX	(7) (17)
	Benzo(b)fluoranthene	mg/kg	0.498	6.38 (G)	1.7	1.7	mg/kg	MAX	(7) (17)
	Lead	mg/kg	298	3090 (NP)	1140	298	mg/kg	MEAN	(16) (17)
West of South Street On-Facility (Resident)	Arsenic	mg/kg	3.61	9.48 (NP)	35.7 J	9.48	mg/kg	95% UCL (NP)	W-Test (4)
	Benz(a)anthracene	mg/kg	0.549	3.24 (NP)	6.4	3.24	mg/kg	99% UCL (NP)	W-Test (3)
	Benzo(a)pyrene	mg/kg	0.597	3.65 (NP)	7.3	3.65	mg/kg	99% UCL (NP)	W-Test (3)
	Benzo(b)fluoranthene	mg/kg	0.625	3.57 (NP)	6.7	3.57	mg/kg	99% UCL (NP)	W-Test (3)
	Chromium	mg/kg	9.82	11.4 (NP)	30.5	11.4	mg/kg	95% UCL (NP)	W-Test (10)
	Chrysene	mg/kg	0.628	3.98 (T)	7.6	3.98	mg/kg	97.5% UCL (T)	W-Test (11)
	Dibenz(a,h)anthracene	mg/kg	0.068	0.421 (NP)	0.88	0.421	mg/kg	99% UCL (NP)	W-Test (3)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.263	1.58 (NP)	3.3	1.58	mg/kg	99% UCL (NP)	W-Test (3)
	Lead	mg/kg	98.4	197 (T)	1050	98.4	mg/kg	MEAN	(16)
	Manganese	mg/kg	161	178 (N)	295	178	mg/kg	95% UCL (N)	W-Test (5)
	Mercury	mg/kg	0.281	2.41 (NP)	5.6 J	2.41	mg/kg	99% UCL (NP)	W-Test (3)
	Vanadium	mg/kg	19.1	21.0 (N)	36	21.0	mg/kg	95% UCL (N)	W-Test (5)
West of South Street On-Facility (Site Worker and Construction Worker)	Arsenic	mg/kg	3.61	9.48 (NP)	35.7 J	9.48	mg/kg	95% UCL (NP)	W-Test (4) (17)
	Benz(a)anthracene	mg/kg	0.549	3.24 (NP)	6.4	3.24	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benzo(a)pyrene	mg/kg	0.597	3.65 (NP)	7.3	3.65	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benzo(b)fluoranthene	mg/kg	0.625	3.57 (NP)	6.7	3.57	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Chrysene	mg/kg	0.628	3.98 (T)	7.6	3.98	mg/kg	97.5% UCL (T)	W-Test (11) (17)
	Dibenz(a,h)anthracene	mg/kg	0.068	0.421 (NP)	0.88	0.421	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.263	1.58 (NP)	3.3	1.58	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Lead	mg/kg	98.4	197 (T)	1050	98.4	mg/kg	MEAN	(16) (17)
Lot 208 (Resident)	Arsenic	mg/kg	2.27	NC	3.4	3.4	mg/kg	MAX	(13)
	Benzo(a)pyrene	mg/kg	0.037	NC	0.064	0.064	mg/kg	MAX	(13)
	Cyanide (weak acid dissociable)	mg/kg	1.21	NC	3.2 J	3.2	mg/kg	MAX	(13)
	Manganese	mg/kg	212	NC	286	286	mg/kg	MAX	(13)
	Vanadium	mg/kg	18.8	NC	21.5	21.5	mg/kg	MAX	(13)

TABLE 3.2.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
Lot 208 (Construction Worker)	Arsenic	mg/kg	2.27	NC	3.4	3.4	mg/kg	MAX	(13) (17)
Vacant Lot 209 (Resident)	Arsenic	mg/kg	NA	NC	3.4 J	3.4	mg/kg	MAX	(15)
	Manganese	mg/kg	NA	NC	284	284	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	37.8	37.8	mg/kg	MAX	(15)
Vacant Lot 209 (Construction Worker)	Arsenic	mg/kg	NA	NC	3.4 J	3.4	mg/kg	MAX	(15) (17)
Lot 283 (Resident)	Arsenic	mg/kg	NA	NC	4.9	4.9	mg/kg	MAX	(15)
	Benz(a)anthracene	mg/kg	NA	NC	0.78	0.78	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC	0.72	0.72	mg/kg	MAX	(15)
	Benzo(b)fluoranthene	mg/kg	NA	NC	0.62	0.62	mg/kg	MAX	(15)
	Dibenz(a,h)anthracene	mg/kg	NA	NC	0.059	0.059	mg/kg	MAX	(15)
	Lead	mg/kg	NA	NC	308 J	308	mg/kg	MAX	(15)
	Manganese	mg/kg	NA	NC	811	811	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	34.4 J	34.4	mg/kg	MAX	(15)
Lot 283 (Construction Worker)	Arsenic	mg/kg	NA	NC	4.9	4.9	mg/kg	MAX	(15) (17)
	Benz(a)anthracene	mg/kg	NA	NC	0.78	0.78	mg/kg	MAX	(15) (17)
	Benzo(a)pyrene	mg/kg	NA	NC	0.72	0.72	mg/kg	MAX	(15) (17)
	Lead	mg/kg	NA	NC	308 J	308	mg/kg	MAX	(15) (17)
Lot 282 (Resident)	Arsenic	mg/kg	NA	NC	8.9	8.9	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC	0.17	0.17	mg/kg	MAX	(15)
	Manganese	mg/kg	NA	NC	391	391	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	36.5 J	36.5	mg/kg	MAX	(15)
Lot 282 (Construction Worker)	Arsenic	mg/kg	NA	NC	8.9	8.9	mg/kg	MAX	(15) (17)
Lot 210 (Resident)	Arsenic	mg/kg	NA	NC	3.6	3.6	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC	0.61	0.61	mg/kg	MAX	(15)
	Benzo(b)fluoranthene	mg/kg	NA	NC	0.8	0.8	mg/kg	MAX	(15)
	Manganese	mg/kg	NA	NC	347	347	mg/kg	MAX	(15)
	Nickel	mg/kg	NA	NC	165	165	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	33.6 J	33.6	mg/kg	MAX	(15)

TABLE 3.2.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value [2]	Units	Statistic	Rationale
Lot 210 (Construction Worker)	Arsenic	mg/kg	NA	NC	3.6		3.6	mg/kg	MAX	(15) (17)
	Benzo(a)pyrene	mg/kg	NA	NC	0.61		0.61	mg/kg	MAX	(15) (17)
	Benzo(b)fluoranthene	mg/kg	NA	NC	0.8		0.8	mg/kg	MAX	(15) (17)
Lot 230 (Resident)	Arsenic	mg/kg	NA	NC	6.8	J	6.8	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC	0.42		0.42	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	28.3	J	28.3	mg/kg	MAX	(15)
Lot 230 (Construction Worker)	Arsenic	mg/kg	NA	NC	6.8	J	6.8	mg/kg	MAX	(15) (17)
	Benzo(a)pyrene	mg/kg	NA	NC	0.42		0.42	mg/kg	MAX	(15) (17)
Lot 257 (Resident)	Arsenic	mg/kg	5.18	NC	10.5	J	10.5	mg/kg	MAX	(13)
	Benz(a)anthracene	mg/kg	0.524	NC	0.79		0.79	mg/kg	MAX	(13)
	Benzo(a)pyrene	mg/kg	0.49	NC	0.765		0.765	mg/kg	MAX	(13)
	Benzo(b)fluoranthene	mg/kg	0.636	NC	1.04		1.04	mg/kg	MAX	(13)
	Chromium	mg/kg	18.3	NC	26		26	mg/kg	MAX	(13)
	Dibenz(a,h)anthracene	mg/kg	0.071	NC	0.145		0.145	mg/kg	MAX	(13)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.321	NC	0.715		0.715	mg/kg	MAX	(13)
	Lead	mg/kg	395	NC	657	J	395	mg/kg	MEAN	(16)
	Manganese	mg/kg	248	NC	415	J	415	mg/kg	MAX	(13)
	Vanadium	mg/kg	23	NC	35.9	J	35.9	mg/kg	MAX	(13)
Lot 257 (Construction Worker)	Arsenic	mg/kg	5.18	NC	10.5	J	10.5	mg/kg	MAX	(13) (17)
	Benz(a)anthracene	mg/kg	0.524	NC	0.79		0.79	mg/kg	MAX	(13) (17)
	Benzo(a)pyrene	mg/kg	0.49	NC	0.765		0.765	mg/kg	MAX	(13) (17)
	Benzo(b)fluoranthene	mg/kg	0.636	NC	1.04		1.04	mg/kg	MAX	(13) (17)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.321	NC	0.715		0.715	mg/kg	MAX	(13) (17)
	Lead	mg/kg	395	NC	657	J	395	mg/kg	MEAN	(16) (17)

TABLE 3.2.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value [2]	Units	Statistic	Rationale
Orlando Property (Resident)	Arsenic	mg/kg	2.3	2.82	(N)	4.5		2.82	mg/kg	95% UCL (N)	W-Test (5)
	Benz(a)anthracene	mg/kg	0.332	1.57	(T)	3.6		1.57	mg/kg	99% UCL (T)	W-Test (9)
	Benzo(a)pyrene	mg/kg	0.262	1.27	(T)	2.7		1.27	mg/kg	99% UCL (T)	W-Test (9)
	Benzo(b)fluoranthene	mg/kg	0.303	1.44	(T)	3.2		1.44	mg/kg	99% UCL (T)	W-Test (9)
	Chromium	mg/kg	13	16.2	(G)	23		16.2	mg/kg	95% UCL (G)	K-S Test (6)
	Dibenz(a,h)anthracene	mg/kg	0.0249	0.0496	(G)	0.16		0.0496	mg/kg	95% UCL (G)	K-S Test (6)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.108	0.236	(G)	0.72		0.236	mg/kg	95% UCL (G)	K-S Test (6)
	Lead	mg/kg	73.1	141	(G)	474	J	73.1	mg/kg	MEAN	(16)
	Manganese	mg/kg	300	387	(G)	615		387	mg/kg	95% UCL (G)	K-S Test (6)
	Vanadium	mg/kg	23	28.3	(G)	56.7		28.3	mg/kg	95% UCL (G)	K-S Test (6)
Orlando Property (Construction Worker)	Arsenic	mg/kg	2.3	2.82	(N)	4.5		2.82	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benz(a)anthracene	mg/kg	0.332	1.57	(T)	3.6		1.57	mg/kg	99% UCL (T)	W-Test (9) (17)
	Benzo(a)pyrene	mg/kg	0.262	1.27	(T)	2.7		1.27	mg/kg	99% UCL (T)	W-Test (9) (17)
	Benzo(b)fluoranthene	mg/kg	0.303	1.44	(T)	3.2		1.44	mg/kg	99% UCL (T)	W-Test (9) (17)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.108	0.236	(G)	0.72		0.236	mg/kg	95% UCL (G)	K-S Test (6) (17)
	Lead	mg/kg	73.1	141	(G)	474	J	73.1	mg/kg	MEAN	(16) (17)
Lot 342 (Resident)	Arsenic	mg/kg	NA	NC		5.7	J	5.7	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC		0.1		0.1	mg/kg	MAX	(15)
	Chromium	mg/kg	NA	NC		25.3		25.3	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC		39.2	J	39.2	mg/kg	MAX	(15)
Lot 342 (Construction Worker)	Arsenic	mg/kg	NA	NC		5.7	J	5.7	mg/kg	MAX	(15) (17)
Lot 360 (Resident)	Antimony	mg/kg	4.55	NC		6.7	J	6.7	mg/kg	MAX	(13)
	Arsenic	mg/kg	7.96	18.0	(G)	28.3	J	18.0	mg/kg	95% UCL (G)	K-S Test (6)
	Benz(a)anthracene	mg/kg	0.339	0.514	(N)	0.7	J	0.514	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(a)pyrene	mg/kg	0.295	0.455	(N)	0.62		0.455	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(b)fluoranthene	mg/kg	0.432	0.656	(N)	0.86		0.656	mg/kg	95% UCL (N)	W-Test (5)
	Chromium	mg/kg	67.4	NC		96.8		96.8	mg/kg	MAX	(13)
	Dibenz(a,h)anthracene	mg/kg	0.0602	0.0899	(N)	0.13		0.0899	mg/kg	95% UCL (N)	W-Test (5)
	Lead	mg/kg	222	561	(G)	730	J	222	mg/kg	MEAN	(16)
	Vanadium	mg/kg	47.3	NC		48.6	J	48.6	mg/kg	MAX	(13)
Lot 350 (Resident)	Antimony	mg/kg	NA	NC		4	J	4	mg/kg	MAX	(15)
	Arsenic	mg/kg	NA	NC		7.6	J	7.6	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC		0.15		0.15	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC		45.4	J	45.4	mg/kg	MAX	(15)

TABLE 3.2.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:

NA = Not applicable.

NC = Not calculated.

ND = Not detected.

(G) = gamma

(T) = Log-normal (value based on log-transformed data)

(N) = normal

(NP) = non-parametric

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.

(3) Shapiro-Wilk W-test indicates that the data are non-parametric therefore a 99% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).

(4) Shapiro-Wilk W test indicates the data are non-parametric and $0.5<\sigma<1$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).

(5) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).

(6) Kolmogorov-Smirnov test indicates the data are gamma distributed and $k^* \geq 0.5$. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).

(7) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the maximum detected concentration is used for the RME EPC.

(8) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.5\leq\sigma\leq2.0$, and $20\leq n\leq50$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(9) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.5<\sigma<2.0$, and $n<20$. Therefore, a 99% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(10) Shapiro-Wilk W test indicates the data are non-parametric. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).

(11) Shapiro-Wilk W test indicates the data are log-normally distributed, $2.0\leq\sigma<2.5$ and $20\leq n<50$. Therefore, a 97.5% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(12) Shapiro-Wilk W test indicates the data are log-normally distributed, $1<\sigma<1.5$, and $n\geq25$. Therefore, a 95% UCL was calculated based on the H-UCL using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(13) Maximum concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.

(14) Kolmogorov-Smirnov test indicates the data are gamma distributed and $0.1 \leq k^* < 0.5$. Therefore, an adjusted gamma 95% UCL was calculated (USEPA, 2004).

(15) Only one sample is included in this exposure point concentration. Therefore, an arithmetic mean is not calculated and the maximum concentration is used as the RME EPC.

(16) The arithmetic mean is used in the IEUBK and Adult Lead Models.

(17) Fugitive dust EPCs for the construction worker are modeled from soil EPCs to quantitatively evaluate this exposure pathway.

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
East of South Street On-Facility (Resident)	Antimony	mg/kg	0.776	2.55 (NP)	15 J	2.55	mg/kg	95% UCL (NP)	W-Test (4)
	Arsenic	mg/kg	3.1	3.92 (G)	15.5 J	3.92	mg/kg	95% UCL (G)	K-S Test (6)
	Benz(a)anthracene	mg/kg	6.74	29.5 (NP)	83	29.5	mg/kg	99% UCL (NP)	W-Test (3)
	Benzo(a)pyrene	mg/kg	6.7	27.6 (NP)	72	27.6	mg/kg	99% UCL (NP)	W-Test (3)
	Benzo(b)fluoranthene	mg/kg	7.61	32.4 (NP)	89	32.4	mg/kg	99% UCL (NP)	W-Test (3)
	Benzo(k)fluoranthene	mg/kg	4.66	18.3 (NP)	45	18.3	mg/kg	99% UCL (NP)	W-Test (3)
	Chromium	mg/kg	13.1	15.7 (N)	58	15.7	mg/kg	95% UCL (N)	W-Test (5)
	Chrysene	mg/kg	6.67	27.4 (NP)	71	27.4	mg/kg	99% UCL (NP)	W-Test (3)
	Dibenz(a,h)anthracene	mg/kg	0.612	2.45 (NP)	6.1	2.45	mg/kg	99% UCL (NP)	W-Test (3)
	Dibenzofuran	mg/kg	1.85	10.9 (NP)	28	10.9	mg/kg	99% UCL (NP)	W-Test (3)
	Indeno(1,2,3-cd)pyrene	mg/kg	2.36	9.17 (NP)	21	9.17	mg/kg	99% UCL (NP)	W-Test (3)
	Lead	mg/kg	291	576 (T)	5620	291	mg/kg	MEAN	(16)
	Manganese	mg/kg	188	219 (NP)	723 J	219	mg/kg	95% UCL (NP)	W-Test (10)
	Mercury	mg/kg	0.889	5.36 (NP)	14	5.36	mg/kg	99% UCL (NP)	W-Test (3)
	Methylnaphthalene (2-)	mg/kg	1.61	9.52 (NP)	31	9.52	mg/kg	99% UCL (NP)	W-Test (3)
	Napthalene	mg/kg	3.09	21.8 (NP)	82	21.8	mg/kg	99% UCL (NP)	W-Test (3)
	Trichloroethene	mg/kg	0.957	9.00 (NP)	24	9.00	mg/kg	99% UCL (NP)	W-Test (3)
	Vanadium	mg/kg	25.9	34.5 (NP)	199	34.5	mg/kg	95% UCL (NP)	W-Test (10)
	Zinc	mg/kg	365	1750 (NP)	4370	1750	mg/kg	99% UCL (NP)	W-Test (3)
East of South Street On-Facility (Site Worker and Construction Worker)	Antimony	mg/kg	0.776	2.55 (NP)	15 J	2.55	mg/kg	95% UCL (NP)	W-Test (4) (17)
	Arsenic	mg/kg	3.1	3.92 (G)	15.5 J	3.92	mg/kg	95% UCL (G)	K-S Test (6) (17)
	Benz(a)anthracene	mg/kg	6.74	29.5 (NP)	83	29.5	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benzo(a)pyrene	mg/kg	6.7	27.6 (NP)	72	27.6	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benzo(b)fluoranthene	mg/kg	7.61	32.4 (NP)	89	32.4	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benzo(k)fluoranthene	mg/kg	4.66	18.3 (NP)	45	18.3	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Chrysene	mg/kg	6.67	27.4 (NP)	71	27.4	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Dibenz(a,h)anthracene	mg/kg	0.612	2.45 (NP)	6.1	2.45	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Indeno(1,2,3-cd)pyrene	mg/kg	2.36	9.17 (NP)	21	9.17	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Lead	mg/kg	291	576 (T)	5620	291	mg/kg	MEAN	(16) (17)

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
East of South Street On-Facility (Site Worker and Construction Worker) Cont'd	Methylnaphthalene (2-)	mg/kg	1.61	9.52 (NP)	31	9.52	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Napthalene	mg/kg	3.09	21.8 (NP)	82	21.8	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Trichloroethene	mg/kg	0.957	9.00 (NP)	24	9.00	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Vanadium	mg/kg	25.9	34.5 (NP)	199	34.5	mg/kg	95% UCL (NP)	W-Test (10) (17)
	Zinc	mg/kg	365	1750 (NP)	4370	1750	mg/kg	99% UCL (NP)	W-Test (3) (17)
Old Railroad and Former Lower Mill Pond Area (Resident)	Antimony	mg/kg	0.774	3.85 (NP)	4.4 J	3.85	mg/kg	99% UCL (NP)	W-Test (3)
	Arsenic	mg/kg	16.5	96.1 (NP)	106	96.1	mg/kg	99% UCL (NP)	W-Test (3)
	Benz(a)anthracene	mg/kg	2.58	19.4 (T)	22	19.4	mg/kg	99% UCL (T)	W-Test (9)
	Benzo(a)pyrene	mg/kg	2.28	8.75 (G)	18	8.75	mg/kg	95% UCL (G)	K-S Test (14)
	Benzo(b)fluoranthene	mg/kg	3.83	15.4 (G)	30	15.4	mg/kg	95% UCL (G)	K-S Test (14)
	Benzo(k)fluoranthene	mg/kg	1.76	6.65 (G)	14	6.65	mg/kg	95% UCL (G)	K-S Test (14)
	Chromium	mg/kg	10.9	22.5 (NP)	45	22.5	mg/kg	95% UCL (NP)	W-Test (4)
	Chrysene	mg/kg	2.95	11.3 (G)	24	11.3	mg/kg	95% UCL (G)	K-S Test (14)
	Dibenz(a,h)anthracene	mg/kg	0.367	2.14 (T)	3.4	2.14	mg/kg	99% UCL (T)	W-Test (9)
	Indeno(1,2,3-cd)pyrene	mg/kg	1.38	10.8 (NP)	13	10.8	mg/kg	99% UCL (NP)	W-Test (3)
	Manganese	mg/kg	203	254 (N)	379 J	254	mg/kg	95% UCL (N)	W-Test (5)
	Vanadium	mg/kg	19.6	23.5 (NP)	44.3 J	23.5	mg/kg	95% UCL (NP)	W-Test (10)
Old Railroad and Former Lower Mill Pond Area (Construction Worker)	Arsenic	mg/kg	16.5	96.1 (NP)	106	96.1	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benz(a)anthracene	mg/kg	2.58	19.4 (T)	22	19.4	mg/kg	99% UCL (T)	W-Test (9) (17)
	Benzo(a)pyrene	mg/kg	2.28	8.75 (G)	18	8.75	mg/kg	95% UCL (G)	K-S Test (14) (17)
	Benzo(b)fluoranthene	mg/kg	3.83	15.4 (G)	30	15.4	mg/kg	95% UCL (G)	K-S Test (14) (17)
	Benzo(k)fluoranthene	mg/kg	1.76	6.65 (G)	14	6.65	mg/kg	95% UCL (G)	K-S Test (14) (17)
	Chrysene	mg/kg	2.95	11.3 (G)	24	11.3	mg/kg	95% UCL (G)	K-S Test (14) (17)
	Dibenz(a,h)anthracene	mg/kg	0.367	2.14 (T)	3.4	2.14	mg/kg	99% UCL (T)	W-Test (9) (17)
	Indeno(1,2,3-cd)pyrene	mg/kg	1.38	10.8 (NP)	13	10.8	mg/kg	99% UCL (NP)	W-Test (3) (17)
Gleason Court Vacant Lot (Resident)	Arsenic	mg/kg	6.31	16.7 (N)	19.3	16.7	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(a)pyrene	mg/kg	0.141	0.324 (N)	0.29	0.141	mg/kg	MEAN	(7)
	Manganese	mg/kg	210	242 (N)	235 J	210	mg/kg	MEAN	(7)
	Vanadium	mg/kg	24.0	29.6 (N)	29	24.0	mg/kg	MEAN	(7)

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
Gleason Court Vacant Lot (Construction Worker)	Arsenic	mg/kg	6.31	16.7 (N)	19.3	16.7	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benzo(a)pyrene	mg/kg	0.141	0.324 (N)	0.29	0.141	mg/kg	MEAN	(7) (17)
Gleason Court Lot 122 (Resident)	Arsenic	mg/kg	6.36	13 (N)	14.3	13	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(a)pyrene	mg/kg	0.176	0.376 (N)	0.385	0.376	mg/kg	95% UCL (N)	W-Test (5)
	Manganese	mg/kg	154	633 (NP)	210	154	mg/kg	MEAN	(7)
	Vanadium	mg/kg	32.3	36.0 (N)	36.7	36.0	mg/kg	95% UCL	W-Test (5)
Gleason Court Lot 122 (Construction Worker)	Arsenic	mg/kg	6.36	13 (N)	14.3	13	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benzo(a)pyrene	mg/kg	0.176	0.376 (N)	0.385	0.376	mg/kg	95% UCL (N)	W-Test (5) (17)
Gleason Court Lot 124 (Resident)	Arsenic	mg/kg	2.6	3.77 (N)	3.6	2.6	mg/kg	MEAN	(7)
	Benzo(a)pyrene	mg/kg	0.207	0.556 (N)	0.64	0.556	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(b)fluoranthene	mg/kg	0.267	0.748 (N)	0.87	0.748	mg/kg	95% UCL (N)	W-Test (5)
	Dibenz(a,h)anthracene	mg/kg	0.0251	0.0649 (N)	0.075 J	0.0649	mg/kg	95% UCL (N)	W-Test (5)
	Manganese	mg/kg	187	218 (N)	213	187	mg/kg	MEAN	(7)
	Vanadium	mg/kg	24.6	30.6 (N)	32	30.6	mg/kg	95% UCL (N)	W-Test (5)
Gleason Court Lot 124 (Construction Worker)	Arsenic	mg/kg	2.6	3.77 (N)	3.6	2.6	mg/kg	MEAN	(7) (17)
	Benzo(a)pyrene	mg/kg	0.207	0.556 (N)	0.64	0.556	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benzo(b)fluoranthene	mg/kg	0.267	0.748 (N)	0.87	0.748	mg/kg	95% UCL (N)	W-Test (5) (17)
Gleason Court Lot 125 (Resident)	Arsenic	mg/kg	3.95	8.11 (N)	9.2	8.11	mg/kg	95% UCL (N)	W-Test (5)
	Barium	mg/kg	174	1650 (NP)	618	174	mg/kg	MEAN	(7)
	Benz(a)anthracene	mg/kg	0.373	1.04 (N)	1.2	1.04	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(a)pyrene	mg/kg	0.416	5.24 (G)	1.4	0.416	mg/kg	MEAN	(7)
	Benzo(b)fluoranthene	mg/kg	0.498	6.38 (G)	1.7	0.498	mg/kg	MEAN	(7)
	Dibenz(a,h)anthracene	mg/kg	0.0358	0.39 (G)	0.12 J	0.0358	mg/kg	MEAN	(7)
	Lead	mg/kg	298	3090 (NP)	1140	298	mg/kg	MEAN	(7)
	Manganese	mg/kg	269	352 (N)	369	352	mg/kg	95% UCL (N)	W-Test (5)
	Vanadium	mg/kg	21.8	28.2 (N)	26.9	21.8	mg/kg	MEAN	(7)

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
Gleason Court Lot 125 (Construction Worker)	Arsenic	mg/kg	3.95	8.11 (N)	9.2	8.11	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benz(a)anthracene	mg/kg	0.373	1.04 (N)	1.2	1.04	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benzo(a)pyrene	mg/kg	0.416	5.24 (G)	1.4	0.416	mg/kg	MEAN	(7) (17)
	Benzo(b)fluoranthene	mg/kg	0.498	6.38 (G)	1.7	0.498	mg/kg	MEAN	(7) (17)
	Lead	mg/kg	298	3090 (NP)	1140	298	mg/kg	MEAN	(7) (17)
West of South Street On-Facility (Resident)	Arsenic	mg/kg	3.61	9.48 (NP)	35.7 J	9.48	mg/kg	95% UCL (NP)	W-Test (4)
	Benz(a)anthracene	mg/kg	0.549	3.24 (NP)	6.4	3.24	mg/kg	99% UCL (NP)	W-Test (3)
	Benzo(a)pyrene	mg/kg	0.597	3.65 (NP)	7.3	3.65	mg/kg	99% UCL (NP)	W-Test (3)
	Benzo(b)fluoranthene	mg/kg	0.625	3.57 (NP)	6.7	3.57	mg/kg	99% UCL (NP)	W-Test (3)
	Chromium	mg/kg	9.82	11.4 (NP)	30.5	11.4	mg/kg	95% UCL (NP)	W-Test (10)
	Chrysene	mg/kg	0.628	3.98 (T)	7.6	3.98	mg/kg	97.5% UCL (T)	W-Test (11)
	Dibenz(a,h)anthracene	mg/kg	0.068	0.421 (NP)	0.88	0.421	mg/kg	99% UCL (NP)	W-Test (3)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.263	1.58 (NP)	3.3	1.58	mg/kg	99% UCL (NP)	W-Test (3)
	Lead	mg/kg	98.4	197 (T)	1050	98.4	mg/kg	MEAN	(16)
	Manganese	mg/kg	161	178 (N)	295	178	mg/kg	95% UCL (N)	W-Test (5)
	Mercury	mg/kg	0.281	2.41 (NP)	5.6 J	2.41	mg/kg	99% UCL (NP)	W-Test (3)
	Vanadium	mg/kg	19.1	21.0 (N)	36	21.0	mg/kg	95% UCL (N)	W-Test (5)
West of South Street On-Facility (Site Worker and Construction Worker)	Arsenic	mg/kg	3.61	9.48 (NP)	35.7 J	9.48	mg/kg	95% UCL (NP)	W-Test (4) (17)
	Benz(a)anthracene	mg/kg	0.549	3.24 (NP)	6.4	3.24	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benzo(a)pyrene	mg/kg	0.597	3.65 (NP)	7.3	3.65	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Benzo(b)fluoranthene	mg/kg	0.625	3.57 (NP)	6.7	3.57	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Chrysene	mg/kg	0.628	3.98 (T)	7.6	3.98	mg/kg	97.5% UCL (T)	W-Test (11) (17)
	Dibenz(a,h)anthracene	mg/kg	0.068	0.421 (NP)	0.88	0.421	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.263	1.58 (NP)	3.3	1.58	mg/kg	99% UCL (NP)	W-Test (3) (17)
	Lead	mg/kg	98.4	197 (T)	1050	98.4	mg/kg	MEAN	(16) (17)
Lot 208 (Resident)	Arsenic	mg/kg	2.27	NC	3.4	2.27	mg/kg	MEAN	(13)
	Benzo(a)pyrene	mg/kg	0.037	NC	0.064	0.037	mg/kg	MEAN	(13)
	Cyanide (weak acid dissociable)	mg/kg	1.21	NC	3.2 J	1.21	mg/kg	MEAN	(13)
	Manganese	mg/kg	212	NC	286	212	mg/kg	MEAN	(13)
	Vanadium	mg/kg	18.8	NC	21.5	18.8	mg/kg	MEAN	(13)

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value [2]	Units	Statistic	Rationale
Lot 208 (Construction Worker)	Arsenic	mg/kg	2.27	NC	3.4		2.27	mg/kg	MEAN	(13) (17)
Vacant Lot 209 (Resident)	Arsenic	mg/kg	NA	NC	3.4	J	3.4	mg/kg	MAX	(15)
	Manganese	mg/kg	NA	NC	284		284	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	37.8		37.8	mg/kg	MAX	(15)
Vacant Lot 209 (Construction Worker)	Arsenic	mg/kg	NA	NC	3.4	J	3.4	mg/kg	MAX	(15) (17)
Lot 283 (Resident)	Arsenic	mg/kg	NA	NC	4.9		4.9	mg/kg	MAX	(15)
	Benz(a)anthracene	mg/kg	NA	NC	0.78		0.78	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC	0.72		0.72	mg/kg	MAX	(15)
	Benzo(b)fluoranthene	mg/kg	NA	NC	0.62		0.62	mg/kg	MAX	(15)
	Dibenz(a,h)anthracene	mg/kg	NA	NC	0.059		0.059	mg/kg	MAX	(15)
	Lead	mg/kg	NA	NC	308	J	308	mg/kg	MAX	(15)
	Manganese	mg/kg	NA	NC	811		811	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	34.4	J	34.4	mg/kg	MAX	(15)
Lot 283 (Construction Worker)	Arsenic	mg/kg	NA	NC	4.9		4.9	mg/kg	MAX	(15) (17)
	Benz(a)anthracene	mg/kg	NA	NC	0.78		0.78	mg/kg	MAX	(15) (17)
	Benzo(a)pyrene	mg/kg	NA	NC	0.72		0.72	mg/kg	MAX	(15) (17)
	Lead	mg/kg	NA	NC	308	J	308	mg/kg	MAX	(15) (17)
Lot 282 (Resident)	Arsenic	mg/kg	NA	NC	8.9		8.9	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC	0.17		0.17	mg/kg	MAX	(15)
	Manganese	mg/kg	NA	NC	391		391	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	36.5	J	36.5	mg/kg	MAX	(15)
Lot 282 (Construction Worker)	Arsenic	mg/kg	NA	NC	8.9		8.9	mg/kg	MAX	(15) (17)
Lot 210 (Resident)	Arsenic	mg/kg	NA	NC	3.6		3.6	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC	0.61		0.61	mg/kg	MAX	(15)
	Benzo(b)fluoranthene	mg/kg	NA	NC	0.8		0.8	mg/kg	MAX	(15)
	Manganese	mg/kg	NA	NC	347		347	mg/kg	MAX	(15)
	Nickel	mg/kg	NA	NC	165		165	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	33.6	J	33.6	mg/kg	MAX	(15)

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value [2]	Units	Statistic	Rationale
Lot 210 (Construction Worker)	Arsenic	mg/kg	NA	NC	3.6		3.6	mg/kg	MAX	(15) (17)
	Benzo(a)pyrene	mg/kg	NA	NC	0.61		0.61	mg/kg	MAX	(15) (17)
	Benzo(b)fluoranthene	mg/kg	NA	NC	0.8		0.8	mg/kg	MAX	(15) (17)
Lot 230 (Resident)	Arsenic	mg/kg	NA	NC	6.8	J	6.8	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC	0.42		0.42	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	28.3	J	28.3	mg/kg	MAX	(15)
Lot 230 (Construction Worker)	Arsenic	mg/kg	NA	NC	6.8	J	6.8	mg/kg	MAX	(15) (17)
	Benzo(a)pyrene	mg/kg	NA	NC	0.42		0.42	mg/kg	MAX	(15) (17)
Lot 257 (Resident)	Arsenic	mg/kg	5.18	NC	10.5	J	5.18	mg/kg	MEAN	(13)
	Benz(a)anthracene	mg/kg	0.524	NC	0.79		0.524	mg/kg	MEAN	(13)
	Benzo(a)pyrene	mg/kg	0.49	NC	0.765		0.49	mg/kg	MEAN	(13)
	Benzo(b)fluoranthene	mg/kg	0.636	NC	1.04		0.636	mg/kg	MEAN	(13)
	Chromium	mg/kg	18.3	NC	26		18.3	mg/kg	MEAN	(13)
	Dibenz(a,h)anthracene	mg/kg	0.071	NC	0.145		0.071	mg/kg	MEAN	(13)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.321	NC	0.715		0.321	mg/kg	MEAN	(13)
	Lead	mg/kg	395	NC	657	J	395	mg/kg	MEAN	(13)
	Manganese	mg/kg	248	NC	415	J	248	mg/kg	MEAN	(13)
	Vanadium	mg/kg	23	NC	35.9	J	23	mg/kg	MEAN	(13)
Lot 257 (Construction Worker)	Arsenic	mg/kg	5.18	NC	10.5	J	5.18	mg/kg	MEAN	(13) (17)
	Benz(a)anthracene	mg/kg	0.524	NC	0.79		0.524	mg/kg	MEAN	(13) (17)
	Benzo(a)pyrene	mg/kg	0.49	NC	0.765		0.49	mg/kg	MEAN	(13) (17)
	Benzo(b)fluoranthene	mg/kg	0.636	NC	1.04		0.636	mg/kg	MEAN	(13) (17)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.321	NC	0.715		0.321	mg/kg	MEAN	(13) (17)
	Lead	mg/kg	395	NC	657	J	395	mg/kg	MEAN	(13) (17)

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [2]	Units	Statistic	Rationale
Orlando Property (Resident)	Arsenic	mg/kg	2.3	2.82 (N)	4.5	2.82	mg/kg	95% UCL (N)	W-Test (5)
	Benz(a)anthracene	mg/kg	0.332	1.57 (T)	3.6	1.57	mg/kg	99% UCL (T)	W-Test (9)
	Benzo(a)pyrene	mg/kg	0.262	1.27 (T)	2.7	1.27	mg/kg	99% UCL (T)	W-Test (9)
	Benzo(b)fluoranthene	mg/kg	0.303	1.44 (T)	3.2	1.44	mg/kg	99% UCL (T)	W-Test (9)
	Chromium	mg/kg	13	16.2 (G)	23	16.2	mg/kg	95% UCL (G)	K-S Test (6)
	Dibenz(a,h)anthracene	mg/kg	0.0249	0.0496 (G)	0.16	0.0496	mg/kg	95% UCL (G)	K-S Test (6)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.108	0.236 (G)	0.72	0.236	mg/kg	95% UCL (G)	K-S Test (6)
	Lead	mg/kg	73.1	141 (G)	474 J	73.1	mg/kg	MEAN	(16)
	Manganese	mg/kg	300	387 (G)	615	387	mg/kg	95% UCL (G)	K-S Test (6)
	Vanadium	mg/kg	23	28.3 (G)	56.7	28.3	mg/kg	95% UCL (G)	K-S Test (6)
Orlando Property (Construction Worker)	Arsenic	mg/kg	2.3	2.82 (N)	4.5	2.82	mg/kg	95% UCL (N)	W-Test (5) (17)
	Benz(a)anthracene	mg/kg	0.332	1.57 (T)	3.6	1.57	mg/kg	99% UCL (T)	W-Test (9) (17)
	Benzo(a)pyrene	mg/kg	0.262	1.27 (T)	2.7	1.27	mg/kg	99% UCL (T)	W-Test (9) (17)
	Benzo(b)fluoranthene	mg/kg	0.303	1.44 (T)	3.2	1.44	mg/kg	99% UCL (T)	W-Test (9) (17)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.108	0.236 (G)	0.72	0.236	mg/kg	95% UCL (G)	K-S Test (6) (17)
	Lead	mg/kg	73.1	141 (G)	474 J	73.1	mg/kg	MEAN	(16) (17)
Lot 342 (Resident)	Arsenic	mg/kg	NA	NC	5.7 J	5.7	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC	0.1	0.1	mg/kg	MAX	(15)
	Chromium	mg/kg	NA	NC	25.3	25.3	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	39.2 J	39.2	mg/kg	MAX	(15)
Lot 342 (Construction Worker)	Arsenic	mg/kg	NA	NC	5.7 J	5.7	mg/kg	MAX	(15) (17)
Lot 360 (Resident)	Antimony	mg/kg	4.55	NC	6.7 J	4.55	mg/kg	MEAN	(13)
	Arsenic	mg/kg	7.96	18.0 (G)	28.3 J	18.0	mg/kg	95% UCL (G)	K-S Test (6)
	Benz(a)anthracene	mg/kg	0.339	0.514 (N)	0.7 J	0.514	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(a)pyrene	mg/kg	0.295	0.455 (N)	0.62	0.455	mg/kg	95% UCL (N)	W-Test (5)
	Benzo(b)fluoranthene	mg/kg	0.432	0.656 (N)	0.86	0.656	mg/kg	95% UCL (N)	W-Test (5)
	Chromium	mg/kg	67.4	NC	96.8	67.4	mg/kg	MEAN	(13)
	Dibenz(a,h)anthracene	mg/kg	0.0602	0.0899 (N)	0.13	0.0899	mg/kg	95% UCL (N)	W-Test (5)
	Lead	mg/kg	222	561 (G)	730 J	222	mg/kg	MEAN	(16)
	Vanadium	mg/kg	47.3	NC	48.6 J	47.3	mg/kg	MEAN	(13)
Lot 350 (Resident)	Antimony	mg/kg	NA	NC	4 J	4	mg/kg	MAX	(15)
	Arsenic	mg/kg	NA	NC	7.6 J	7.6	mg/kg	MAX	(15)
	Benzo(a)pyrene	mg/kg	NA	NC	0.15	0.15	mg/kg	MAX	(15)
	Vanadium	mg/kg	NA	NC	45.4 J	45.4	mg/kg	MAX	(15)

TABLE 3.2.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:

NA = Not applicable.

NC = Not calculated.

ND = Not detected.

(G) = gamma

(T) = Log-normal (value based on log-transformed data)

(N) = normal

(NP) = non-parametric

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.

(3) Shapiro-Wilk W-test indicates that the data are non-parametric therefore a 99% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).

(4) Shapiro-Wilk W test indicates the data are non-parametric and $0.5<\sigma<1$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).

(5) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).

(6) Kolmogorov-Smirnov test indicates the data are gamma distributed and $k^{\wedge} \geq 0.5$. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).

(7) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the arithmetic mean concentration is used for the CT EPC.

(8) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.5\leq\sigma\leq2.0$, and $20\leq n\leq50$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(9) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.5<\sigma<2.0$, and $n<20$. Therefore, a 99% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(10) Shapiro-Wilk W test indicates the data are non-parametric. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).

(11) Shapiro-Wilk W test indicates the data are log-normally distributed, $2.0\leq\sigma<2.5$ and $20\leq n<50$. Therefore, a 97.5% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(12) Shapiro-Wilk W test indicates the data are log-normally distributed, $1<\sigma<1.5$, and $n\geq25$. Therefore, a 95% UCL was calculated based on the H-UCL using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(13) Arithmetic mean concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.

(14) Kolmogorov-Smirnov test indicates the data are gamma distributed and $0.1 \leq k^{\wedge} < 0.5$. Therefore, an adjusted gamma 95% UCL was calculated (USEPA, 2004).

(15) Only one sample is included in this exposure point concentration. Therefore, an arithmetic mean is not calculated and the maximum concentration is used as the CT EPC.

(16) The arithmetic mean is used in the IEUBK and Adult Lead Models.

(17) Fugitive dust EPCs for the construction worker are modeled from soil EPCs to quantitatively evaluate this exposure pathway.

TABLE 3.3.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current (Resident)
Medium: Soil
Exposure Medium: Plant Tissue

Exposure Point	Chemical of Potential Concern [1]	Units	Arithmetic Mean	95% UCL (Distribution) [2]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [3]	Units	Statistic	Rationale
Gleason Court Lot 122	Arsenic	mg/kg	9.28	NC	14.3	14.3	mg/kg	MAX	(4)
Gleason Court Lot 125	Arsenic	mg/kg	1.85	NC	2	2	mg/kg	MAX	(4)
Lot 208	Arsenic	mg/kg	2.85	NC	3.4	3.4	mg/kg	MAX	(4)
Lot 283	Arsenic	mg/kg	NA	NC	4.9	4.9	mg/kg	MAX	(5)
	Lead	mg/kg	NA	NC	308 J	308	mg/kg	MAX	(5)
Lot 282	Arsenic	mg/kg	NA	NC	8.9	8.9	mg/kg	MAX	(5)
Lot 210	Arsenic	mg/kg	NA	NC	3.6	3.6	mg/kg	MAX	(5)
	Nickel	mg/kg	NA	NC	165	165	mg/kg	MAX	(5)
Lot 230	Arsenic	mg/kg	NA	NC	6.8 J	6.8	mg/kg	MAX	(5)
Lot 257	Arsenic	mg/kg	7.18	NC	10.5	10.5	mg/kg	MAX	(4)
	Chromium	mg/kg	22.8	NC	26	26	mg/kg	MAX	(4)
	Lead	mg/kg	566	NC	657 J	566	mg/kg	MEAN	(6)
Orlando Property	Arsenic	mg/kg	2.69	3.31 (G)	4.5	3.31	mg/kg	95% UCL (G)	K-S Test (7)
	Chromium	mg/kg	12.1	16.4 (G)	23	16.4	mg/kg	95% UCL (G)	A-D Test (8)
	Lead	mg/kg	92.5	204 (T)	474 J	92.5	mg/kg	MEAN	(6)
Lot 342	Arsenic	mg/kg	NA	NC	5.7 J	5.7	mg/kg	MAX	(5)
	Chromium	mg/kg	NA	NC	25.3	25.3	mg/kg	MAX	(5)
Lot 360	Arsenic	mg/kg	7.96	18.0 (G)	28.3 J	18.0	mg/kg	95% UCL (G)	K-S Test (7)
	Chromium	mg/kg	67.4	NC	96.8	96.8	mg/kg	MAX	(4)
	Lead	mg/kg	222	561 (G)	730 J	222	mg/kg	MEAN	(6)

TABLE 3.3.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:

σ = standard deviation of log-transformed data

(G) = gamma

(N) = normal

NC = Not calculated.

(NP) = non-parametric

(T) = log-normal (value based on log-transformed data)

(1) Only COPCs for which plant uptake factors are available are shown on this table.

(2) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(3) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.

(4) Maximum concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.

(5) Only one sample is included in this exposure point concentration. Therefore, an arithmetic mean is not calculated and the maximum concentration is used as the RME EPC.

(6) The arithmetic mean is used in the IEUBK and Adult Lead Models.

(7) Kolmogorov-Smirnov test indicates the data are gamma distributed and k^>0.5. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).

(8) Anderson-Darling test indicates the data are gamma distributed and k^>0.5. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).

TABLE 3.3.supporting
SUMMARY OF MODELED PLANT CONCENTRATIONS FOR CURRENT SCENARIOS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe	Exposure Point	Chemical of Potential Concern	Soil EPC (mg/kg)	Plant EPC (leafy vegetables) (mg/kg)	Plant EPC (root vegetables) (mg/kg)
			RME	RME	RME
Current	Lot 122	Arsenic	14.3	0.515	0.114
Current	Lot 125	Arsenic	2	0.072	0.016
Current	Lot 208	Arsenic	3.4	0.122	0.0272
Current	Lot 283	Arsenic	4.9	0.176	0.0392
Current	Lot 282	Arsenic	8.9	0.32	0.0712
Current	Lot 210	Arsenic	3.6	0.13	0.0288
		Nickel	165	5.28	1.32
Current	Lot 230	Arsenic	6.8	0.245	0.0544
Current	Lot 257	Arsenic	10.5	0.378	0.084
		Chromium	26	2.47	2.47
Current	Orlando Property	Arsenic	3.31	0.119	0.0265
		Chromium	16.4	1.56	1.56
Current	Lot 342	Arsenic	5.7	0.205	0.0456
		Chromium	25.3	2.4	2.4
Current	Lot 360	Arsenic	18	0.648	0.144
		Chromium	96.8	9.2	9.2

TABLE 3.4.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future (Resident)
Medium: Soil
Exposure Medium: Plant Tissue

Exposure Point	Chemical of Potential Concern [1]	Units	Arithmetic Mean	95% UCL (Distribution) [2]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [3]	Units	Statistic	Rationale
East of South Street On-Facility	Arsenic	mg/kg	3.1	3.92 (G)	15.5 J	3.92	mg/kg	95% UCL (G)	K-S Test (7)
	Chromium	mg/kg	13.1	15.7 (N)	58	15.7	mg/kg	95% UCL (N)	W-Test (6)
	Lead	mg/kg	291	576 (T)	5620	291	mg/kg	MEAN	(14)
	Mercury	mg/kg	0.889	5.36 (NP)	14	5.36	mg/kg	99% UCL (NP)	W-Test (4)
	Zinc	mg/kg	365	1750 (NP)	4370	1750	mg/kg	99% UCL (NP)	W-Test (4)
Old Railroad and Former Lower Mill Pond Area	Arsenic	mg/kg	16.5	96.1 (NP)	106	96.1	mg/kg	99% UCL (NP)	W-Test (4)
	Chromium	mg/kg	10.9	22.5 (NP)	45	22.5	mg/kg	95% UCL (NP)	W-Test (5)
Gleason Court Vacant Lot	Arsenic	mg/kg	6.31	16.7 (N)	19.3	16.7	mg/kg	95% UCL (N)	W-Test (6)
Gleason Court Lot 122	Arsenic	mg/kg	6.36	13 (N)	14.3	13	mg/kg	95% UCL (N)	W-Test (6)
Gleason Court Lot 124	Arsenic	mg/kg	2.6	3.77 (N)	3.6	3.6	mg/kg	MAX	(8)
Gleason Court Lot 125	Arsenic	mg/kg	3.95	8.11 (N)	9.2	8.11	mg/kg	95% UCL (N)	W-Test (6)
	Lead	mg/kg	298	3090 (NP)	1140	298	mg/kg	MEAN	(14)
West of South Street On-Facility	Arsenic	mg/kg	3.61	9.48 (NP)	35.7 J	9.48	mg/kg	95% UCL (NP)	W-Test (5)
	Chromium	mg/kg	9.82	11.4 (NP)	30.5	11.4	mg/kg	95% UCL (NP)	W-Test (10)
	Lead	mg/kg	98.4	197 (T)	1050	98.4	mg/kg	MEAN	(14)
	Mercury	mg/kg	0.281	2.41 (NP)	5.6 J	2.41	mg/kg	99% UCL (NP)	W-Test (4)
Lot 208	Arsenic	mg/kg	2.27	NC	3.4	3.4	mg/kg	MAX	(12)
Vacant Lot 209	Arsenic	mg/kg	NA	NC	3.4 J	3.4	mg/kg	MAX	(13)
Lot 283	Arsenic	mg/kg	NA	NC	4.9	4.9	mg/kg	MAX	(13)
	Lead	mg/kg	NA	NC	308 J	308	mg/kg	MAX	(13)
Lot 282	Arsenic	mg/kg	NA	NC	8.9	8.9	mg/kg	MAX	(13)
Lot 210	Arsenic	mg/kg	NA	NC	3.6	3.6	mg/kg	MAX	(13)
	Nickel	mg/kg	NA	NC	165	165	mg/kg	MAX	(13)
Lot 230	Arsenic	mg/kg	NA	NC	6.8 J	6.8	mg/kg	MAX	(13)

TABLE 3.4.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future (Resident)
Medium: Soil
Exposure Medium: Plant Tissue

Exposure Point	Chemical of Potential Concern [1]	Units	Arithmetic Mean	95% UCL (Distribution) [2]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value [3]	Units	Statistic	Rationale
Lot 257	Arsenic	mg/kg	5.18	NC	10.5 J	10.5	mg/kg	MAX	(12)
	Chromium	mg/kg	18.3	NC	26	26	mg/kg	MAX	(12)
	Lead	mg/kg	395	NC	657 J	395	mg/kg	MEAN	(14)
Orlando Property	Arsenic	mg/kg	2.3	2.82 (N)	4.5	2.82	mg/kg	95% UCL (N)	W-Test (6)
	Chromium	mg/kg	13	16.2 (G)	23	16.2	mg/kg	95% UCL (G)	K-S Test (7)
	Lead	mg/kg	73.1	141 (G)	474 J	73.1	mg/kg	MEAN	(14)
Lot 342	Arsenic	mg/kg	NA	NC	5.7 J	5.7	mg/kg	MAX	(13)
	Chromium	mg/kg	NA	NC	25.3	25.3	mg/kg	MAX	(13)
Lot 360	Arsenic	mg/kg	7.96	18.0 (G)	28.3 J	18.0	mg/kg	95% UCL (G)	K-S Test (7)
	Chromium	mg/kg	67.4	NC	96.8	96.8	mg/kg	MAX	(12)
	Lead	mg/kg	222	561 (G)	730 J	222	mg/kg	MEAN	(14)
Lot 350	Arsenic	mg/kg	NA	NC	7.6 J	7.6	mg/kg	MAX	(13)

Notes:

σ = standard deviation of log-transformed data

NA = Not applicable.

NC = Not calculated.

ND = Not detected.

(G) = gamma

(T) = Log-normal (value based on log-transformed data)

(N) = normal

(NP) = non-parametric

(1) Only COPCs for which plant uptake factors are available are shown on this table.

(2) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(3) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.

(4) Shapiro-Wilk W-test indicates that the data are non-parametric therefore a 99% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data.

(5) Shapiro-Wilk W test indicates the data are non-parametric and $0.5<\sigma<1$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).

(6) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).

(7) Kolmogorov-Smirnov test indicates the data are gamma distributed and $k^{*} \geq 0.5$. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).

(8) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the maximum detected concentration is used for the RME EPC.

(9) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.5 \leq \sigma \leq 2.0$, and $20 \leq n \leq 50$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(10) Shapiro-Wilk W test indicates the data are non-parametric. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).

(11) Shapiro-Wilk W test indicates the data are log-normally distributed, $1<\sigma<1.5$, and $n \geq 25$. Therefore, a 95% UCL was calculated based on the H-UCL using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(12) Maximum concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.

(13) Only one sample is included in this exposure point concentration. Therefore, an arithmetic mean is not calculated and the maximum concentration is used as the RME EPC.

(14) The arithmetic mean is used in the IEUBK and Adult Lead Models.

TABLE 3.4.supporting
SUMMARY OF MODELED PLANT CONCENTRATIONS FOR FUTURE SCENARIOS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe	Exposure Point	Chemical of Potential Concern	Soil EPC (mg/kg)	Plant EPC (leafy vegetables) (mg/kg)	Plant EPC (root vegetables) (mg/kg)
			RME	RME	RME
Future	East of South Street On-Facility	Arsenic	3.92	0.141	0.0314
		Chromium	15.7	1.49	1.49
		Mercury	5.36	0.0429	0.075
		Zinc	1750	438	77
Future	Gleason Court Vacant Lot	Arsenic	16.7	0.601	0.134
Future	Old Railroad & Former Lower Mill Pond Area	Arsenic	96.1	3.46	0.769
		Chromium	22.5	2.14	2.14
Future	Lot 122	Arsenic	13	0.468	0.104
Future	Lot 124	Arsenic	3.6	0.13	0.0288
Future	Lot 125	Arsenic	8.11	0.292	0.0649
Future	Lot 208	Arsenic	3.4	0.122	0.0272
Future	Lot 283	Arsenic	4.9	0.176	0.0392
Future	Lot 282	Arsenic	8.9	0.32	0.0712
Future	Lot 210	Arsenic	3.6	0.13	0.0288
		Nickel	165	5.28	1.32
Future	Lot 230	Arsenic	6.8	0.245	0.0544
Future	Lot 257	Arsenic	10.5	0.378	0.084
		Chromium	26	2.47	2.47
Future	Orlando Property	Arsenic	2.82	0.102	0.0226
		Chromium	16.2	1.54	1.54
Future	Lot 342	Arsenic	5.7	0.205	0.0456
		Chromium	25.3	2.4	2.4
Future	Lot 360	Arsenic	18	0.648	0.144
		Chromium	96.8	9.2	9.2
Future	Lot 350	Arsenic	7.6	0.274	0.0608
Future	West of South Street On-Facility	Arsenic	9.48	0.341	0.0758
		Chromium	11.4	1.08	1.08
		Mercury	2.41	0.0193	0.0337
Future	Vacant Lot 209	Arsenic	3.4	0.122	0.0272

TABLE 3.5.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
East of South Street On-Facility Building 1 (Indoor Air - Site Worker) [3]	Benzene	mg/m3	0.00909	NC	0.0129	0.0129	mg/m3	MAX	(4)
	Carbon tetrachloride	mg/m3	0.00253	NC	0.00348	0.00348	mg/m3	MAX	(4)
	Methylene chloride	mg/m3	0.0500	NC	0.0972	0.0972	mg/m3	MAX	(4)
	Trichloroethene	mg/m3	0.0332	NC	0.0498	0.0498	mg/m3	MAX	(4)
East of South Street On-Facility Building 2 (Indoor Air - Site Worker) [3]	Benzene	mg/m3	0.00553	NC	0.0099	0.0099	mg/m3	MAX	(4)
	Naphthalene	mg/m3	0.00362	NC	0.00655	0.00655	mg/m3	MAX	(4)
	Tetrachloroethene	mg/m3	0.0132	NC	0.0247	0.0247	mg/m3	MAX	(4)
	Trichloroethene	mg/m3	0.00317	NC	0.00423	0.00423	mg/m3	MAX	(4)
	Trimethylbenzene (1,2,4-)	mg/m3	0.00912	NC	0.017	0.017	mg/m3	MAX	(4)
East of South Street On-Facility Building 3 (Indoor Air - Site Worker)	Heptachlor	mg/kg	0.000323	0.0008 (N)	0.00091 J	0.0008	mg/kg	95% UCL (N)	W-Test (5)
	Methylnaphthalene (2-)	mg/kg	0.278	1.64 (NP)	3.5	1.64	mg/kg	99% UCL (NP)	W-Test (6)
	Naphthalene	mg/kg	0.487	3.12 (NP)	6.4	3.12	mg/kg	99% UCL (NP)	W-Test (6)
	Trichlorofluoromethane	mg/kg	0.0134	0.137 (NP)	0.2 J	0.137	mg/kg	99% UCL (NP)	W-Test (7)
East of South Street On-Facility Building 4 (Indoor Air - Site Worker)	Benzene	mg/kg	0.00549	0.0313 (NP)	0.036 J	0.0313	mg/kg	99% UCL (NP)	W-Test (6)
	Ethylbenzene	mg/kg	0.00228	0.00693 (NP)	0.016 J	0.00693	mg/kg	95% UCL (NP)	W-Test (8)
	Methylnaphthalene (2-)	mg/kg	1.57	4.20 (G)	17	4.20	mg/kg	95% UCL (G)	K-S Test (9)
	Naphthalene	mg/kg	2.00	5.29 (G)	14	5.29	mg/kg	95% UCL (G)	K-S Test (9)
East of South Street On-Facility Building 5 (Indoor Air - Site Worker)	Benzene	mg/kg	0.00146	0.00309 (NP)	0.005	0.00309	mg/kg	95% UCL (NP)	W-Test (8)
	Methylnaphthalene (2-)	mg/kg	0.912	4.78 (NP)	3.5	3.5	mg/kg	MAX	(10)
	Naphthalene	mg/kg	1.68	6.77 (G)	8.8	6.77	mg/kg	95% UCL (G)	K-S Test (9)
Gleason Court Lot 124 (Indoor Air - Resident) [3]	Naphthalene	mg/m3	0.00481	NC	0.0109	0.0109	mg/m3	MAX	(4)
	Trichloroethene	mg/m3	0.00269	NC	0.00402	0.00402	mg/m3	MAX	(4)
	Trimethylbenzene (1,2,4-)	mg/m3	0.0128	NC	0.0359	0.0359	mg/m3	MAX	(4)
	Trimethylbenzene (1,3,5-)	mg/m3	0.00636	NC	0.0102	0.0102	mg/m3	MAX	(4)
Gleason Court Lot 125 (Indoor Air - Resident) [3]	Naphthalene	mg/m3	0.00462	NC	0.0109	0.0109	mg/m3	MAX	(4)
	Trichloroethene	mg/m3	0.00179	NC	0.0027 J	0.0027	mg/m3	MAX	(4)
	Trimethylbenzene (1,2,4-)	mg/m3	0.0128	NC	0.0359	0.0359	mg/m3	MAX	(4)
	Trimethylbenzene (1,3,5-)	mg/m3	0.00617	NC	0.0102	0.0102	mg/m3	MAX	(4)
Lot 283 (Indoor Air - Resident)	Chloroform	mg/kg	NA	NC	0.0012 J	0.0012	mg/kg	MAX	(11)
	Naphthalene	mg/kg	NA	NC	0.0775	0.0775	mg/kg	MAX	(11)

TABLE 3.5.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Orlando Property (Indoor Air - Resident)	Naphthalene	mg/kg	0.137	2.87 (G)	0.6	0.6	mg/kg	MAX	(10)
Off-Site Residential Building 1 (Indoor Air - Resident)	Naphthalene	mg/kg	0.0593	NC	0.11 J	0.11	mg/kg	MAX	(4)
Off-Site Residential Building 2 (Indoor Air - Resident)	Naphthalene	mg/kg	0.312	3.77 (G)	1.4 J	1.4	mg/kg	MAX	(10)
Off-Site Residential Building 3 (Indoor Air - Resident)	Heptachlor	mg/kg	NA	NC	0.00091 J	0.00091	mg/kg	MAX	(11)
	Naphthalene	mg/kg	0.306	NC	0.61 J	0.61	mg/kg	MAX	(4)

TABLE 3.5.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:
(G) = gamma
(N) = normal
NA = Not Applicable
NC = Not calculated.
(NP) = non-parametric
n= sample size
σ = standard deviation of log-transformed data

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).
(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.
(3) Soil gas data are used to calculate EPCs at this exposure point.
(4) Maximum concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.
(5) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).
(6) Shapiro-Wilk W test indicates the data are non-parametric and 2.0<σ<3.0 and n ≥ 10. Therefore, a 99% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation
the data (USEPA, 2004).
(7) Shapiro-Wilk W test indicates the data are non-parametric and 1.0<σ<2.0 and n < 50. Therefore, a 99% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation
the data (USEPA, 2004).
(8) Shapiro-Wilk W test indicates the data are non-parametric and 0.5<σ<1.0. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the
data (USEPA, 2004).
(9) Kolmogorov-Smirnov test indicates the data are gamma distributed and 0.1 < k^ < 0.5. Therefore, an adjusted gamma 95% UCL was calculated (USEPA, 2004).
(10) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the maximum detected concentration is used for the RME E
(11) Only one sample is included in this exposure point concentration. Therefore, an arithmetic mean is not calculated and the maximum concentration is used as the RME EPC.

TABLE 3.5.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
East of South Street On-Facility Building 1 (Indoor Air - Site Worker) [3]	Benzene	mg/m3	0.00909	NC	0.0129	0.0091	mg/m3	MEAN	(4)
	Carbon tetrachloride	mg/m3	0.00253	NC	0.00348	0.00253	mg/m3	MEAN	(4)
	Methylene chloride	mg/m3	0.0500	NC	0.0972	0.05	mg/m3	MEAN	(4)
	Trichloroethene	mg/m3	0.0332	NC	0.0498	0.0332	mg/m3	MEAN	(4)
East of South Street On-Facility Building 2 (Indoor Air - Site Worker) [3]	Benzene	mg/m3	0.00553	NC	0.0099	0.00553	mg/m3	MEAN	(4)
	Naphthalene	mg/m3	0.00362	NC	0.00655	0.00362	mg/m3	MEAN	(4)
	Tetrachloroethene	mg/m3	0.0132	NC	0.0247	0.0132	mg/m3	MEAN	(4)
	Trichloroethene	mg/m3	0.00317	NC	0.00423	0.00317	mg/m3	MEAN	(4)
	Trimethylbenzene (1,2,4-)	mg/m3	0.00912	NC	0.017	0.00912	mg/m3	MEAN	(4)
East of South Street On-Facility Building 3 (Indoor Air - Site Worker)	Heptachlor	mg/kg	0.000323	0.0008 (N)	0.00091 J	0.0008	mg/kg	95% UCL (N)	W-Test (5)
	Methylnaphthalene (2-)	mg/kg	0.278	1.64 (NP)	3.5	1.64	mg/kg	99% UCL (NP)	W-Test (6)
	Naphthalene	mg/kg	0.487	3.12 (NP)	6.4	3.12	mg/kg	99% UCL (NP)	W-Test (6)
	Trichlorofluoromethane	mg/kg	0.0134	0.137 (NP)	0.2 J	0.137	mg/kg	99% UCL (NP)	W-Test (7)
East of South Street On-Facility Building 4 (Indoor Air - Site Worker)	Benzene	mg/kg	0.00549	0.0313 (NP)	0.036 J	0.0313	mg/kg	99% UCL (NP)	W-Test (6)
	Ethylbenzene	mg/kg	0.00228	0.00693 (NP)	0.016 J	0.00693	mg/kg	95% UCL (NP)	W-Test (8)
	Methylnaphthalene (2-)	mg/kg	1.57	4.20 (G)	17	4.20	mg/kg	95% UCL (G)	K-S Test (9)
	Naphthalene	mg/kg	2.00	5.29 (G)	14	5.29	mg/kg	95% UCL (G)	K-S Test (9)
East of South Street On-Facility Building 5 (Indoor Air - Site Worker)	Benzene	mg/kg	0.00146	0.00309 (NP)	0.005	0.00309	mg/kg	95% UCL (NP)	W-Test (8)
	Methylnaphthalene (2-)	mg/kg	0.912	4.78 (NP)	3.5	0.912	mg/kg	MEAN	(10)
	Naphthalene	mg/kg	1.68	6.77 (G)	8.8	6.77	mg/kg	95% UCL (G)	K-S Test (9)
Gleason Court Lot 124 (Indoor Air - Resident) [3]	Naphthalene	mg/m3	0.00481	NC	0.0109	0.00481	mg/m3	MEAN	(4)
	Trichloroethene	mg/m3	0.00269	NC	0.00402	0.00269	mg/m3	MEAN	(4)
	Trimethylbenzene (1,2,4-)	mg/m3	0.0128	NC	0.0359	0.0128	mg/m3	MEAN	(4)
	Trimethylbenzene (1,3,5-)	mg/m3	0.00636	NC	0.0102	0.00636	mg/m3	MEAN	(4)
Gleason Court Lot 125 (Indoor Air - Resident) [3]	Naphthalene	mg/m3	0.00462	NC	0.0109	0.00462	mg/m3	MEAN	(4)
	Trichloroethene	mg/m3	0.00179	NC	0.0027 J	0.00179	mg/m3	MEAN	(4)
	Trimethylbenzene (1,2,4-)	mg/m3	0.0128	NC	0.0359	0.0128	mg/m3	MEAN	(4)
	Trimethylbenzene (1,3,5-)	mg/m3	0.00617	NC	0.0102	0.00617	mg/m3	MEAN	(4)
Lot 283 (Indoor Air - Resident)	Chloroform	mg/kg	NA	NC	0.0012 J	0.0012	mg/kg	MAX	(11)
	Naphthalene	mg/kg	NA	NC	0.0775	0.0775	mg/kg	MAX	(11)

TABLE 3.5.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Orlando Property (Indoor Air - Resident)	Naphthalene	mg/kg	0.137	2.87 (G)	0.6	0.137	mg/kg	MEAN	(10)
Off-Site Residential Building 1 (Indoor Air - Resident)	Naphthalene	mg/kg	0.0593	NC	0.11 J	0.0593	mg/kg	MEAN	(4)
Off-Site Residential Building 2 (Indoor Air - Resident)	Naphthalene	mg/kg	0.312	3.77 (G)	1.4 J	0.312	mg/kg	MEAN	(10)
Off-Site Residential Building 3 (Indoor Air - Resident)	Heptachlor	mg/kg	NA	NC	0.00091 J	0.00091	mg/kg	MAX	(11)
	Naphthalene	mg/kg	0.306	NC	0.61 J	0.306	mg/kg	MEAN	(4)

TABLE 3.5.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY
Blackburn and Union Privileges Site
Walpole, Massachusetts

Notes:
(G) = gamma
(N) = normal
NA = Not Applicable
NC = Not calculated.
(NP) = non-parametric
n= sample size
σ = standard deviation of log-transformed data

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).
(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.
(3) Soil gas data are used to calculate EPCs at this exposure point.
(4) Arithmetic mean concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.
(5) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (USEPA, 2004).
(6) Shapiro-Wilk W test indicates the data are non-parametric and 2.0<σ<3.0 and n ≥ 10. Therefore, a 99% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).
(7) Shapiro-Wilk W test indicates the data are non-parametric and 1.0<σ<2.0 and n < 50. Therefore, a 99% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).
(8) Shapiro-Wilk W test indicates the data are non-parametric and 0.5<σ<1.0. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).
(9) Kolmogorov-Smirnov test indicates the data are gamma distributed and 0.1 < k^ < 0.5. Therefore, an adjusted gamma 95% UCL was calculated (USEPA, 2004).
(10) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the arithmetic mean concentration is used for the CT EPC.
(11) Only one sample is included in this exposure point concentration. Therefore, an arithmetic mean is not calculated and the maximum concentration is used as the CT EPC.

TABLE 3.5.supporting
SUMMARY OF MODELED INDOOR AIR CONCENTRATIONS FROM SOIL OR SOIL GAS FOR CURRENT SCENARIOS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario	Exposure Point	Chemical	Soil EPC (mg/kg) RME	Soil EPC (mg/kg) CT	Soil Gas EPC (mg/m3) RME	Soil Gas EPC (mg/m3) CT	Final Indoor Air EPC (mg/m3) RME	Final Indoor Air EPC (mg/m3) CT
Current Site Worker	East of South Street On-Facility Building 1	Benzene	NA	NA	0.0129	0.00909	4.73E-06	3.33E-06
		Carbon tetrachloride	NA	NA	0.00348	0.00253	9.27E-04	6.20E-07
		Methylene chloride	NA	NA	0.0972	0.05	3.56E-05	1.83E-05
		Trichloroethene	NA	NA	0.0498	0.0332	1.82E-05	1.22E-05
Current Site Worker	East of South Street On-Facility Building 2	Benzene	NA	NA	0.0099	0.00553	6.99E-06	3.90E-06
		Naphthalene	NA	NA	0.00655	0.00362	4.61E-06	2.55E-06
		Tetrachloroethene	NA	NA	0.0247	0.0132	1.74E-05	9.30E-06
		Trichloroethene	NA	NA	0.00423	0.00317	2.98E-06	2.24E-06
		Trimethylbenzene (1,2,4-)	NA	NA	0.017	0.00912	1.20E-05	6.42E-06
Current Site Worker	East of South Street On-Facility Building 3	Heptachlor	0.0008	0.0008	NA	NA	1.36E-07	1.37E-07
		Methylnaphthalene (2-)	1.64	1.64	NA	NA	5.96E-05	5.96E-05
		Naphthalene	3.12	3.12	NA	NA	2.00E-04	2.00E-04
		Trichlorofluoromethane	0.137	0.137	NA	NA	4.55E-03	1.17E-02
Current Site Worker	East of South Street On-Facility Building 4	Benzene	0.0313	0.0313	NA	NA	1.04E-03	2.14E-03
		Ethylbenzene	0.00693	0.00693	NA	NA	9.74E-05	1.01E-04
		Methylnaphthalene (2-)	4.2	4.2	NA	NA	3.09E-04	3.09E-04
		Naphthalene	5.29	5.29	NA	NA	6.88E-04	6.88E-04
Current Site Worker	East of South Street On-Facility Building 5	Benzene	0.00309	0.00309	NA	NA	1.03E-04	1.52E-04
		Methylnaphthalene (2-)	3.5	0.912	NA	NA	1.77E-04	4.62E-05
		Naphthalene	6.77	6.77	NA	NA	6.05E-04	6.06E-04
Current Resident	Gleason Court Lot 124	Naphthalene	NA	NA	0.0109	0.00481	3.56E-05	1.57E-05
		Trichloroethene	NA	NA	0.00402	0.00269	1.31E-05	8.79E-06
		Trimethylbenzene (1,2,4-)	NA	NA	0.0359	0.0128	1.17E-04	4.18E-05
		Trimethylbenzene (1,3,5-)	NA	NA	0.0102	0.00636	3.33E-05	2.08E-05
Current Resident	Gleason Court Lot 125	Naphthalene	NA	NA	0.0109	0.00462	3.56E-05	1.51E-05
		Trichloroethene	NA	NA	0.0027	0.00179	8.82E-06	5.85E-06
		Trimethylbenzene (1,2,4-)	NA	NA	0.0359	0.0128	1.17E-04	4.18E-05
		Trimethylbenzene (1,3,5-)	NA	NA	0.0102	0.00617	3.33E-05	2.01E-05
Current Resident	Lot 283	Chloroform	0.0012	0.0012	NA	NA	4.21E-06	1.40E-05
		Naphthalene	0.0775	0.0775	NA	NA	2.72E-04	3.78E-04
Current Resident	Orlando Property	Naphthalene	0.6	0.137	NA	NA	1.06E-03	2.43E-04
Current Resident	Off-Site Residential Building 1	Naphthalene	0.11	0.0593	NA	NA	4.81E-05	2.64E-05
Current Resident	Off-Site Residential Building 2	Naphthalene	1.4	0.312	NA	NA	6.24E-04	1.40E-04
Current Resident	Off-Site Residential Building 3	Heptachlor	0.00091	0.00091	NA	NA	1.18E-06	1.28E-06
		Naphthalene	0.61	0.306	NA	NA	3.38E-04	1.71E-04

TABLE 3.6.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Lots South of the AOC (Indoor Air - Resident)	Benzene	mg/kg	0.0016	0.0022 (G)	0.0033	0.0022	mg/kg	95% UCL (G)	K-S Test (6)
	Carbon Disulfide	mg/kg	0.007	0.051 (NP)	0.033 J	0.033	mg/kg	MAX	(7)
	Chloroform	mg/kg	0.0011	0.0011 (N)	0.0013 J	0.0011	mg/kg	95% UCL (N)	W-test (5)
	Napthalene	mg/kg	0.13	0.32 (G)	0.34	0.32	mg/kg	95% UCL (G)	K-S Test (6)
	Trichlorofluoromethane	mg/kg	0.0951	0.15 (N)	0.25 J	0.15	mg/kg	95% UCL (N)	W-test (5)
West of South Street On-Facility (Indoor Air - Resident and Site Worker)	Benzene	mg/kg	0.0012	0.001 (NP)	0.0011 J	0.001	mg/kg	95% UCL (NP)	W-test (9)
	Carbon Disulfide	mg/kg	0.0027	0.0066 (NP)	0.024 J	0.0066	mg/kg	95% UCL (NP)	W-test (4)
	Chloroform	mg/kg	0.0010	0.0011 (NP)	0.0015 J	0.0011	mg/kg	95% UCL (NP)	W-test (9)
	Methylnapthalene (2-)	mg/kg	0.46	2.8 (NP)	8.5	2.8	mg/kg	99% UCL (NP)	W-test (3)
	Napthalene	mg/kg	0.30	1.2 (NP)	2.5	1.2	mg/kg	99% UCL (NP)	W-test (3)
	Trichlorofluoromethane	mg/kg	0.02	0.092 (NP)	0.2 J	0.092	mg/kg	99% UCL (NP)	W-test (3)
East of South Street On-Facility SB-09 area (Indoor Air from Soil Gas - Resident and Site Worker) [12]	Benzene	mg/m3	0.00486	0.00734 (N)	0.0129	0.00734	mg/m3	95% UCL (N)	W-test (5)
	Carbon tetrachloride	mg/m3	0.00333	0.00941 (NP)	0.00348	0.00348	mg/m3	MAX	(7)
	Chloroform	mg/m3	0.00245	0.00725 (NP)	0.0123 J	0.00725	mg/m3	95% UCL (NP)	W-test (4)
	Dichloroethene (cis-1,2-)	mg/m3	0.00493	0.0289 (NP)	0.0394	0.0289	mg/m3	97.5% UCL (NP)	W-test (13)
	Ethylbenzene	mg/m3	0.00767	0.0120 (N)	0.0243	0.012	mg/m3	95% UCL (N)	W-test (5)
	Methylene chloride	mg/m3	0.0177	0.0427 (T)	0.0972	0.0427	mg/m3	95% UCL (T)	W-test (8)
	Naphthalene	mg/m3	0.00346	0.00942 (T)	0.0109	0.00942	mg/m3	95% UCL (T)	W-test (14)
	Tetrachloroethene	mg/m3	0.00585	0.0219 (NP)	0.0247	0.0219	mg/m3	97.5% UCL (NP)	W-test (13)
	Trichloroethene	mg/m3	0.397	4.21 (NP)	3.85	3.85	mg/m3	MAX	(7)
	Trimethylbenzene (1,2,4-)	mg/m3	0.0106	0.0299 (NP)	0.0359	0.0299	mg/m3	95% UCL (NP)	W-test (15)
	Trimethylbenzene (1,3,5-)	mg/m3	0.00710	0.0131 (G)	0.0269	0.0131	mg/m3	95% UCL (G)	K-S Test (6)
East of South Street On-Facility non-SB-09 area (Indoor Air from Soil - Resident and Site Worker)	Benzene	mg/kg	0.00371	0.0199 (NP)	0.036 J	0.0199	mg/kg	99% UCL (NP)	W-test (3)
	Ethylbenzene	mg/kg	0.00175	0.00461 (NP)	0.016 J	0.00461	mg/kg	95% UCL (NP)	W-test (4)
	Heptachlor	mg/kg	0.000346	0.000792 (G)	0.00091 J	0.000792	mg/kg	95% UCL (G)	K-S Test (6)
	Methylnaphthalene (2-)	mg/kg	0.986	6.11 (NP)	17	6.11	mg/kg	99% UCL (NP)	W-test (3)
	Naphthalene	mg/kg	1.26	6.40 (NP)	14	6.4	mg/kg	99% UCL (NP)	W-test (3)
	Trichloroethene	mg/kg	0.00105	0.00114 (NP)	0.0018	0.00114	mg/kg	95% UCL (NP)	W-test (9)

TABLE 3.6.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Lot 283 (Indoor Air - Resident)	Chloroform	mg/kg	NA	NC	0.0012 J	0.0012	mg/kg	MAX	(11)
	Naphthalene	mg/kg	NA	NC	0.0775	0.078	mg/kg	MAX	(11)
Lot 257 (Indoor Air - Resident)	Naphthalene	mg/kg	0.059	NC	0.1	0.1	mg/kg	MAX	(10)
Lot 360 (Indoor Air - Resident)	Naphthalene	mg/kg	0.102	0.476 (T)	1.1	0.476	mg/kg	99% UCL (T)	W-test (17)
Lot 350 (Indoor Air - Resident)	Naphthalene	mg/kg	NA	NC	0.065	0.065	mg/kg	MAX	(11)
Gleason Court Lot 124 (Indoor Air - Resident) [12]	Naphthalene	mg/m3	0.00481	NC	0.0109	0.0109	mg/m3	MAX	(10)
	Trichloroethene	mg/m3	0.00269	NC	0.00402	0.00402	mg/m3	MAX	(10)
	Trimethylbenzene (1,2,4-)	mg/m3	0.0128	NC	0.0359	0.0359	mg/m3	MAX	(10)
	Trimethylbenzene (1,3,5-)	mg/m3	0.00636	NC	0.0102	0.0102	mg/m3	MAX	(10)
Gleason Court Lot 125 (Indoor Air - Resident) [12]	Naphthalene	mg/m3	0.00462	NC	0.0109	0.0109	mg/m3	MAX	(10)
	Trichloroethene	mg/m3	0.00179	NC	0.0027 J	0.0027	mg/m3	MAX	(10)
	Trimethylbenzene (1,2,4-)	mg/m3	0.0128	NC	0.0359	0.0359	mg/m3	MAX	(10)
	Trimethylbenzene (1,3,5-)	mg/m3	0.00617	NC	0.0102	0.0102	mg/m3	MAX	(10)
Lot 208 (Indoor Air - Resident)	Naphthalene	mg/kg	0.025	NC	0.058	0.058	mg/kg	MAX	(10)
Orlando Property (Indoor Air - Resident)	Naphthalene	mg/kg	0.058	0.51 (NP)	0.6	0.51	mg/kg	99% UCL (NP)	W-test (3)
Old Railroad and Former Lower Mill Pond Area (Indoor Air - Resident)	Methylene Chloride	mg/kg	0.018	NC	0.042 J	0.042	mg/kg	MAX	(10)
	Naphthalene	mg/kg	0.36	2.1 (NP)	2.2	2.1	mg/kg	99% UCL (NP)	W-test (3)

TABLE 3.6.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Lots South of the AOC (Trench Vapor - Construction Worker)	Acetone	mg/kg	0.0642	0.101 (N)	0.15 J	0.101	mg/kg	95% UCL (N)	W-test (5)
	Benzene	mg/kg	0.0016	0.0022 (G)	0.0033	0.0022	mg/kg	95% UCL (G)	K-S Test (6)
	Carbon Disulfide	mg/kg	0.007	0.051 (NP)	0.033 J	0.033	mg/kg	MAX	(7)
	Chloroform	mg/kg	0.0011	0.0011 (N)	0.0013 J	0.0011	mg/kg	95% UCL (N)	W-test (5)
	Methylnaphthalene (2-)	mg/kg	0.0791	0.13 (N)	0.26	0.13	mg/kg	95% UCL (N)	W-test (5)
	Napthalene	mg/kg	0.13	0.32 (G)	0.34	0.32	mg/kg	95% UCL (G)	K-S Test (6)
	Trichlorofluoromethane	mg/kg	0.0951	0.15 (N)	0.25 J	0.15	mg/kg	95% UCL (N)	W-test (5)
West of South Street On-Facility (Trench Vapor - Construction Worker)	Acetone	mg/kg	0.0158	0.0611 (NP)	0.13 J	0.0611	mg/kg	99% UCL (NP)	W-test (3)
	Benzene	mg/kg	0.0012	0.001 (NP)	0.0011 J	0.001	mg/kg	95% UCL (NP)	W-test (9)
	Carbon Disulfide	mg/kg	0.0027	0.0066 (NP)	0.024 J	0.0066	mg/kg	95% UCL (NP)	W-test (4)
	Chloroform	mg/kg	0.0010	0.0011 (NP)	0.0015 J	0.0011	mg/kg	95% UCL (NP)	W-test (9)
	Methylnapthalene (2-)	mg/kg	0.46	2.8 (NP)	8.5	2.8	mg/kg	99% UCL (NP)	W-test (3)
	Napthalene	mg/kg	0.30	1.2 (NP)	2.5	1.2	mg/kg	99% UCL (NP)	W-test (3)
	Toluene	mg/kg	0.00180	0.00366 (NP)	0.013 J	0.00366	mg/kg	95% UCL (NP)	W-test (4)
	Trichlorofluoromethane	mg/kg	0.02	0.092 (NP)	0.2 J	0.092	mg/kg	99% UCL (NP)	W-test (3)
East of South Street On-Facility SB-09 area (Trench Vapor from Soil Gas - Construction Worker) [12]	Trichloroethene	mg/m3	0.397	4.21 (NP)	3.85	3.85	mg/m3	MAX	(7)
East of South Street On-Facility non-SB-09 area (Trench Vapor from Soil - Construction Worker)	Acetone	mg/kg	0.0125	0.0325 (NP)	0.11 J	0.0325	mg/kg	95% UCL (NP)	W-test (4)
	Benzene	mg/kg	0.00371	0.0199 (NP)	0.036 J	0.0199	mg/kg	99% UCL (NP)	W-test (3)
	Carbon disulfide	mg/kg	0.00115	0.00139 (NP)	0.0041	0.00139	mg/kg	95% UCL (NP)	W-test (9)
	Methylnaphthalene (2-)	mg/kg	0.986	6.11 (NP)	17	6.11	mg/kg	99% UCL (NP)	W-test (3)
	Naphthalene	mg/kg	1.26	6.40 (NP)	14	6.4	mg/kg	99% UCL (NP)	W-test (3)
	Toluene	mg/kg	0.00305	0.00886 (NP)	0.031 J	0.00886	mg/kg	95% UCL (NP)	W-test (4)
	Trichloroethene	mg/kg	0.00105	0.00114 (NP)	0.0018	0.00114	mg/kg	95% UCL (NP)	W-test (9)
	Trichlorofluoromethane	mg/kg	0.0014	0.00206 (NP)	0.0098 J	0.00206	mg/kg	95% UCL (NP)	W-test (9)
	Xylene (m,p-)	mg/kg	0.0103	0.101 (NP)	0.21 J	0.101	mg/kg	99% UCL (NP)	W-test (3)
	Xylene (o-)	mg/kg	0.00620	0.0577 (NP)	0.12 J	0.0577	mg/kg	99% UCL (NP)	W-test (3)
Lot 283 (Trench Vapor - Construction Worker)	Chloroform	mg/kg	NA	NC	0.0012 J	0.0012	mg/kg	MAX	(11)
	Naphthalene	mg/kg	NA	NC	0.0775	0.0775	mg/kg	MAX	(11)
Lot 282 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	NA	NC	0.026	0.026	mg/kg	MAX	(11)

TABLE 3.6.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future

Medium: Soil/Soil Gas

Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Lot 210 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	NA	NC	0.056	0.056	mg/kg	MAX	(11)
Lot 230 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	NA	NC	0.042	0.042	mg/kg	MAX	(11)
Lot 257 (Trench Vapor - Construction Worker)	Methylnaphthalene (2-)	mg/kg	0.0515	NC	0.0855	0.0855	mg/kg	MAX	(10)
	Naphthalene	mg/kg	0.059	NC	0.1	0.1	mg/kg	MAX	(10)
Lot 342 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	NA	NC	0.05	0.05	mg/kg	MAX	(11)
Lot 360 (Trench Vapor - Construction Worker)	Methylnaphthalene (2-)	mg/kg	0.123	0.320 (G)	1.1	0.32	mg/kg	95% UCL (G)	K-S Test (16)
	Naphthalene	mg/kg	0.102	0.476 (T)	1.1	0.476	mg/kg	99% UCL (T)	W-test (17)
Lot 350 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	NA	NC	0.065	0.065	mg/kg	MAX	(11)
Gleason Court Vacant Lot (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	0.0143	0.0324 (N)	0.035	0.0324	mg/kg	95% UCL (N)	W-test (5)
Lot 208 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	0.025	NC	0.058	0.058	mg/kg	MAX	(10)
	Trichlorofluoromethane	mg/kg	NA	NC	0.0045 J	0.0045	mg/kg	MAX	(11)
Orlando Property (Trench Vapor - Construction Worker)	Methylnaphthalene (2-)	mg/kg	0.034	0.25 (NP)	0.31	0.25	mg/kg	99% UCL (NP)	W-test (3)
	Naphthalene	mg/kg	0.058	0.51 (NP)	0.6	0.51	mg/kg	99% UCL (NP)	W-test (3)
Old Railroad and Former Lower Mill Pond Area (Trench Vapor - Construction Worker)	Acetone	mg/kg	0.0345	NC	0.097 J	0.097	mg/kg	MAX	(10)
	Methylene Chloride	mg/kg	0.018	NC	0.042 J	0.042	mg/kg	MAX	(10)
	Methylnaphthalene (2-)	mg/kg	0.326	2.1 (NP)	2.3	2.1	mg/kg	99% UCL (NP)	W-test (3)
	Naphthalene	mg/kg	0.36	2.1 (NP)	2.2	2.1	mg/kg	99% UCL (NP)	W-test (3)

TABLE 3.6.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:

(G) = gamma

(N) = normal

NA = Not Applicable

NC = Not calculated.

(NP) = non-parametric

(T) = log-normal (value based on log-transformed data)

n= sample size

σ = standard deviation of log-transformed data

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.

(3) Shapiro-Wilk W-test indicates that the data are non-parametric therefore a 99% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).

(4) Shapiro-Wilk W test indicates the data are non-parametric and $0.5<\sigma<1$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).

(5) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t-statistic (USEPA, 2004).

(6) Kolmogorov-Smirnov test indicates the data are gamma distributed and $\hat{k} \geq 0.5$. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).

(7) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the maximum concentration is used for the RME EPC.

(8) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.0 \leq \sigma < 1.5$, and $n<25$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(9) Shapiro-Wilk W-test indicates the data are non-parametric. Therefore, a 95% UCL was calculated based on the Student's t-statistic (USEPA, 2004).

(10) Maximum concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.

(11) Only one sample is included in this exposure point concentration. Therefore, an arithmetic mean is not calculated and the maximum concentration is used as the RME EPC.

(12) Soil gas data are used to calculate EPCs at this exposure point.

(13) The recommended UCL is greater than the maximum detected concentration. Shapiro-Wilk W Test indicates that the data are non-parametric and a 97.5% UCL based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data is used for the RME EPC (USEPA, 2004).

(14) Shapiro-Wilk W test indicates the data are log-normally distributed and $0.5 \leq \sigma < 1.0$. Therefore, a 95% UCL was calculated based on the H-statistic (USEPA, 2004).

(15) The recommended UCL is greater than the maximum detected concentration. Shapiro-Wilk W Test indicates that the data are non-parametric and a 95% UCL based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data is used for the RME EPC (USEPA, 2004).

(16) Kolmogorov-Smirnov test indicates the data are gamma distributed and $0.1 \leq \hat{k} \geq 0.5$. Therefore, an adjusted gamma 95% UCL was calculated (USEPA, 2004).

(17) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.5 \leq \sigma < 2.0$, and $n<20$. Therefore, a 99% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

TABLE 3.6.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value[2]	Units	Statistic	Rationale
Lots South of the AOC (Indoor Air - Resident)	Benzene	mg/kg	0.0016	0.0022	(G)	0.0033		0.0022	mg/kg	95% UCL (G)	K-S Test (6)
	Carbon Disulfide	mg/kg	0.007	0.051	(NP)	0.033	J	0.007	mg/kg	MEAN	(7)
	Chloroform	mg/kg	0.0011	0.0011	(N)	0.0013	J	0.0011	mg/kg	95% UCL (N)	W-test (5)
	Napthalene	mg/kg	0.13	0.32	(G)	0.34		0.32	mg/kg	95% UCL (G)	K-S Test (6)
	Trichlorofluoromethane	mg/kg	0.0951	0.15	(N)	0.25	J	0.15	mg/kg	95% UCL (N)	W-test (5)
West of South Street On-Facility (Indoor Air - Resident and Site Worker)	Benzene	mg/kg	0.0012	0.001	(NP)	0.0011	J	0.001	mg/kg	95% UCL (NP)	W-test (9)
	Carbon Disulfide	mg/kg	0.0027	0.0066	(NP)	0.024	J	0.0066	mg/kg	95% UCL (NP)	W-test (4)
	Chloroform	mg/kg	0.0010	0.0011	(NP)	0.0015	J	0.0011	mg/kg	95% UCL (NP)	W-test (9)
	Methylnapthalene (2-)	mg/kg	0.46	2.8	(NP)	8.5		2.8	mg/kg	99% UCL (NP)	W-test (3)
	Napthalene	mg/kg	0.30	1.2	(NP)	2.5		1.2	mg/kg	99% UCL (NP)	W-test (3)
	Trichlorofluoromethane	mg/kg	0.02	0.092	(NP)	0.2	J	0.092	mg/kg	99% UCL (NP)	W-test (3)
East of South Street On-Facility SB-09 area (Indoor Air from Soil Gas - Resident and Site Worker) [12]	Benzene	mg/m3	0.00486	0.00734	(N)	0.0129		0.00734	mg/m3	95% UCL (N)	W-test (5)
	Carbon tetrachloride	mg/m3	0.00333	0.00941	(NP)	0.00348		0.00333	mg/m3	MEAN	(7)
	Chloroform	mg/m3	0.00245	0.00725	(NP)	0.0123	J	0.00725	mg/m3	95% UCL (NP)	W-test (4)
	Dichloroethene (cis-1,2-)	mg/m3	0.00493	0.0289	(NP)	0.0394		0.0289	mg/m3	97.5% UCL (NP)	W-test (13)
	Ethylbenzene	mg/m3	0.00767	0.0120	(N)	0.0243		0.012	mg/m3	95% UCL (N)	W-test (5)
	Methylene chloride	mg/m3	0.0177	0.0427	(T)	0.0972		0.0427	mg/m3	95% UCL (T)	W-test (8)
	Naphthalene	mg/m3	0.00346	0.00942	(T)	0.0109		0.00942	mg/m3	95% UCL (T)	W-test (14)
	Tetrachloroethene	mg/m3	0.00585	0.0219	(NP)	0.0247		0.0219	mg/m3	97.5% UCL (NP)	W-test (13)
	Trichloroethene	mg/m3	0.397	4.21	(NP)	3.85		0.397	mg/m3	MEAN	(7)
	Trimethylbenzene (1,2,4-)	mg/m3	0.0106	0.0299	(NP)	0.0359		0.0299	mg/m3	95% UCL (NP)	W-test (15)
	Trimethylbenzene (1,3,5-)	mg/m3	0.00710	0.0131	(G)	0.0269		0.0131	mg/m3	95% UCL (G)	K-S Test (6)
East of South Street On-Facility non-SB-09 area (Indoor Air from Soil - Resident and Site Worker)	Benzene	mg/kg	0.00371	0.0199	(NP)	0.036	J	0.0199	mg/kg	99% UCL (NP)	W-test (3)
	Ethylbenzene	mg/kg	0.00175	0.00461	(NP)	0.016	J	0.00461	mg/kg	95% UCL (NP)	W-test (4)
	Heptachlor	mg/kg	0.000346	0.000792	(G)	0.00091	J	0.000792	mg/kg	95% UCL (G)	K-S Test (6)
	Methylnaphthalene (2-)	mg/kg	0.986	6.11	(NP)	17		6.11	mg/kg	99% UCL (NP)	W-test (3)
	Naphthalene	mg/kg	1.26	6.40	(NP)	14		6.4	mg/kg	99% UCL (NP)	W-test (3)
	Trichloroethene	mg/kg	0.00105	0.00114	(NP)	0.0018		0.00114	mg/kg	95% UCL (NP)	W-test (9)

TABLE 3.6.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Lot 283 (Indoor Air - Resident)	Chloroform	mg/kg	NA	NC	0.0012 J	0.0012	mg/kg	MAX	(11)
	Naphthalene	mg/kg	NA	NC	0.0775	0.078	mg/kg	MAX	(11)
Lot 257 (Indoor Air - Resident)	Naphthalene	mg/kg	0.059	NC	0.1	0.059	mg/kg	MEAN	(10)
Lot 360 (Indoor Air - Resident)	Naphthalene	mg/kg	0.102	0.476 (T)	1.1	0.476	mg/kg	99% UCL (T)	W-test (17)
Lot 350 (Indoor Air - Resident)	Naphthalene	mg/kg	NA	NC	0.065	0.065	mg/kg	MAX	(11)
Gleason Court Lot 124 (Indoor Air - Resident) [12]	Naphthalene	mg/m3	0.00481	NC	0.0109	0.00481	mg/m3	MEAN	(10)
	Trichloroethene	mg/m3	0.00269	NC	0.00402	0.00269	mg/m3	MEAN	(10)
	Trimethylbenzene (1,2,4-)	mg/m3	0.0128	NC	0.0359	0.0128	mg/m3	MEAN	(10)
	Trimethylbenzene (1,3,5-)	mg/m3	0.00636	NC	0.0102	0.00636	mg/m3	MEAN	(10)
Gleason Court Lot 125 (Indoor Air - Resident) [12]	Naphthalene	mg/m3	0.00462	NC	0.0109	0.00462	mg/m3	MEAN	(10)
	Trichloroethene	mg/m3	0.00179	NC	0.0027 J	0.00179	mg/m3	MEAN	(10)
	Trimethylbenzene (1,2,4-)	mg/m3	0.0128	NC	0.0359	0.0128	mg/m3	MEAN	(10)
	Trimethylbenzene (1,3,5-)	mg/m3	0.00617	NC	0.0102	0.00617	mg/m3	MEAN	(10)
Lot 208 (Indoor Air - Resident)	Naphthalene	mg/kg	0.025	NC	0.058	0.025	mg/kg	MEAN	(10)
Orlando Property (Indoor Air - Resident)	Naphthalene	mg/kg	0.058	0.51 (NP)	0.6	0.51	mg/kg	99% UCL (NP)	W-test (3)
Old Railroad and Former Lower Mill Pond Area (Indoor Air - Resident)	Methylene Chloride	mg/kg	0.018	NC	0.042 J	0.018	mg/kg	MEAN	(10)
	Naphthalene	mg/kg	0.36	2.1 (NP)	2.2	2.1	mg/kg	99% UCL (NP)	W-test (3)

TABLE 3.6.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future

Medium: Soil/Soil Gas

Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Lots South of the AOC (Trench Vapor - Construction Worker)	Acetone	mg/kg	0.0642	0.101 (N)	0.15 J	0.101	mg/kg	95% UCL (N)	W-test (5)
	Benzene	mg/kg	0.0016	0.0022 (G)	0.0033	0.0022	mg/kg	95% UCL (G)	K-S Test (6)
	Carbon Disulfide	mg/kg	0.007	0.051 (NP)	0.033 J	0.007	mg/kg	MEAN	(7)
	Chloroform	mg/kg	0.0011	0.0011 (N)	0.0013 J	0.0011	mg/kg	95% UCL (N)	W-test (5)
	Methylnaphthalene (2-)	mg/kg	0.0791	0.13 (N)	0.26	0.13	mg/kg	95% UCL (N)	W-test (5)
	Napthalene	mg/kg	0.13	0.32 (G)	0.34	0.32	mg/kg	95% UCL (G)	K-S Test (6)
	Trichlorofluoromethane	mg/kg	0.0951	0.15 (N)	0.25 J	0.15	mg/kg	95% UCL (N)	W-test (5)
West of South Street On-Facility (Trench Vapor - Construction Worker)	Acetone	mg/kg	0.0158	0.0611 (NP)	0.13 J	0.0611	mg/kg	99% UCL (NP)	W-test (3)
	Benzene	mg/kg	0.0012	0.001 (NP)	0.0011 J	0.001	mg/kg	95% UCL (NP)	W-test (9)
	Carbon Disulfide	mg/kg	0.0027	0.0066 (NP)	0.024 J	0.0066	mg/kg	95% UCL (NP)	W-test (4)
	Chloroform	mg/kg	0.0010	0.0011 (NP)	0.0015 J	0.0011	mg/kg	95% UCL (NP)	W-test (9)
	Methylnapthalene (2-)	mg/kg	0.46	2.8 (NP)	8.5	2.8	mg/kg	99% UCL (NP)	W-test (3)
	Napthalene	mg/kg	0.30	1.2 (NP)	2.5	1.2	mg/kg	99% UCL (NP)	W-test (3)
	Toluene	mg/kg	0.00180	0.00366 (NP)	0.013 J	0.00366	mg/kg	95% UCL (NP)	W-test (4)
	Trichlorofluoromethane	mg/kg	0.02	0.092 (NP)	0.2 J	0.092	mg/kg	99% UCL (NP)	W-test (3)
East of South Street On-Facility SB-09 area (Trench Vapor from Soil Gas - Construction Worker) [12]	Trichloroethene	mg/m3	0.397	4.21 (NP)	3.85	0.397	mg/m3	MEAN	(7)
East of South Street On-Facility non-SB-09 area (Trench Vapor from Soil - Construction Worker)	Acetone	mg/kg	0.0125	0.0325 (NP)	0.11 J	0.0325	mg/kg	95% UCL (NP)	W-test (4)
	Benzene	mg/kg	0.00371	0.0199 (NP)	0.036 J	0.0199	mg/kg	99% UCL (NP)	W-test (3)
	Carbon disulfide	mg/kg	0.00115	0.00139 (NP)	0.0041	0.00139	mg/kg	95% UCL (NP)	W-test (9)
	Methylnaphthalene (2-)	mg/kg	0.986	6.11 (NP)	17	6.11	mg/kg	99% UCL (NP)	W-test (3)
	Naphthalene	mg/kg	1.26	6.40 (NP)	14	6.4	mg/kg	99% UCL (NP)	W-test (3)
	Toluene	mg/kg	0.00305	0.00886 (NP)	0.031 J	0.00886	mg/kg	95% UCL (NP)	W-test (4)
	Trichloroethene	mg/kg	0.00105	0.00114 (NP)	0.0018	0.00114	mg/kg	95% UCL (NP)	W-test (9)
	Trichlorofluoromethane	mg/kg	0.0014	0.00206 (NP)	0.0098 J	0.00206	mg/kg	95% UCL (NP)	W-test (9)
	Xylene (m,p-)	mg/kg	0.0103	0.101 (NP)	0.21 J	0.101	mg/kg	99% UCL (NP)	W-test (3)
	Xylene (o-)	mg/kg	0.00620	0.0577 (NP)	0.12 J	0.0577	mg/kg	99% UCL (NP)	W-test (3)
Lot 283 (Trench Vapor - Construction Worker)	Chloroform	mg/kg	NA	NC	0.0012 J	0.0012	mg/kg	MAX	(11)
	Naphthalene	mg/kg	NA	NC	0.0775	0.0775	mg/kg	MAX	(11)
Lot 282 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	NA	NC	0.026	0.026	mg/kg	MAX	(11)

TABLE 3.6.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil/Soil Gas
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) [1]	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Lot 210 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	NA	NC	0.056	0.056	mg/kg	MAX	(11)
Lot 230 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	NA	NC	0.042	0.042	mg/kg	MAX	(11)
Lot 257 (Trench Vapor - Construction Worker)	Methylnaphthalene (2-)	mg/kg	0.0515	NC	0.0855	0.0515	mg/kg	MEAN	(10)
	Naphthalene	mg/kg	0.059	NC	0.1	0.059	mg/kg	MEAN	(10)
Lot 342 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	NA	NC	0.05	0.05	mg/kg	MAX	(11)
Lot 360 (Trench Vapor - Construction Worker)	Methylnaphthalene (2-)	mg/kg	0.123	0.320 (G)	1.1	0.32	mg/kg	95% UCL (G)	K-S Test (16)
	Naphthalene	mg/kg	0.102	0.476 (T)	1.1	0.476	mg/kg	99% UCL (T)	W-test (17)
Lot 350 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	NA	NC	0.065	0.065	mg/kg	MAX	(11)
Gleason Court Vacant Lot (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	0.0143	0.0324 (N)	0.035	0.0324	mg/kg	95% UCL (N)	W-test (5)
Lot 208 (Trench Vapor - Construction Worker)	Naphthalene	mg/kg	0.025	NC	0.058	0.025	mg/kg	MEAN	(10)
	Trichlorofluoromethane	mg/kg	NA	NC	0.0045 J	0.0045	mg/kg	MAX	(11)
Orlando Property (Trench Vapor - Construction Worker)	Methylnaphthalene (2-)	mg/kg	0.034	0.25 (NP)	0.31	0.25	mg/kg	99% UCL (NP)	W-test (3)
	Naphthalene	mg/kg	0.058	0.51 (NP)	0.6	0.51	mg/kg	99% UCL (NP)	W-test (3)
Old Railroad and Former Lower Mill Pond Area (Trench Vapor - Construction Worker)	Acetone	mg/kg	0.0345	NC	0.097 J	0.0345	mg/kg	MEAN	(10)
	Methylene Chloride	mg/kg	0.018	NC	0.042 J	0.018	mg/kg	MEAN	(10)
	Methylnaphthalene (2-)	mg/kg	0.326	2.1 (NP)	2.3	2.1	mg/kg	99% UCL (NP)	W-test (3)
	Naphthalene	mg/kg	0.36	2.1 (NP)	2.2	2.1	mg/kg	99% UCL (NP)	W-test (3)

TABLE 3.6.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:

(G) = gamma

(N) = normal

NA = Not Applicable

NC = Not calculated.

(NP) = non-parametric

(T) = log-normal (value based on log-transformed data)

n= sample size

σ = standard deviation of log-transformed data

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.

(3) Shapiro-Wilk W-test indicates that the data are non-parametric therefore a 99% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).

(4) Shapiro-Wilk W test indicates the data are non-parametric and $0.5<\sigma<1$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (USEPA, 2004).

(5) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t-statistic (USEPA, 2004).

(6) Kolmogorov-Smirnov test indicates the data are gamma distributed and $\hat{k} \geq 0.5$. Therefore, an approximate gamma 95% UCL was calculated (USEPA, 2004).

(7) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the arithmetic mean concentration is used for the CT EPC.

(8) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.0 \leq \sigma < 1.5$, and $n<25$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

(9) Shapiro-Wilk W-test indicates the data are non-parametric. Therefore, a 95% UCL was calculated based on the Student's t-statistic (USEPA, 2004).

(10) Arithmetic mean concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.

(11) Only one sample is included in this exposure point concentration. Therefore, an arithmetic mean is not calculated and the maximum concentration is used as the CT EPC.

(12) Soil gas data are used to calculate EPCs at this exposure point.

(13) The recommended UCL is greater than the maximum detected concentration. Shapiro-Wilk W Test indicates that the data are non-parametric and a 97.5% UCL based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data is used for the CT EPC (USEPA, 2004).

(14) Shapiro-Wilk W test indicates the data are log-normally distributed and $0.5 \leq \sigma < 1.0$. Therefore, a 95% UCL was calculated based on the H-statistic (USEPA, 2004).

(15) The recommended UCL is greater than the maximum detected concentration. Shapiro-Wilk W Test indicates that the data are non-parametric and a 95% UCL based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data is used for the CT EPC (USEPA, 2004).

(16) Kolmogorov-Smirnov test indicates the data are gamma distributed and $0.1 \leq \hat{k} \geq 0.5$. Therefore, an adjusted gamma 95% UCL was calculated (USEPA, 2004).

(17) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.5 \leq \sigma < 2.0$, and $n<20$. Therefore, a 99% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (USEPA, 2004).

TABLE 3.6.supporting
SUMMARY OF MODELED INDOOR AIR AND TRENCH VAPOR CONCENTRATIONS FROM SOIL OR SOIL GAS FOR FUTURE SCENARIOS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario		Exposure Point	Chemical	Soil EPC (mg/kg) RME	Soil EPC (mg/kg) CT	Soil Gas EPC (mg/m3) RME	Soil Gas EPC (mg/m3) CT	Final Indoor Air EPC (mg/m3) RME	Final Indoor Air EPC (mg/m3) CT
Future Resident	Indoor Air	East of South Street On-Facility (SB-09 area)	Benzene	NA	NA	0.00734	0.00734	2.40E-05	2.40E-05
			Carbon tetrachloride	NA	NA	0.00348	0.00333	1.14E-05	1.09E-05
			Chloroform	NA	NA	0.00725	0.00725	2.37E-05	2.37E-05
			Dichloroethene (cis-1,2-)	NA	NA	0.0289	0.0289	9.44E-05	9.44E-05
			Ethylbenzene	NA	NA	0.012	0.012	3.92E-05	3.92E-05
			Methylene chloride	NA	NA	0.0427	0.0427	1.40E-04	1.40E-04
			Naphthalene	NA	NA	0.00942	0.00942	3.07E-05	3.07E-05
			Tetrachloroethene	NA	NA	0.0219	0.0219	7.15E-05	7.15E-05
			Trichloroethene	NA	NA	3.85	0.397	1.26E-02	1.30E-03
			Trimethylbenzene (1,2,4-)	NA	NA	0.0299	0.0299	9.76E-05	9.76E-05
			Trimethylbenzene (1,3,5-)	NA	NA	0.0131	0.0131	4.27E-05	4.27E-05
Future Resident	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Benzene	0.0199	0.0199	NA	NA	1.90E-04	6.35E-04
			Ethylbenzene	0.00461	0.00461	NA	NA	4.41E-05	1.47E-04
			Heptachlor	0.000792	0.000792	NA	NA	1.03E-06	1.12E-06
			Methylnaphthalene (2-)	6.11	6.11	NA	NA	1.93E-03	1.94E-03
			Naphthalene	6.4	6.4	NA	NA	3.55E-03	3.58E-03
			Trichloroethene	0.00114	0.00114	NA	NA	1.09E-05	3.64E-05
Future Site Worker	Indoor Air	East of South Street On-Facility (SB-09 area)	Benzene	NA	NA	0.00734	0.00734	2.40E-05	2.40E-05
			Carbon tetrachloride	NA	NA	0.00348	0.00333	1.14E-05	1.09E-05
			Chloroform	NA	NA	0.00725	0.00725	2.37E-05	2.37E-05
			Dichloroethene (cis-1,2-)	NA	NA	0.0289	0.0289	9.44E-05	9.44E-05
			Ethylbenzene	NA	NA	0.012	0.012	3.92E-05	3.92E-05
			Methylene chloride	NA	NA	0.0427	0.0427	1.40E-04	1.40E-04
			Naphthalene	NA	NA	0.00942	0.00942	3.07E-05	3.07E-05
			Tetrachloroethene	NA	NA	0.0219	0.0219	7.15E-05	7.15E-05
			Trichloroethene	NA	NA	3.85	0.397	1.26E-02	1.30E-03
			Trimethylbenzene (1,2,4-)	NA	NA	0.0299	0.0299	9.76E-05	9.76E-05
			Trimethylbenzene (1,3,5-)	NA	NA	0.0131	0.0131	4.27E-05	4.27E-05
Future Site Worker	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Benzene	0.0199	0.0199	NA	NA	2.28E-04	6.35E-04
			Ethylbenzene	0.00461	0.00461	NA	NA	5.29E-05	1.47E-04
			Heptachlor	0.000792	0.000792	NA	NA	1.05E-06	1.12E-06
			Methylnaphthalene (2-)	6.11	6.11	NA	NA	1.93E-03	1.94E-03
			Naphthalene	6.4	6.4	NA	NA	3.56E-03	3.58E-03
			Trichloroethene	0.00114	0.00114	NA	NA	1.31E-05	3.64E-05

TABLE 3.6.supporting
SUMMARY OF MODELED INDOOR AIR AND TRENCH VAPOR CONCENTRATIONS FROM SOIL OR SOIL GAS FOR FUTURE SCENARIOS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario		Exposure Point	Chemical	Soil EPC (mg/kg) RME	Soil EPC (mg/kg) CT	Soil Gas EPC (mg/m3) RME	Soil Gas EPC (mg/m3) CT	Final Indoor Air EPC (mg/m3) RME	Final Indoor Air EPC (mg/m3) CT
Future Resident	Indoor Air	West of South Street On-Facility	Benzene	0.001	0.001	NA	NA	1.08E-05	3.59E-05
			Carbon Disulfide	0.0066	0.0066	NA	NA	7.10E-05	2.37E-04
			Chloroform	0.0011	0.0011	NA	NA	1.18E-05	3.94E-05
			Methylnaphthalene (2-)	2.8	2.8	NA	NA	6.99E-04	7.06E-04
			Naphthalene	1.2	1.2	NA	NA	5.25E-04	5.33E-04
			Trichlorofluoromethane	0.092	0.092	NA	NA	9.90E-04	3.30E-03
Future Site Worker	Indoor Air	West of South Street On-Facility	Benzene	0.001	0.001	NA	NA	1.29E-05	3.59E-05
			Carbon Disulfide	0.0066	0.0066	NA	NA	8.52E-05	2.37E-04
			Chloroform	0.0011	0.0011	NA	NA	1.42E-05	3.94E-05
			Methylnaphthalene (2-)	2.8	2.8	NA	NA	7.01E-04	7.06E-04
			Naphthalene	1.2	1.2	NA	NA	5.27E-04	5.33E-04
			Trichlorofluoromethane	0.092	0.092	NA	NA	1.19E-03	3.30E-03
Future Resident	Indoor Air	Lots South of the AOC	Benzene	0.0022	0.0022	NA	NA	6.97E-05	2.32E-04
			Carbon Disulfide	0.033	0.007	NA	NA	1.05E-03	7.39E-04
			Chloroform	0.0011	0.0011	NA	NA	3.49E-05	1.16E-04
			Napthalene	0.32	0.32	NA	NA	1.43E-04	1.43E-04
			Trichlorofluoromethane	0.15	0.15	NA	NA	4.75E-03	1.58E-02
Future Resident	Indoor Air	Old Railroad and Former Lower Mill Pond Area	Methylene Chloride	0.042	0.018	NA	NA	1.91E-04	2.72E-04
			Naphthalene	2.1	2.1	NA	NA	1.53E-03	1.57E-03
Future Resident	Indoor Air	Lot 124	Naphthalene	NA	NA	0.0109	0.00481	3.56E-05	1.57E-05
			Trichloroethene	NA	NA	0.00402	0.00269	1.31E-05	8.79E-06
			Trimethylbenzene (1,2,4-)	NA	NA	0.0359	0.0128	1.17E-04	4.18E-05
			Trimethylbenzene (1,3,5-)	NA	NA	0.0102	0.00636	3.33E-05	2.08E-05
Future Resident	Indoor Air	Lot 125	Naphthalene	NA	NA	0.0109	0.00462	3.56E-05	1.51E-05
			Trichloroethene	NA	NA	0.0027	0.00179	8.82E-06	5.85E-06
			Trimethylbenzene (1,2,4-)	NA	NA	0.0359	0.0128	1.17E-04	4.18E-05
			Trimethylbenzene (1,3,5-)	NA	NA	0.0102	0.00617	3.33E-05	2.01E-05
Future Resident	Indoor Air	Lot 208	Naphthalene	0.058	0.025	NA	NA	1.74E-04	1.22E-04
Future Resident	Indoor Air	Lot 283	Chloroform	0.0012	0.0012	NA	NA	4.21E-06	1.40E-05
			Naphthalene	0.078	0.078	NA	NA	2.74E-04	3.80E-04
Future Resident	Indoor Air	Lot 257	Naphthalene	0.1	0.059	NA	NA	5.07E-05	2.99E-05
Future Resident	Indoor Air	Orlando Property	Naphthalene	0.51	0.51	NA	NA	9.04E-04	9.04E-04
Future Resident	Indoor Air	Lot 360	Naphthalene	0.476	0.476	NA	NA	2.11E-04	2.11E-04
Future Resident	Indoor Air	Lot 350	Naphthalene	0.065	0.065	NA	NA	3.44E-04	3.44E-04

TABLE 3.6.supporting
SUMMARY OF MODELED INDOOR AIR AND TRENCH VAPOR CONCENTRATIONS FROM SOIL OR SOIL GAS FOR FUTURE SCENARIOS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario	Exposure Point	Chemical	Soil EPC (mg/kg) RME	Soil EPC (mg/kg) CT	Soil Gas EPC (mg/m3) RME	Soil Gas EPC (mg/m3) CT	Final Indoor Air EPC (mg/m3) RME	Final Indoor Air EPC (mg/m3) CT
Future Construction Worker Trench Vapor	East of South Street On-Facility (SB-09 area)	Trichloroethene	NA	NA	3.85	0.397	9.32E-02	9.61E-03
Future Construction Worker Trench Vapor	East of South Street On-Facility (non-SB-09 area)	Acetone	0.0325	0.0325	NA	NA	2.37E-02	2.37E-02
		Benzene	0.0199	0.0199	NA	NA	5.25E-02	5.25E-02
		Carbon disulfide	0.00139	0.00139	NA	NA	3.03E-02	3.03E-02
		Methylnaphthalene (2-)	6.11	6.11	NA	NA	9.59E-03	9.59E-03
		Naphthalene	6.4	6.4	NA	NA	2.00E-02	2.00E-02
		Toluene	0.00886	0.00886	NA	NA	8.42E-03	8.42E-03
		Trichloroethene	0.00114	0.00114	NA	NA	1.76E-03	1.76E-03
		Trichlorofluoromethane	0.00206	0.00206	NA	NA	1.32E-02	1.32E-02
		Xylene (m,p-) [1]	0.101	0.101	NA	NA	4.20E-02	4.20E-02
		Xylene (o-)	0.0577	0.0577	NA	NA	1.94E-02	1.94E-02
Future Construction Worker Trench Vapor	Gleason Court Vacant Lot	Naphthalene	0.0324	0.0324	NA	NA	9.55E-04	9.55E-04
Future Construction Worker Trench Vapor	Old Railroad and Former Lower Mill Pond Area	Acetone	0.097	0.0345	NA	NA	7.56E-02	2.69E-02
		Methylene Chloride	0.042	0.018	NA	NA	3.14E-01	1.35E-01
		Methylnaphthalene (2-)	2.1	2.1	NA	NA	4.47E-03	4.47E-03
		Naphthalene	2.1	2.1	NA	NA	8.90E-03	8.90E-03
Future Construction Worker Trench Vapor	Lot 208	Naphthalene	0.058	0.025	NA	NA	1.71E-03	7.37E-04
		Trichlorofluoromethane	0.0045	0.0045	NA	NA	1.93E-01	1.93E-01
Future Construction Worker Trench Vapor	Lot 283	Chloroform	0.0012	0.0012	NA	NA	2.38E-02	2.38E-02
		Naphthalene	0.0775	0.0775	NA	NA	2.28E-03	2.28E-03
Future Construction Worker Trench Vapor	Lot 282	Naphthalene	0.026	0.026	NA	NA	7.66E-04	7.66E-04
Future Construction Worker Trench Vapor	Lot 210	Naphthalene	0.056	0.056	NA	NA	1.65E-03	1.65E-03
Future Construction Worker Trench Vapor	Lot 230	Naphthalene	0.042	0.042	NA	NA	1.24E-03	1.24E-03
Future Construction Worker Trench Vapor	Lot 257	Methylnaphthalene (2-)	0.0855	0.0515	NA	NA	1.21E-04	7.31E-05
		Naphthalene	0.1	0.059	NA	NA	2.83E-04	1.67E-04
Future Construction Worker Trench Vapor	Orlando Property	Methylnaphthalene (2-)	0.25	0.25	NA	NA	1.24E-03	1.24E-03
		Naphthalene	0.51	0.51	NA	NA	5.04E-03	5.04E-03

TABLE 3.6.supporting
SUMMARY OF MODELED INDOOR AIR AND TRENCH VAPOR CONCENTRATIONS FROM SOIL OR SOIL GAS FOR FUTURE SCENARIOS
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario	Exposure Point		Chemical	Soil EPC (mg/kg) RME	Soil EPC (mg/kg) CT	Soil Gas EPC (mg/m3) RME	Soil Gas EPC (mg/m3) CT	Final Indoor Air EPC (mg/m3) RME	Final Indoor Air EPC (mg/m3) CT
Future Construction Worker	Trench Vapor	Lot 342	Naphthalene	0.05	0.05	NA	NA	1.47E-03	1.47E-03
Future Construction Worker	Trench Vapor	Lot 360	Methylnaphthalene (2-)	0.32	0.32	NA	NA	3.98E-04	3.98E-04
			Naphthalene	0.476	0.476	NA	NA	1.18E-03	1.18E-03
Future Construction Worker	Trench Vapor	Lot 350	Naphthalene	0.065	0.065	NA	NA	1.92E-03	1.92E-03
Future Construction Worker	Trench Vapor	West of South Street On-Facility	Acetone	0.0611	0.0611	NA	NA	4.19E-02	4.19E-02
			Benzene	0.001	0.001	NA	NA	2.13E-03	2.13E-03
			Carbon Disulfide	0.0066	0.0066	NA	NA	1.19E-01	1.19E-01
			Chloroform	0.0011	0.0011	NA	NA	2.81E-03	2.81E-03
			Methylnapthalene (2-)	2.8	2.8	NA	NA	3.52E-03	3.52E-03
			Naphthalene	1.2	1.2	NA	NA	3.01E-03	3.01E-03
			Toluene	0.00366	0.00366	NA	NA	2.80E-03	2.80E-03
			Trichlorofluoromethane	0.092	0.092	NA	NA	4.79E-01	4.79E-01
Future Construction Worker	Trench Vapor	Lots South of the AOC	Acetone	0.101	0.101	NA	NA	6.92E-02	6.92E-02
			Benzene	0.0022	0.0022	NA	NA	4.70E-03	4.70E-03
			Carbon Disulfide	0.033	0.007	NA	NA	5.95E-01	1.26E-01
			Chloroform	0.0011	0.0011	NA	NA	2.81E-03	2.81E-03
			Methylnaphthalene (2-)	0.13	0.13	NA	NA	1.64E-04	1.64E-04
			Napthalene	0.32	0.32	NA	NA	8.01E-04	8.01E-04
			Trichlorofluoromethane	0.15	0.15	NA	NA	7.80E-01	7.80E-01

Note:
(1) Modeling parameters for p-xylene are used to model trench vapor concentrations from m,p-xylene concentrations in soil.

Table 3.7.RME
Exposure Point Concentration Summary
Reasonable Maximum Exposure
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)	Maximum Concentration (Qualifier)[1]	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Off-site groundwater west of Neponset River	Arsenic	mg/L	0.000327	NC	0.00063	0.00063	mg/L	MAX	(3)
	Manganese	mg/L	0.0757	NC	0.13	0.13	mg/L	MAX	(3)
Off-site groundwater east of Neponset River (SH-27)	Antimony	mg/L	0.00107	NC	0.0022	0.0022	mg/L	MAX	(3)
	Arsenic	mg/L	0.00085	NC	0.0016	0.0016	mg/L	MAX	(3)
	Benzo(a)pyrene	mg/L	0.00000887	NC	0.000014	0.000014	mg/L	MAX	(3)
	Manganese	mg/L	0.303	NC	0.42	0.42	mg/L	MAX	(3)
	Nitrophenol (4-)	mg/L	0.000367	NC	0.0001	0.0001	mg/L	MAX	(3)
	Trichloroethene	mg/L	0.00251	NC	0.0051	0.0051	mg/L	MAX	(3)
	Vanadium	mg/L	0.0024	NC	0.0047	0.0047	mg/L	MAX	(3)
Off-site groundwater east of Neponset River (SH-28)	Arsenic	mg/L	0.00056	NC	0.00092	0.00092	mg/L	MAX	(3)
	Manganese	mg/L	0.291	NC	0.76	0.76	mg/L	MAX	(3)
	Trichloroethene	mg/L	0.000263	NC	0.00043	0.00043	mg/L	MAX	(3)
Off-facility groundwater Lot 208 / Lot 209	Arsenic	mg/L	0.0229	NC	0.059	0.059	mg/L	MAX	(3)
	Benzene	mg/L	0.00187	NC	0.00457	0.00457	mg/L	MAX	(3)
	Benzo(a)pyrene	mg/L	0.0000332	NC	0.000077	0.000077	mg/L	MAX	(3)
	Chromium	mg/L	0.00854	NC	0.03	0.03	mg/L	MAX	(3)
	Dibenz(a,h)anthracene	mg/L	0.00000859	NC	0.000025	0.000025	mg/L	MAX	(3)
	Lead	mg/L	0.0362	NC	0.17	0.0362	mg/L	MEAN	(4)
	Manganese	mg/L	0.152	NC	0.62	0.62	mg/L	MAX	(3)
	Methylnaphthalene (2-)	mg/L	0.00562	NC	0.0138	0.0138	mg/L	MAX	(3)
	Naphthalene	mg/L	0.0152	NC	0.0413	0.0413	mg/L	MAX	(3)
	Vanadium	mg/L	0.0754	NC	0.22	0.22	mg/L	MAX	(3)
On-Site Groundwater	Acenaphthene	mg/L	0.00325	NC	0.0763	0.0763	mg/L	MAX	(3)
	Acenaphthylene	mg/L	0.00279	NC	0.0787	0.0787	mg/L	MAX	(3)
	Antimony	mg/L	0.00441	NC	0.034	0.034	mg/L	MAX	(3)
	Arsenic	mg/L	0.0548	NC	0.631	0.631	mg/L	MAX	(3)
	Barium	mg/L	0.05	NC	0.27	0.27	mg/L	MAX	(3)
	Benzene	mg/L	0.0257	NC	0.58	0.58	mg/L	MAX	(3)
	Benz[a]anthracene	mg/L	0.00027	NC	0.00078	0.00078	mg/L	MAX	(3)
	Benzo[a]pyrene	mg/L	0.000089	NC	0.0016	0.0016	mg/L	MAX	(3)
	Benzo[b]fluoranthene	mg/L	0.000245	NC	0.000405	0.000405	mg/L	MAX	(3)
	bis(2-Ethylhexyl)phthalate	mg/L	0.00441	NC	0.0372	0.0372	mg/L	MAX	(3)
	Cadmium	mg/L	0.000595	NC	0.00182	0.00182	mg/L	MAX	(3)
	Carbazole	mg/L	0.00329	NC	0.0627	0.0627	mg/L	MAX	(3)
	Chloroform	mg/L	0.00321	NC	0.00032	0.00032	mg/L	MAX	(3)
	Chromium	mg/L	0.00882	NC	0.13	0.13	mg/L	MAX	(3)
	Cyanide	mg/L	0.0028	NC	0.00465	0.00465	mg/L	MAX	(3)
	Dibenz[a,h]anthracene	mg/L	0.0000311	NC	0.000627	0.000627	mg/L	MAX	(3)
	Ethylbenzene	mg/L	0.0176	NC	0.353	0.353	mg/L	MAX	(3)
	Fluorene	mg/L	0.00208	NC	0.0487	0.0487	mg/L	MAX	(3)

Table 3.7.RME
Exposure Point Concentration Summary
Reasonable Maximum Exposure
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)	Maximum Concentration (Qualifier)[1]	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
On-Site Groundwater Cont'd	Indeno[1,2,3-cd]pyrene	mg/L	0.000238	NC	0.000285	0.000285	mg/L	MAX	(3)
	Lead	mg/L	0.0208	NC	0.302	0.0208	mg/L	MEAN	(4)
	Manganese	mg/L	0.673	NC	3.9	3.9	mg/L	MAX	(3)
	Mercury	mg/L	0.000146	NC	0.0014	0.0014	mg/L	MAX	(3)
	Methylene chloride	mg/L	0.00219	NC	0.034	0.034	mg/L	MAX	(3)
	2-Methylnaphthalene	mg/L	0.0209	NC	0.503	0.503	mg/L	MAX	(3)
	4-Methylphenol	mg/L	0.00553	NC	0.092	0.092	mg/L	MAX	(3)
	Methyl tert-butyl ether (MTBE)	mg/L	0.00492	NC	0.024	0.024	mg/L	MAX	(3)
	Naphthalene	mg/L	0.134	NC	3.13	3.13	mg/L	MAX	(3)
	Nickel	mg/L	0.0431	NC	0.629	0.629	mg/L	MAX	(3)
	Pyrene	mg/L	0.000784	NC	0.0158	0.0158	mg/L	MAX	(3)
	Selenium	mg/L	0.00251	NC	0.0196	0.0196	mg/L	MAX	(3)
	Styrene	mg/L	0.0118	NC	0.267	0.267	mg/L	MAX	(3)
	Thallium	mg/L	0.000225	NC	0.000305	0.000305	mg/L	MAX	(3)
	Toluene	mg/L	0.0421	NC	0.897	0.897	mg/L	MAX	(3)
	Trichloroethene	mg/L	0.00118	NC	0.00253	0.00253	mg/L	MAX	(3)
	Vanadium	mg/L	0.234	NC	3.35	3.35	mg/L	MAX	(3)
	m/p-Xylene	mg/L	0.0251	NC	0.46	0.46	mg/L	MAX	(3)
	o-Xylene	mg/L	0.0138	NC	0.217	0.217	mg/L	MAX	(3)
	Zinc	mg/L	0.181	NC	4.84	4.84	mg/L	MAX	(3)

Notes:
NC = Not calculated.
ND = Not detected.
UCL = upper confidence limit
(1) Maximum detected concentration for all wells (individually averaged over time) at the exposure point. Qualifiers not shown due to averaging.
(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.
(3) Maximum concentration is used as the EPC.
(4) The arithmetic mean is used in the IEUBK and Adult Lead Models.

Table 3.7.CT
Exposure Point Concentration Summary
Central Tendency Exposure
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)	Maximum Concentration (Qualifier)[1]	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
Off-site groundwater west of Neponset River	Arsenic	mg/L	0.000327	NC	0.00063	0.000327	mg/L	MEAN	(3)
	Manganese	mg/L	0.0757	NC	0.13	0.0757	mg/L	MEAN	(3)
Off-site groundwater east of Neponset River (SH-27)	Antimony	mg/L	0.00107	NC	0.0022	0.00107	mg/L	MEAN	(3)
	Arsenic	mg/L	0.00085	NC	0.0016	0.00085	mg/L	MEAN	(3)
	Benzo(a)pyrene	mg/L	0.00000887	NC	0.000014	0.00000887	mg/L	MEAN	(3)
	Manganese	mg/L	0.303	NC	0.42	0.303	mg/L	MEAN	(3)
	Nitrophenol (4-)	mg/L	0.000367	NC	0.0001	0.0001	mg/L	MAX	(4)
	Trichloroethene	mg/L	0.00251	NC	0.0051	0.00251	mg/L	MEAN	(3)
	Vanadium	mg/L	0.0024	NC	0.0047	0.0024	mg/L	MEAN	(3)
Off-site groundwater east of Neponset River (SH-28)	Arsenic	mg/L	0.00056	NC	0.00092	0.00056	mg/L	MEAN	(3)
	Manganese	mg/L	0.291	NC	0.76	0.291	mg/L	MEAN	(3)
	Trichloroethene	mg/L	0.000263	NC	0.00043	0.000263	mg/L	MEAN	(3)
Off-facility groundwater Lot 208 / Lot 209	Arsenic	mg/L	0.0229	NC	0.059	0.0229	mg/L	MEAN	(3)
	Benzene	mg/L	0.00187	NC	0.00457	0.00187	mg/L	MEAN	(3)
	Benzo(a)pyrene	mg/L	0.0000332	NC	0.000077	0.0000332	mg/L	MEAN	(3)
	Chromium	mg/L	0.00854	NC	0.03	0.00854	mg/L	MEAN	(3)
	Dibenz(a,h)anthracene	mg/L	0.00000859	NC	0.000025	0.00000859	mg/L	MEAN	(3)
	Lead	mg/L	0.0362	NC	0.17	0.0362	mg/L	MEAN	(3)
	Manganese	mg/L	0.152	NC	0.62	0.152	mg/L	MEAN	(3)
	Methylnaphthalene (2-)	mg/L	0.00562	NC	0.0138	0.00562	mg/L	MEAN	(3)
	Naphthalene	mg/L	0.0152	NC	0.0413	0.0152	mg/L	MEAN	(3)
	Vanadium	mg/L	0.0754	NC	0.22	0.0754	mg/L	MEAN	(3)
On-Site Groundwater	Acenaphthene	mg/L	0.00325	NC	0.0763	0.00325	mg/L	MEAN	(3)
	Acenaphthylene	mg/L	0.00279	NC	0.0787	0.00279	mg/L	MEAN	(3)
	Antimony	mg/L	0.00441	NC	0.034	0.00441	mg/L	MEAN	(3)
	Arsenic	mg/L	0.0548	NC	0.631	0.0548	mg/L	MEAN	(3)
	Barium	mg/L	0.05	NC	0.27	0.05	mg/L	MEAN	(3)
	Benzene	mg/L	0.0257	NC	0.58	0.0257	mg/L	MEAN	(3)
	Benz[a]anthracene	mg/L	0.00027	NC	0.00078	0.00027	mg/L	MEAN	(3)
	Benzo[a]pyrene	mg/L	0.000089	NC	0.0016	0.000089	mg/L	MEAN	(3)
	Benzo[b]fluoranthene	mg/L	0.000245	NC	0.000405	0.000245	mg/L	MEAN	(3)
	bis(2-Ethylhexyl)phthalate	mg/L	0.00441	NC	0.0372	0.00441	mg/L	MEAN	(3)
	Cadmium	mg/L	0.000595	NC	0.00182	0.000595	mg/L	MEAN	(3)
	Carbazole	mg/L	0.00329	NC	0.0627	0.00329	mg/L	MEAN	(3)
	Chloroform	mg/L	0.00321	NC	0.00032	0.00032	mg/L	MAX	(4)
	Chromium	mg/L	0.00882	NC	0.13	0.00882	mg/L	MEAN	(3)
	Cyanide	mg/L	0.0028	NC	0.00465	0.0028	mg/L	MEAN	(3)
	Dibenz[a,h]anthracene	mg/L	0.0000311	NC	0.000627	0.0000311	mg/L	MEAN	(3)
	Ethylbenzene	mg/L	0.0176	NC	0.353	0.0176	mg/L	MEAN	(3)
	Fluorene	mg/L	0.00208	NC	0.0487	0.00208	mg/L	MEAN	(3)
	Indeno[1,2,3-cd]pyrene	mg/L	0.000238	NC	0.000285	0.000238	mg/L	MEAN	(3)
	Lead	mg/L	0.0208	NC	0.302	0.0208	mg/L	MEAN	(3)

Table 3.7.CT
Exposure Point Concentration Summary
Central Tendency Exposure
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)	Maximum Concentration (Qualifier)[1]	Exposure Point Concentration			
						Value[2]	Units	Statistic	Rationale
On-Site Groundwater Cont'd	Manganese	mg/L	0.673	NC	3.9	0.673	mg/L	MEAN	(3)
	Mercury	mg/L	0.000146	NC	0.0014	0.000146	mg/L	MEAN	(3)
	Methylene chloride	mg/L	0.00219	NC	0.034	0.00219	mg/L	MEAN	(3)
	2-Methylnaphthalene	mg/L	0.0209	NC	0.503	0.0209	mg/L	MEAN	(3)
	4-Methylphenol	mg/L	0.00553	NC	0.092	0.00553	mg/L	MEAN	(3)
	Methyl tert-butyl ether (MTBE)	mg/L	0.00492	NC	0.024	0.00492	mg/L	MEAN	(3)
	Naphthalene	mg/L	0.134	NC	3.13	0.134	mg/L	MEAN	(3)
	Nickel	mg/L	0.0431	NC	0.629	0.0431	mg/L	MEAN	(3)
	Pyrene	mg/L	0.000784	NC	0.0158	0.000784	mg/L	MEAN	(3)
	Selenium	mg/L	0.00251	NC	0.0196	0.00251	mg/L	MEAN	(3)
	Styrene	mg/L	0.0118	NC	0.267	0.0118	mg/L	MEAN	(3)
	Thallium	mg/L	0.000225	NC	0.000305	0.000225	mg/L	MEAN	(3)
	Toluene	mg/L	0.0421	NC	0.897	0.0421	mg/L	MEAN	(3)
	Trichloroethene	mg/L	0.00118	NC	0.00253	0.00118	mg/L	MEAN	(3)
	Vanadium	mg/L	0.234	NC	3.35	0.234	mg/L	MEAN	(3)
	m/p-Xylene	mg/L	0.0251	NC	0.46	0.0251	mg/L	MEAN	(3)
	o-Xylene	mg/L	0.0138	NC	0.217	0.0138	mg/L	MEAN	(3)
	Zinc	mg/L	0.181	NC	4.84	0.181	mg/L	MEAN	(3)

Notes:
NC = Not calculated.
ND = Not detected.
UCL = upper confidence limit
(1) Maximum detected concentration for all wells (individually averaged over time) at the exposure point. Qualifiers not shown due to averaging.
(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.
(3) Mean concentration is used as the EPC.
(4) Maximum detected concentration is used as the EPC because the mean concentration is greater than the maximum detected concetration.

TABLE 3.8.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Dermal Contact)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution) [1]		Maximum Concentration [2]		Exposure Point Concentration			
								Value [3]	Units	Statistic	Rationale
East of South Street On-Facility (Construction Worker)	Arsenic	mg/L	0.00239	0.00489	(N)	0.0046		0.0046	mg/L	MAX	(4)
	Benz(a)anthracene	mg/L	0.000161	0.0015	(NP)	0.000565		0.000565	mg/L	MAX	(4)
	Benzo(a)pyrene	mg/L	0.000142	0.00153	(NP)	0.00056		0.00056	mg/L	MAX	(4)
	Benzo(b)fluoranthene	mg/L	0.000121	0.00106	(NP)	0.000405		0.000405	mg/L	MAX	(4)
	Chloroform	mg/L	0.000271	0.000335	(N)	0.00048	J	0.000335	mg/L	95% UCL(N)	W Test (5)
	Chromium	mg/L	0.00299	0.0237	(G)	0.0094		0.0094	mg/L	MAX	(4)
	Dibenz(a,h)anthracene	mg/L	0.0000254	0.000243	(NP)	0.000091		0.000091	mg/L	MAX	(4)
	Indeno(1,2,3-cd)pyrene	mg/L	0.0000907	0.000735	(NP)	0.000285		0.000285	mg/L	MAX	(4)
	Manganese	mg/L	0.192	0.394	(N)	0.416		0.394	mg/L	95% UCL(N)	W Test (5)
	Naphthalene	mg/L	0.000216	0.0021	(NP)	0.000785		0.000785	mg/L	MAX	(4)
	Thallium	mg/L	0.000222	0.000282	(N)	0.000298		0.000282	mg/L	95% UCL(N)	W Test (5)
	Trichloroethene	mg/L	0.000288	0.000335	(N)	0.000345		0.000335	mg/L	95% UCL(N)	W Test (5)
Old Railroad and Former Lower Mill Pond Area (Construction Worker)	Arsenic	mg/L	NC	NC		0.00092	J	0.00092	mg/L	MAX	(10)
	Chromium	mg/L	NC	NC		0.021		0.021	mg/L	MAX	(10)
	Manganese	mg/L	NC	NC		0.73		0.73	mg/L	MAX	(10)
West of South Street Off-Facility/Off-Site Groundwater Exposure Area (Construction Worker)	Arsenic	mg/L	0.0275	0.0515	(N)	0.059		0.0515	mg/L	95% UCL(N)	W Test (5)
	Benzene	mg/L	0.0022	0.0041	(N)	0.00457		0.0041	mg/L	95% UCL(N)	W Test (5)
	Benzo(a)pyrene	mg/L	0.0000393	0.0000721	(N)	0.000077		0.0000721	mg/L	95% UCL(N)	W Test (5)
	Chromium	mg/L	0.00982	0.0216	(N)	0.03		0.0216	mg/L	95% UCL(N)	W Test (5)
	Dibenz(a,h)anthracene	mg/L	0.00000896	0.0000179	(N)	0.000025		0.0000179	mg/L	95% UCL(N)	W Test (5)
	Manganese	mg/L	0.303	0.644	(N)	0.76		0.644	mg/L	95% UCL(N)	W Test (5)
	Methylnaphthalene (2-)	mg/L	0.00674	0.0125	(N)	0.0138		0.0125	mg/L	95% UCL(N)	W Test (5)
	Naphthalene	mg/L	0.0183	0.0349	(N)	0.0413		0.0349	mg/L	95% UCL(N)	W Test (5)
	Vanadium	mg/L	0.0901	0.177	(N)	0.22		0.177	mg/L	95% UCL(N)	W Test (5)

TABLE 3.8.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Dermal Contact)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution) [1]		Maximum Concentration [2]	Exposure Point Concentration			
							Value [3]	Units	Statistic	Rationale
West of South Street On-Facility (Construction Worker)	Antimony	mg/L	0.00213	0.00318	(N)	0.0054	0.00318	mg/L	95% UCL(N)	W Test (5)
	Arsenic	mg/L	0.0111	0.0584	(G)	0.0448	0.0448	mg/L	MAX	(4)
	Barium	mg/L	0.0565	0.145	(G)	0.27	0.145	mg/L	95% UCL(G)	K-S Test (6)
	Benz(a)anthracene	mg/L	0.000148	0.00047	(NP)	0.00055	0.00047	mg/L	95% UCL(NP)	W Test (7)
	Benzene	mg/L	0.00425	0.0358	(NP)	0.0257	0.0257	mg/L	MAX	(4)
	Benzo(a)pyrene	mg/L	0.0000798	0.000453	(G)	0.000303	0.000303	mg/L	MAX	(4)
	Benzo(b)fluoranthene	mg/L	0.0000801	0.000226	(NP)	0.00012	0.00012	mg/L	MAX	(4)
	bis(2-Ethylhexyl)phthalate	mg/L	0.00573	0.0333	(G)	0.0372	0.0333	mg/L	95% UCL(G)	K-S Test (8)
	Chromium	mg/L	0.0187	0.0753	(T)	0.13	0.0753	mg/L	99% UCL(T)	W Test (9)
	Dibenz(a,h)anthracene	mg/L	0.0000155	0.000044	(G)	0.0000583	0.000044	mg/L	95% UCL(G)	K-S Test (6)
	Hexanone (2-)	mg/L	0.0035	0.0107	(NP)	0.012	0.0107	mg/L	95% UCL(NP)	W Test (7)
	Manganese	mg/L	0.801	4.67	(G)	3.9	3.9	mg/L	MAX	(4)
	Methylnaphthalene (2-)	mg/L	0.0109	0.0902	(NP)	0.0633	0.0633	mg/L	MAX	(4)
	Naphthalene	mg/L	0.0344	0.301	(NP)	0.217	0.217	mg/L	MAX	(4)
	Nickel	mg/L	0.0185	0.0499	(G)	0.081	0.0499	mg/L	95% UCL(G)	K-S Test (6)
	Phenanthrene	mg/L	0.00552	0.0261	(NP)	0.024	0.024	mg/L	MAX	(4)
	Trichloroethene	mg/L	0.00057	0.00141	(NP)	0.00073	0.00073	mg/L	MAX	(4)
	Vanadium	mg/L	0.0309	0.0549	(N)	0.101	0.0549	mg/L	95% UCL(N)	W Test (5)
	Xylene (m,p-)	mg/L	0.00429	0.0145	(NP)	0.019	0.0145	mg/L	95% UCL(NP)	W Test (7)

TABLE 3.8.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:
σ = standard deviation of log-transformed data
(G) = gamma
n = sample size
(N) = normal
NC = Not calculated
(NP) = non-parametric
(T) = log-normal (value based on log-transformed data)
(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).
(2) Maximum detected concentration for all wells (individually averaged over time) at the exposure point. Qualifiers not shown due to averaging.
(3) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.
(4) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method (that results in a UCL less than the maximum detected) was identified (ProUC Version 3.0, USEPA, 2004). Therefore, the maximum concentration is used for the RME EPC.
(5) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (ProUCL Version 3.0, USEPA, 2004).
(6) Kolmogorov-Smirnov test indicates the data are gamma distributed and $k \geq 0.5$. Therefore, an approximate gamma 95% UCL was calculated (ProUCL Version 3.0, USEPA, 2004).
(7) Shapiro-Wilk W-test indicates that the data are non-parametric, $1.0<s<2.0$, and $n \leq 10$. The recommended 99% Chebyshev (Mean, Sd) UCL was greater than the maximum detected concentratic Therefore, a 95% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data (ProUCL Version 3.0, USEPA 2004).
(8) Kolmogorov-Smirnov test indicates the data are gamma distributed and $0.1 \leq k<0.5$. Therefore, an adjusted gamma 95% UCL was calculated (ProUCL Version 3.0, USEPA, 2004).
(9) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.5<\sigma<2.0$, and $n<20$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (ProUCL Version 3.0, USEPA, 2004).
(10) Only one sample is included at this exposure point (WP-02), therefore, the concentration in that sample is used for the RME EPC.

TABLE 3.8.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Dermal Contact)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution) [1]		Maximum Concentration [2]		Exposure Point Concentration			
								Value [3]	Units	Statistic	Rationale
East of South Street On-Facility (Construction Worker)	Arsenic	mg/L	0.00239	0.00489	(N)	0.0046		0.00239	mg/L	MEAN	(4)
	Benz(a)anthracene	mg/L	0.000161	0.0015	(NP)	0.000565		0.000161	mg/L	MEAN	(4)
	Benzo(a)pyrene	mg/L	0.000142	0.00153	(NP)	0.00056		0.000142	mg/L	MEAN	(4)
	Benzo(b)fluoranthene	mg/L	0.000121	0.00106	(NP)	0.000405		0.000121	mg/L	MEAN	(4)
	Chloroform	mg/L	0.000271	0.000335	(N)	0.00048	J	0.000335	mg/L	95% UCL(N)	W Test (5)
	Chromium	mg/L	0.00299	0.0237	(G)	0.0094		0.00299	mg/L	MEAN	(4)
	Dibenz(a,h)anthracene	mg/L	0.0000254	0.000243	(NP)	0.000091		0.0000254	mg/L	MEAN	(4)
	Indeno(1,2,3-cd)pyrene	mg/L	0.0000907	0.000735	(NP)	0.000285		0.0000907	mg/L	MEAN	(4)
	Manganese	mg/L	0.192	0.394	(N)	0.416		0.394	mg/L	95% UCL(N)	W Test (5)
	Naphthalene	mg/L	0.000216	0.0021	(NP)	0.000785		0.000216	mg/L	MEAN	(4)
	Thallium	mg/L	0.000222	0.000282	(N)	0.000298		0.000282	mg/L	95% UCL(N)	W Test (5)
	Trichloroethene	mg/L	0.000288	0.000335	(N)	0.000345		0.000335	mg/L	95% UCL(N)	W Test (5)
Old Railroad and Former Lower Mill Pond Area (Construction Worker)	Arsenic	mg/L	NC	NC		0.00092	J	0.00092	mg/L	MAX	(10)
	Chromium	mg/L	NC	NC		0.021		0.021	mg/L	MAX	(10)
	Manganese	mg/L	NC	NC		0.73		0.73	mg/L	MAX	(10)
West of South Street Off-Facility/Off-Site Groundwater Exposure Area (Construction Worker)	Arsenic	mg/L	0.0275	0.0515	(N)	0.059		0.0515	mg/L	95% UCL(N)	W Test (5)
	Benzene	mg/L	0.0022	0.0041	(N)	0.00457		0.0041	mg/L	95% UCL(N)	W Test (5)
	Benzo(a)pyrene	mg/L	0.0000393	0.0000721	(N)	0.000077		0.0000721	mg/L	95% UCL(N)	W Test (5)
	Chromium	mg/L	0.00982	0.0216	(N)	0.03		0.0216	mg/L	95% UCL(N)	W Test (5)
	Dibenz(a,h)anthracene	mg/L	0.00000896	0.0000179	(N)	0.000025		0.0000179	mg/L	95% UCL(N)	W Test (5)
	Manganese	mg/L	0.303	0.644	(N)	0.76		0.644	mg/L	95% UCL(N)	W Test (5)
	Methylnaphthalene (2-)	mg/L	0.00674	0.0125	(N)	0.0138		0.0125	mg/L	95% UCL(N)	W Test (5)
	Naphthalene	mg/L	0.0183	0.0349	(N)	0.0413		0.0349	mg/L	95% UCL(N)	W Test (5)
	Vanadium	mg/L	0.0901	0.177	(N)	0.22		0.177	mg/L	95% UCL(N)	W Test (5)
West of South Street On-Facility (Construction Worker)	Antimony	mg/L	0.00213	0.00318	(N)	0.0054		0.00318	mg/L	95% UCL(N)	W Test (5)
	Arsenic	mg/L	0.0111	0.0584	(G)	0.0448		0.0111	mg/L	MEAN	(4)
	Barium	mg/L	0.0565	0.145	(G)	0.27		0.145	mg/L	95% UCL(G)	K-S Test (6)
	Benz(a)anthracene	mg/L	0.000148	0.00047	(NP)	0.00055		0.00047	mg/L	95% UCL(NP)	W Test (7)
	Benzene	mg/L	0.00425	0.0358	(NP)	0.0257		0.00425	mg/L	MEAN	(4)

TABLE 3.8.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Dermal Contact)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution) [1]		Maximum Concentration [2]	Exposure Point Concentration			
							Value [3]	Units	Statistic	Rationale
West of South Street On-Facility (Construction Worker) Cont.	Benzo(a)pyrene	mg/L	0.0000798	0.000453	(G)	0.000303	0.0000798	mg/L	MEAN	(4)
	Benzo(b)fluoranthene	mg/L	0.0000801	0.000226	(NP)	0.00012	0.0000801	mg/L	MEAN	(4)
	bis(2-Ethylhexyl)phthalate	mg/L	0.00573	0.0333	(G)	0.0372	0.0333	mg/L	95% UCL(G)	K-S Test (8)
	Chromium	mg/L	0.0187	0.0753	(T)	0.13	0.0753	mg/L	99% UCL(T)	W Test (9)
	Dibenz(a,h)anthracene	mg/L	0.0000155	0.000044	(G)	0.0000583	0.000044	mg/L	95% UCL(G)	K-S Test (6)
	Hexanone (2-)	mg/L	0.0035	0.0107	(NP)	0.012	0.0107	mg/L	95% UCL(NP)	W Test (7)
	Manganese	mg/L	0.801	4.67	(G)	3.9	0.801	mg/L	MEAN	(4)
	Methylnaphthalene (2-)	mg/L	0.0109	0.0902	(NP)	0.0633	0.0109	mg/L	MEAN	(4)
	Naphthalene	mg/L	0.0344	0.301	(NP)	0.217	0.0344	mg/L	MEAN	(4)
	Nickel	mg/L	0.0185	0.0499	(G)	0.081	0.0499	mg/L	95% UCL(G)	K-S Test (6)
	Phenanthrene	mg/L	0.00552	0.0261	(NP)	0.024	0.00552	mg/L	MEAN	(4)
	Trichloroethene	mg/L	0.00057	0.00141	(NP)	0.00073	0.00057	mg/L	MEAN	(4)
	Vanadium	mg/L	0.0309	0.0549	(N)	0.101	0.0549	mg/L	95% UCL(N)	W Test (5)
	Xylene (m,p-)	mg/L	0.00429	0.0145	(NP)	0.019	0.0145	mg/L	95% UCL(NP)	W Test (7)

TABLE 3.8.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:
σ = standard deviation of log-transformed data
(G) = gamma
n = sample size
(N) = normal
NC = Not calculated
(NP) = non-parametric
(T) = log-normal (value based on log-transformed data)
(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).
(2) Maximum detected concentration for all wells (individually averaged over time) at the exposure point. Qualifiers not shown due to averaging.
(3) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.
(4) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method (that results in a UCL less than the maximum detected) was identified (ProUC Version 3.0, USEPA, 2004). Therefore, the mean concentration is used for the CT EPC.
(5) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (ProUCL Version 3.0, USEPA, 2004).
(6) Kolmogorov-Smirnov test indicates the data are gamma distributed and $k \geq 0.5$. Therefore, an approximate gamma 95% UCL was calculated (ProUCL Version 3.0, USEPA, 2004).
(7) Shapiro-Wilk W-test indicates that the data are non-parametric, $1.0<s<2.0$, and $n \leq 10$. The recommended 99% Chebyshev (Mean, Sd) UCL was greater than the maximum detected concentratic Therefore, a 95% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data (ProUCL Version 3.0, USEPA 2004).
(8) Kolmogorov-Smirnov test indicates the data are gamma distributed and $0.1 \leq k<0.5$. Therefore, an adjusted gamma 95% UCL was calculated (ProUCL Version 3.0, USEPA, 2004).
(9) Shapiro-Wilk W test indicates the data are log-normally distributed, $1.5<\sigma<2.0$, and $n<20$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the Minimum Variance Unbiased Estimate of the log-transformed data (ProUCL Version 3.0, USEPA, 2004).
(10) Only one sample is included at this exposure point (WP-02), therefore, the concentration in that sample is used for the CT EPC.

TABLE 3.9.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)[1]	Maximum Concentration (Qualifier) [2]	Exposure Point Concentration			
						Value [3]	Units	Statistic	Rationale
West of South Street Off-Facility/Off-Site Groundwater Exposure Area (Indoor Air - Resident)	Benzene	mg/L	0.00271	0.00493 (N)	0.00457	0.00457	mg/L	MAX	(4)
	Naphthalene	mg/L	0.0229	0.0420 (N)	0.0413	0.0413	mg/L	MAX	(4)
West of South Street On-Facility (Indoor Air - Resident and Site Worker)	Benzene	mg/L	0.00302	0.0191 (NP)	0.0257	0.0191	mg/L	99% UCL (NP)	W-Test (5)
	Hexanone (2-)	mg/L	0.00346	0.00744 (NP)	0.012	0.00744	mg/L	95% UCL (NP)	W-Test (6)
	Naphthalene	mg/L	0.0266	0.136 (NP)	0.217	0.136	mg/L	95% UCL (NP)	W-Test (7)

Notes:

n = sample size

NC = Not calculated

(NP) = non-parametric

σ = standard deviation of log-transformed data

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(2) Maximum detected concentration for all wells (individually averaged over time) at the exposure point. Qualifiers not shown due to averaging.

(3) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.

(4) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the maximum detected concentration is used for the RME EPC.

(5) Shapiro-Wilk W-test indicates that the data are non-parametric, $1.0<\sigma<2.0$, and $n<50$. Therefore, a 99% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data (ProUCL Version 3.0, USEPA 2004).

(6) Shapiro-Wilk W-test indicates that the data are non-parametric and $0.5<\sigma\leq1.0$. Therefore, a 95% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data (ProUCL Version 3.0, USEPA 2004).

(7) Shapiro-Wilk W-test indicates that the data are non-parametric, $\sigma>3.5$, and $n<100$. Therefore, a 95% UCL was calculated using the Hall's Bootstrap method (ProUCL Version 3.0, USEPA, 2004). calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (ProUCL Version 3.0, USEPA, 2004).

TABLE 3.9.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)[1]	Maximum Concentration (Qualifier)[2]	Exposure Point Concentration			
						Value[3]	Units	Statistic	Rationale
West of South Street Off-Facility/Off-Site Groundwater Exposure Area (Indoor Air - Resident)	Benzene	mg/L	0.00271	0.00493 (N)	0.00457	0.00271	mg/L	MEAN	(4)
	Naphthalene	mg/L	0.0229	0.0420 (N)	0.0413	0.0229	mg/L	MEAN	(4)
West of South Street On-Facility (Indoor Air - Resident and Site Worker)	Benzene	mg/L	0.00302	0.0191 (NP)	0.0257	0.0191	mg/L	99% UCL (NP)	W-Test (5)
	Hexanone (2-)	mg/L	0.00346	0.00744 (NP)	0.012	0.00744	mg/L	95% UCL (NP)	W-Test (6)
	Naphthalene	mg/L	0.0266	0.136 (NP)	0.217	0.136	mg/L	95% UCL (NP)	W-Test (7)

Notes:

n = sample size

NC = Not calculated

(NP) = non-parametric

σ = standard deviation of log-transformed data

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(2) Maximum detected concentration for all wells (individually averaged over time) at the exposure point. Qualifiers not shown due to averaging.

(3) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in Section 3.1.2 of the report.

(4) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (USEPA, 2004). Therefore, the arithmetic mean concentration is used for the CT EPC.

(5) Shapiro-Wilk W-test indicates that the data are non-parametric, $1.0 < \sigma < 2.0$, and $n < 50$. Therefore, a 99% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data (ProUCL Version 3.0, USEPA 2004).

(6) Shapiro-Wilk W-test indicates that the data are non-parametric and $0.5 < \sigma \leq 1.0$. Therefore, a 95% UCL was calculated based on the Chebyshev theorem using the sample arithmetic mean and standard deviation of the data (ProUCL Version 3.0, USEPA 2004).

(7) Shapiro-Wilk W-test indicates that the data are non-parametric, $\sigma > 3.5$, and $n < 100$. Therefore, a 95% UCL was calculated using the Hall's Bootstrap method (ProUCL Version 3.0, USEPA, 2004). calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (ProUCL Version 3.0, USEPA, 2004).

TABLE 3.9a
COMPARISON OF COPC CONCENTRATIONS IN WELLS WEST OF SOUTH ST OFF-FAC./OFF-SITE GROUNDWATER EXPOSURE AREA TO TARGET GROUNDWATER CONCENTRATIONS FOR THE INDOOR AIR PATHWAY
Blackburn and Union Privileges Site
Walpole, Massachusetts

Sample ID	Benzene (ug/L)	Naphthalene (ug/L)
SH-15S / 05-20-02	1.7 J	10
SH-15S / 09-10-01	**7.6** J	**59**
SH-15S / 10-28-03	4.4 J	**55**
SH-26S / 10-28-03	2.5 J	**29**
SH-27S / 11-21-03	0.15 UJ	0.053 U
SH-28S / 11-06-03	0.15 UJ	0.054 U
WP-06 / 10-28-03	0.19 J	3.1
WP-07 / 10-27-03	3.6 J	**18**
Target Groundwater Concentration (ug/L)	5	15

Notes:
Concentrations in bold text are greater than the target groundwater concentration from EPA's Draft Vapor Intrusion Guidance (EPA, 2002). The target groundwater concentration for naphthalene is based on non-cancer, therefore, the value shown corresponds to a hazard index of 0.1.

Sample IDs shaded in gray are used in the EPC calculation for the future groundwater to indoor air pathway West of South Street Off-Facility/Off-Site Groundwater Exposure Area (Table 3.9).

TABLE 3.9.supporting
SUMMARY OF MODELED INDOOR AIR CONCENTRATIONS FROM GROUNDWATER FOR FUTURE SCENARIOS
Blackburn and Union Priveleges Site
Walpole, Massachusetts

Scenario Timeframe	Exposure Point	Chemical	Groundwater EPC (mg/L)		Indoor Air EPC Modeled from Groundwater (mg/m^3)	
			RME	CT	RME	CT
Future	West of South Street On-Facility	Benzene	0.0191	0.0191	3.03E-03	3.03E-03
		Hexanone (2-)	0.00744	0.00744	1.96E-05	1.96E-05
		Naphthalene	0.136	0.136	1.08E-03	1.08E-03
Future	West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Benzene	0.00457	0.00271	7.24E-04	4.29E-04
		Naphthalene	0.0413	0.0229	3.27E-04	1.81E-04

TABLE 3.10.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)[1]		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Lewis Pond (Fisher and Wader)	Antimony	mg/kg	2.1	6.17	(NP)	13		6.17	mg/kg	95% UCL (NP)	W-Test (2)
	Arsenic	mg/kg	8.18	17.5	(NP)	28.2		17.5	mg/kg	95% UCL (NP)	W-Test (2)
	Benz(a)anthracene	mg/kg	1.79	2.13	(N)	3.4		2.13	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(a)pyrene	mg/kg	1.83	2.18	(N)	3.7		2.18	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(b)fluoranthene	mg/kg	2.32	2.77	(N)	4		2.77	mg/kg	95% UCL (N)	W-Test (3)
	Beryllium	mg/kg	0.476	0.592	(N)	0.89		0.592	mg/kg	95% UCL (N)	W-Test (3)
	Cadmium	mg/kg	3.7	4.76	(N)	8		4.76	mg/kg	95% UCL (N)	W-Test (3)
	Chromium	mg/kg	98.2	225	(NP)	410		225	mg/kg	95% UCL (NP)	W-Test (2)
	Dibenz(a,h)anthracene	mg/kg	0.146	0.169	(G)	0.25		0.169	mg/kg	95% UCL (G)	K-S Test (4)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.468	0.533	(N)	0.72		0.533	mg/kg	95% UCL (N)	W-Test (3)
	Lead	mg/kg	1110	3490	(NP)	7600	J	1110	mg/kg	MEAN	(8)
	Manganese	mg/kg	500	675	(G)	1010		675	mg/kg	95% UCL (G)	K-S Test (4)
	Nickel	mg/kg	66.9	229	(NP)	510		229	mg/kg	95% UCL (NP)	W-Test (2)
	Vanadium	mg/kg	38.2	47	(N)	84.6	J	47	mg/kg	95% UCL (N)	W-Test (3)
Neponset River East of South Street (Fisher and Wader)	Arsenic	mg/kg	0.902	NC		1.22		1.22	mg/kg	MAX	(7)
	Benzo(a)pyrene	mg/kg	0.13	NC		0.23		0.23	mg/kg	MAX	(7)
	Manganese	mg/kg	349	NC		586		586	mg/kg	MAX	(7)
	Vanadium	mg/kg	12.8	NC		18.3	J	18.3	mg/kg	MAX	(7)

TABLE 3.10.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)[1]		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Neponset River West of South Street (Fisher and Wader)	Arsenic	mg/kg	2.19	3.46	(G)	5.9		3.46	mg/kg	95% UCL (G)	K-S Test (4)
	Benz(a)anthracene	mg/kg	0.494	1.09	(G)	1.7		1.09	mg/kg	95% UCL (G)	K-S Test (4)
	Benzo(a)pyrene	mg/kg	0.494	1.17	(G)	1.9		1.17	mg/kg	95% UCL (G)	A-D Test (6)
	Benzo(b)fluoranthene	mg/kg	0.538	1.3	(G)	2.2		1.3	mg/kg	95% UCL (G)	K-S Test (4)
	Dibenz(a,h)anthracene	mg/kg	0.0667	0.159	(G)	0.21		0.159	mg/kg	95% UCL (G)	K-S Test (4)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.221	0.517	(G)	0.7		0.517	mg/kg	95% UCL (G)	K-S Test (4)
	Manganese	mg/kg	462	629	(N)	700	J	629	mg/kg	95% UCL (N)	W Test (3)
	Vanadium	mg/kg	11.8	14.3	(N)	17		14.3	mg/kg	95% UCL (N)	W Test (3)
Former Mill Tailrace (Wader)	Arsenic	mg/kg	5.75	8.58	(N)	9.3		8.58	mg/kg	95% UCL (N)	W Test (3)
	Benz(a)anthracene	mg/kg	1.4	2.73	(N)	4		2.73	mg/kg	95% UCL (N)	W Test (3)
	Benzo(a)pyrene	mg/kg	1.26	2.32	(N)	3.2		2.32	mg/kg	95% UCL (N)	W Test (3)
	Benzo(b)fluoranthene	mg/kg	1.95	3.68	(N)	4.6		3.68	mg/kg	95% UCL (N)	W Test (3)
	Chromium	mg/kg	20.7	33.1	(N)	38	J	33.1	mg/kg	95% UCL (N)	W Test (3)
	Dibenz(a,h)anthracene	mg/kg	0.0982	0.176	(N)	0.24		0.176	mg/kg	95% UCL (N)	W Test (3)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.484	1.93	(G)	1.8		1.8	mg/kg	MAX	(5)
	Lead	mg/kg	328	602	(N)	850		328	mg/kg	MEAN	(8)
	Manganese	mg/kg	935	3580	(G)	2500		2500	mg/kg	MAX	(5)
	Vanadium	mg/kg	28.0	42.7	(N)	49.1	J	42.7	mg/kg	95% UCL (N)	W Test (3)

TABLE 3.10.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:
(G) = gamma
J = estimated value
n = sample size
(N) = normal
NC = Not calculated
(NP) = non-parametric
σ = standard deviation of log-transformed data
(T) = log-normal (value based on log-transformed data)
Samples without detected COPCs were included in estimation of the EPC using 1/2 the detection limit.
(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).
(2) Shapiro-Wilk W test indicates the data are neither normally nor log-normally distributed and $0.5 < \sigma < 1$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (ProUCL Version 3.0, USEPA, 2004).
(3) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (ProUCL Version 3.0, USEPA, 2004).
(4) Kolmogorov-Smirnov test indicates the data are gamma distributed. Therefore, an approximate gamma 95% UCL was calculated (ProUCL Version 3.0, USEPA, 2004).
(5) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (ProUCL Version 3.0, USEPA, 2004). Therefore, the maximum concentration is used for the RME EPC.
(6) Anderson-Darling test indicates the data are gamma distributed. Therefore, an approximate gamma 95% UCL was calculated (ProUCL Version 3.0, USEPA, 2004).
(7) Maximum concentration is used as the EPC because 3 samples or fewer were available for EPC calculation.
(8) The arithmetic mean is used in the IEUBK and Adult Lead Models.

TABLE 3.10.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)[1]		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Lewis Pond (Fisher and Wader)	Antimony	mg/kg	2.1	6.17	(NP)	13		6.17	mg/kg	95% UCL (NP)	W-Test (2)
	Arsenic	mg/kg	8.18	17.5	(NP)	28.2		17.5	mg/kg	95% UCL (NP)	W-Test (2)
	Benz(a)anthracene	mg/kg	1.79	2.13	(N)	3.4		2.13	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(a)pyrene	mg/kg	1.83	2.18	(N)	3.7		2.18	mg/kg	95% UCL (N)	W-Test (3)
	Benzo(b)fluoranthene	mg/kg	2.32	2.77	(N)	4		2.77	mg/kg	95% UCL (N)	W-Test (3)
	Beryllium	mg/kg	0.476	0.592	(N)	0.89		0.592	mg/kg	95% UCL (N)	W-Test (3)
	Cadmium	mg/kg	3.7	4.76	(N)	8		4.76	mg/kg	95% UCL (N)	W-Test (3)
	Chromium	mg/kg	98.2	225	(NP)	410		225	mg/kg	95% UCL (NP)	W-Test (2)
	Dibenz(a,h)anthracene	mg/kg	0.146	0.169	(G)	0.25		0.169	mg/kg	95% UCL (G)	K-S Test (4)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.468	0.533	(N)	0.72		0.533	mg/kg	95% UCL (N)	W-Test (3)
	Lead	mg/kg	1110	3490	(NP)	7600	J	1110	mg/kg	MEAN	(8)
	Manganese	mg/kg	500	675	(G)	1010		675	mg/kg	95% UCL (G)	K-S Test (4)
	Nickel	mg/kg	66.9	229	(NP)	510		229	mg/kg	95% UCL (NP)	W-Test (2)
	Vanadium	mg/kg	38.2	47	(N)	84.6	J	47	mg/kg	95% UCL (N)	W-Test (3)
Neponset River East of South Street (Fisher and Wader)	Arsenic	mg/kg	0.902	NC		1.22		0.902	mg/kg	MEAN	(7)
	Benzo(a)pyrene	mg/kg	0.13	NC		0.23		0.13	mg/kg	MEAN	(7)
	Manganese	mg/kg	349	NC		586		349	mg/kg	MEAN	(7)
	Vanadium	mg/kg	12.8	NC		18.3	J	12.8	mg/kg	MEAN	(7)

TABLE 3.10.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future

Medium: Sediment

Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)[1]		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Neponset River West of South Street (Fisher and Wader)	Arsenic	mg/kg	2.19	3.46	(G)	5.9		3.46	mg/kg	95% UCL (G)	K-S Test (4)
	Benz(a)anthracene	mg/kg	0.494	1.09	(G)	1.7		1.09	mg/kg	95% UCL (G)	K-S Test (4)
	Benzo(a)pyrene	mg/kg	0.494	1.17	(G)	1.9		1.17	mg/kg	95% UCL (G)	A-D Test (6)
	Benzo(b)fluoranthene	mg/kg	0.538	1.3	(G)	2.2		1.3	mg/kg	95% UCL (G)	K-S Test (4)
	Dibenz(a,h)anthracene	mg/kg	0.0667	0.159	(G)	0.21		0.159	mg/kg	95% UCL (G)	K-S Test (4)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.221	0.517	(G)	0.7		0.517	mg/kg	95% UCL (G)	K-S Test (4)
	Manganese	mg/kg	462	629	(N)	700	J	629	mg/kg	95% UCL (N)	W Test (3)
	Vanadium	mg/kg	11.8	14.3	(N)	17		14.3	mg/kg	95% UCL (N)	W Test (3)
Former Mill Tailrace (Wader)	Arsenic	mg/kg	5.75	8.58	(N)	9.3		8.58	mg/kg	95% UCL (N)	W Test (3)
	Benz(a)anthracene	mg/kg	1.4	2.73	(N)	4		2.73	mg/kg	95% UCL (N)	W Test (3)
	Benzo(a)pyrene	mg/kg	1.26	2.32	(N)	3.2		2.32	mg/kg	95% UCL (N)	W Test (3)
	Benzo(b)fluoranthene	mg/kg	1.95	3.68	(N)	4.6		3.68	mg/kg	95% UCL (N)	W Test (3)
	Chromium	mg/kg	20.7	33.1	(N)	38	J	33.1	mg/kg	95% UCL (N)	W Test (3)
	Dibenz(a,h)anthracene	mg/kg	0.0982	0.176	(N)	0.24		0.176	mg/kg	95% UCL (N)	W Test (3)
	Indeno(1,2,3-cd)pyrene	mg/kg	0.484	1.93	(G)	1.8		0.484	mg/kg	MEAN	(5)
	Lead	mg/kg	328	602	(N)	850		328	mg/kg	MEAN	(8)
	Manganese	mg/kg	935	3580	(G)	2500		935	mg/kg	MEAN	(5)
	Vanadium	mg/kg	28.0	42.7	(N)	49.1	J	42.7	mg/kg	95% UCL (N)	W Test (3)

TABLE 3.10.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Notes:
(G) = gamma
J = estimated value
n = sample size
(N) = normal
NC = Not calculated
(NP) = non-parametric
σ = standard deviation of log-transformed data
(T) = log-normal (value based on log-transformed data)
Samples without detected COPCs were included in estimation of the EPC using 1/2 the detection limit.
(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).
(2) Shapiro-Wilk W test indicates the data are neither normally nor log-normally distributed and $0.5 < \sigma < 1$. Therefore, a 95% UCL was calculated based on the Chebyshev Theorem using the sample arithmetic mean and standard deviation of the data (ProUCL Version 3.0, USEPA, 2004).
(3) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (ProUCL Version 3.0, USEPA, 2004).
(4) Kolmogorov-Smirnov test indicates the data are gamma distributed. Therefore, an approximate gamma 95% UCL was calculated (ProUCL Version 3.0, USEPA, 2004).
(5) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (ProUCL Version 3.0, USEPA, 2004). Therefore, the arithmetic mean concentration is used for the CT EPC.
(6) Anderson-Darling test indicates the data are gamma distributed. Therefore, an approximate gamma 95% UCL was calculated (ProUCL Version 3.0, USEPA, 2004).

TABLE 3.11.RME

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution) [1]		Maximum Concentration	Exposure Point Concentration			
							Value [2]	Units	Statistic	Rationale
Neponset River East of South Street (Fisher and Wader)	Manganese	mg/L	0.061	0.107	(N)	0.108	0.107	mg/L	95% UCL(N)	W Test (3)
Neponset River West of South Street (Fisher and Wader)	Asbestos	million fibers/ liter	0.385	0.595	(N)	0.59	0.59	million fibers/ liter	MAX	(4)
	Manganese	mg/L	0.0832	0.175	(N)	0.194	0.175	mg/L	95% UCL(N)	W Test (3)
Former Mill Tailrace (Wader)	Arsenic	mg/L	0.0144	0.0243	(N)	0.028	0.0243	mg/L	95% UCL(N)	W Test (3)
	Asbestos	million fibers/ liter	5060	31700	(G)	17800	17800	million fibers/ liter	MAX	(4)
	Benz(a)anthracene	mg/L	0.000244	0.000482	(N)	0.006	0.000482	mg/L	95% UCL(N)	W Test (3)
	Benzo(a)pyrene	mg/L	0.000344	0.000682	(N)	0.00089	0.000682	mg/L	95% UCL(N)	W Test (3)
	Benzo(b)fluoranthene	mg/L	0.000349	0.000704	(N)	0.0009	0.000704	mg/L	95% UCL(N)	W Test (3)
	Chromium	mg/L	0.0139	0.0277	(N)	0.0383	0.0277	mg/L	95% UCL(N)	W Test (3)
	Dibenz(a,h)anthracene	mg/L	0.0000446	0.0000902	(N)	0.00012	0.0000902	mg/L	95% UCL(N)	W Test (3)
	Indeno(1,2,3-cd)pyrene	mg/L	0.000176	0.000342	(N)	0.00043	0.000342	mg/L	95% UCL(N)	W Test (3)
	Manganese	mg/L	0.397	0.786	(N)	0.95	0.786	mg/L	95% UCL(N)	W Test (3)
	Naphthalene	mg/L	0.000331	0.00658	(G)	0.0012	0.0012	mg/L	MAX	(4)
	Vanadium	mg/L	0.0417	0.0858	(N)	0.122	0.0858	mg/L	95% UCL(N)	W Test (3)

Notes:

(G) = gamma

n = sample size

(N) = normal

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA 2004).

(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in section 3.1.2 of the report.

(3) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (ProUCL Version 3.0, USEPA, 2004).

(4) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (ProUCL Version 3.0, USEPA, 2004). Therefore, the maximum concentration is used for the RME EPC.

TABLE 3.11.CT

EXPOSURE POINT CONCENTRATION SUMMARY

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future

Medium: Surface Water

Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution) [1]		Maximum Concentration	Exposure Point Concentration			
							Value [2]	Units	Statistic	Rationale
Neponset River East of South Street (Fisher and Wader)	Manganese	mg/L	0.061	0.107	(N)	0.108	0.107	mg/L	95% UCL(N)	W Test (3)
Neponset River West of South Street (Fisher and Wader)	Asbestos	million fibers/ liter	0.385	0.595	(N)	0.59	0.385	million fibers/ liter	MEAN	(4)
	Manganese	mg/L	0.0832	0.175	(N)	0.194	0.175	mg/L	95% UCL(N)	W Test (3)
Former Mill Tailrace (Wader)	Arsenic	mg/L	0.0144	0.0243	(N)	0.028	0.0243	mg/L	95% UCL(N)	W Test (3)
	Asbestos	million fibers/ liter	5060	31700	(G)	17800	5060	million fibers/ liter	MEAN	(4)
	Benz(a)anthracene	mg/L	0.000244	0.000482	(N)	0.006	0.000482	mg/L	95% UCL(N)	W Test (3)
	Benzo(a)pyrene	mg/L	0.000344	0.000682	(N)	0.00089	0.000682	mg/L	95% UCL(N)	W Test (3)
	Benzo(b)fluoranthene	mg/L	0.000349	0.000704	(N)	0.0009	0.000704	mg/L	95% UCL(N)	W Test (3)
	Chromium	mg/L	0.0139	0.0277	(N)	0.0383	0.0277	mg/L	95% UCL(N)	W Test (3)
	Dibenz(a,h)anthracene	mg/L	0.0000446	0.0000902	(N)	0.00012	0.0000902	mg/L	95% UCL(N)	W Test (3)
	Indeno(1,2,3-cd)pyrene	mg/L	0.000176	0.000342	(N)	0.00043	0.000342	mg/L	95% UCL(N)	W Test (3)
	Manganese	mg/L	0.397	0.786	(N)	0.95	0.786	mg/L	95% UCL(N)	W Test (3)
	Naphthalene	mg/L	0.000331	0.00658	(G)	0.0012	0.000331	mg/L	MEAN	(4)
	Vanadium	mg/L	0.0417	0.0858	(N)	0.122	0.0858	mg/L	95% UCL(N)	W Test (3)

Notes:

(G) = gamma

n = sample size

(N) = normal

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(2) Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in section 3.1.2 of the report.

(3) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (ProUCL Version 3.0, USEPA, 2004).

(4) The recommended UCL is greater than the maximum detected concentration, and no alternative calculation method was identified (ProUCL Version 3.0, USEPA, 2004). Therefore, the mean concentration is used for the CT EPC

TABLE 3.12.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future (Fisher)
Medium: Tissue
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution)[1]		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Lewis Pond	Arsenic	mg/Kg	0.053	0.0815	(N)	0.1		0.0815	mg/kg	95% UCL (N)	W Test (2)
	Benzo(a)pyrene	mg/kg	0.00483	0.009	(NP)	0.0063	J	0.0063	mg/kg	MAX	W Test (6)
	Benzo(b)fluoranthene	mg/kg	0.00795	0.0118	(N)	0.011	J	0.011	mg/kg	MAX	W Test (3)
	bis(2-Ethylhexyl)phthalate	mg/kg	5.06	11.2	(N)	16	J	11.2	mg/kg	95% UCL (N)	W Test (2)
	Lead	mg/kg	0.223	0.377	(N)	0.48	J	0.223	mg/kg	MEAN	(8)
	Mercury	mg/kg	0.0894	0.127	(NP)	0.16		0.127	mg/kg	95% UCL (NP)	W Test (7)
Neponset River	Arsenic	mg/Kg	0.0312	0.0374	(N)	0.039		0.0374	mg/kg	95% UCL (N)	W Test (2)
	Benzo[a]pyrene	mg/kg	0.00146	0.00336	(N)	0.0032		0.0032	mg/kg	MAX	W Test (6)
	bis(2-Ethylhexyl)phthalate	mg/kg	12	246	(G)	51		51	mg/kg	MAX	K-S Test (5)
	Dibenz[a,h]anthracene	mg/kg	0.0014	0.0022	(NP)	0.0029		0.0022	mg/kg	95% UCL (NP)	W Test (7)
	Lead	mg/kg	0.197	0.432	(N)	0.61	J	0.197	mg/kg	MEAN	(8)
	Mercury	mg/kg	0.236	0.295	(N)	0.32		0.295	mg/kg	95% UCL (N)	W Test (2)
	Zinc	mg/kg	17.6	39.4	(G)	42		39.4	mg/kg	95% UCL (G)	A-D Test (4)

Notes:
σ = standard deviation of log-transformed data
(G) = gamma
J = estimated value
(N) = normal
(NP) = non-parametric
Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in section 3.1.2 of the report.
(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).
(2) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (ProUCL Version 3.0, USEPA, 2004).
(3) Shapiro-Wilk W test indicates the data are normally distributed. However, the 95% UCL is greater than the maximum detected concentration. Therefore, the maximum concentration is used as the RME EPC (ProUCL Version 3.0, USEPA, 2004).
(4) Anderson-Darling test indicates the data are gamma distributed. Therefore, an approximate gamma 95% UCL was calculated (ProUCL Version 3.0, USEPA, 2004).
(5) Kolmogorov-Smirnov test indicates the data are gamma distributed. However, the recommended adjusted gamma 95% UCL is greater than the maximum detected concentration, and no alternative UCL calculation method was identified. Therefore, the maximum concentration is used as the RME EPC (ProUCL Version 3.0, USEPA, 2004).
(6) Shapiro-Wilk W test indicates that the data are non-parametric. However, the recommended 95% Chebyshev (Mean, Sd) UCL is greater than the maximum detected concentration, and no alternative UCL calculation method was identified. Therefore, the maximum concentration is used as the RME EPC (ProUCL Version 3.0, USEPA, 2004).
(7) Shapiro-Wilk W test indicates the data are non-parametric and $0<\sigma<0.5$. Therefore, a 95% UCL was calculated based on the Student's t statistic (ProUCL Version 3.0, USEPA, 2004).
(8) The arithmetic mean is used in the IEUBK and Adult Lead Models.

TABLE 3.12.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future (Fisher)
Medium: Tissue
Exposure Medium: Fish Tissue

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	UCL (Distribution) [1]		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Lewis Pond	Arsenic	mg/Kg	0.053	0.0815	(N)	0.1	J	0.0815	mg/kg	95% UCL (N)	W Test (2)
	Benzo(a)pyrene	mg/kg	0.00483	0.009	(NP)	0.0063	J	0.00483	mg/kg	MEAN	W Test (6)
	Benzo(b)fluoranthene	mg/kg	0.00795	0.0118	(N)	0.011	J	0.00795	mg/kg	MEAN	W Test (3)
	bis(2-Ethylhexyl)phthalate	mg/kg	5.06	11.2	(N)	16	J	11.2	mg/kg	95% UCL (N)	W Test (2)
	Lead	mg/kg	0.223	0.377	(N)	0.48	J	0.223	mg/kg	MEAN	(9)
	Mercury	mg/kg	0.0894	0.127	(NP)	0.16		0.127	mg/kg	95% UCL (NP)	W Test (7)
Neponset River	Arsenic	mg/Kg	0.0312	0.0374	(N)	0.039		0.0374	mg/kg	95% UCL (N)	W Test (2)
	Benzo[a]pyrene	mg/kg	0.00416	0.00336	(N)	0.0032		0.0032	mg/kg	MAX	W Test (8)
	bis(2-Ethylhexyl)phthalate	mg/kg	12	246	(G)	51		12	mg/kg	MEAN	K-S Test (5)
	Dibenz[a,h]anthracene	mg/kg	0.0014	0.0022	(NP)	0.0029		0.0022	mg/kg	95% UCL (N)	W Test (2)
	Lead	mg/kg	0.197	0.432	(N)	0.61	J	0.197	mg/kg	MEAN	(9)
	Mercury	mg/kg	0.236	0.295	(N)	0.32		0.295	mg/kg	95% UCL (N)	W Test (2)
	Zinc	mg/kg	17.6	39.4	(G)	42		39.4	mg/kg	95% UCL (G)	A-D Test (4)

Notes:

σ = standard deviation of log-transformed data

(G) = gamma

J = estimated value

(N) = normal

(NP) = non-parametric

Individual samples where the COPC was not detected were included in estimation of the EPC using 1/2 the detection limit or the whole detection limit, as described in section 3.1.2 of the report.

(1) UCL and distribution form were established using USEPA ProUCL software (ProUCL Version 3.0, USEPA, 2004).

(2) Shapiro-Wilk W test indicates the data are normally distributed. Therefore, a 95% UCL was calculated based on the Student's t statistic (ProUCL Version 3.0, USEPA, 2004).

(3) Shapiro-Wilk W test indicates the data are normally distributed. However, the 95% UCL is greather than the maximum detected concentration. Therefore, the mean concentration is used as the CT EPC (ProUCL Version 3.0, USEPA, 2004).

(4) Anderson-Darling test indicates the data are gamma distributed. Therefore, an approximate gamma 95% UCL was calculated (ProUCL Version 3.0, USEPA, 2004).

(5) Kolmogorov-Smirnov test indicates the data are gamma distributed. However, the recommended adjusted gamma 95% UCL is greater than the maximum detected concentration, and no alternative UCL calculation method was identified. Therefore, the mean concentration is used as the CT EPC (ProUCL Version 3.0, USEPA, 2004).

(6) Shapiro-Wilk W test indicates that the data are non-parametric. However, the recommended 95% Chebyshev (Mean, Sd) UCL is greater than the maximum detected concentration, and no alternative UCL calculation method was identified. Therefore, the mean concentration is used as the CT EPC (ProUCL Version 3.0, USEPA, 2004).

(7) Shapiro-Wilk W test indicates the data are non-parametric and $0<\sigma< 0.5$. Therefore, a 95% UCL was calculated based on the Student's t statistic (ProUCL Version 3.0, USEPA, 2004).

(8) Shapiro-Wilk W test indicates that the data are non-parametric. However, both the recommended 95% UCL and the mean are greater than the maximum detected concentration. Therefore, the maximum concentration is used as the CT EPC (USEPA, 2004).

(9) The arithmetic mean is used in the IEUBK and Adult Lead Models.

APPENDIX G
RAGS Table 4 Series (Values Used for Daily Intake Calculations)

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) Lot 122 (2) Lot 124 (3) Lot 125	IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1994	(mg/kg-day) = CS x IR-S x CF x FI
			(4) Gleason Court vacant lot	CF	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			(5) Lot 208 (6) Lot 283 (7) Lot 282	FI	Fraction Ingested	1	unitless	(2)	
			(8) Lot 210 (9) Lot 230 (10) Lot 257	EF	Exposure Frequency	150	days/yr	EPA, 1994	
			(11) Orlando property	ED	Exposure Duration	24	yrs	EPA, 1994	
			(12) Lot 342 (13) Lot 360	BW	Body Weight	70	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1994	
		Child	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) Lot 122 (2) Lot 124 (3) Lot 125	IR-S	Ingestion Rate of Soil	200	mg/day	EPA, 1994	(mg/kg-day) = CS x IR-S x CF x FI
			(4) Gleason Court vacant lot	CF	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			(5) Lot 208 (6) Lot 283 (7) Lot 282	FI	Fraction Ingested	1	unitless	(2)	
			(8) Lot 210 (9) Lot 230 (10) Lot 257	EF	Exposure Frequency	150	days/yr	EPA, 1994	
			(11) Orlando property	ED	Exposure Duration	6	yrs	EPA, 1994	
			(12) Lot 342 (13) Lot 360	BW	Body Weight	15	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1994	
	Trespasser	Older Child	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) West of South Street	IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1994	(mg/kg-day) = CS x IR-S x CF x FI
			On-Facility and Vacant Lot 209	CF	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			(2) Old Railroad and Former Lower Mill Pond Area	FI	Fraction Ingested	1	unitless	(2)	
			(3) Lot 350	EF	Exposure Frequency	87	days/yr	Five (5) non-winter months and four (4) days per week - May - September; (2)	
				ED	Exposure Duration	7	yrs	(2)	
				BW	Body Weight	37	kg	Mean for males and females age 7-14yrs; EPA, 1997 (Vol I: Table 7-3)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	7 years	

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Site Worker	Adult	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	(1)	Chronic Daily Intake (CDI)
			East of South Street On-Facility	IR-S	Ingestion Rate of Soil	100	mg/day	non-residential outdoor worker; EPA, 2002	(mg/kg-day) = CS x IR-S x CF x FI
				CF	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested	1	unitless	(2)	
				EF	Exposure Frequency	150	days/yr	EPA, 1994	
				ED	Exposure Duration	25	yrs	non-residential indoor/outdoor worker; EPA, 2002	
				BW	Body Weight	70	kg	non-residential indoor/outdoor worker; EPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	non-residential indoor/outdoor worker; EPA, 2002	Chronic Absorbed Dose (CAD)
Dermal	Resident	Adult	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where
			(1) Lot 122 (2) Lot 124 (3) Lot 125	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(4) Gleason Court vacant lot	SA	Skin Surface Area Available for Contact	5,700	cm^2	50th percentile skin exposure: adult head, forearms, hands, lowerlegs; EPA, 2004	
			(5) Lot 208 (6) Lot 283 (7) Lot 282	AF	Soil Adherence Factor	0.07	mg/cm^2-event	Adult Resident; EPA, 2004 (Exhibit 3-5)	DA-event (mg/cm^2-event)= CS X CF X AF X ABS-d
			(8) Lot 210 (9) Lot 230 (10) Lot 257	ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
			(11) Orlando property	EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-5)	
			(12) Lot 342 (13) Lot 360	EF	Exposure Frequency	150	days/year	EPA, 1994	
				ED	Exposure Duration	24	years	EPA, 1994	
				BW	Body Weight	70	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1994	
		Child	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where
			(1) Lot 122 (2) Lot 124 (3) Lot 125	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(4) Gleason Court vacant lot	SA	Skin Surface Area Available for Contact	2,800	cm^2	50th percentile skin exposure for: head, forearms, hands, lowerlegs, feet; age <1 to 6 years; EPA, 2004	
			(5) Lot 208 (6) Lot 283 (7) Lot 282						
			(8) Lot 210 (9) Lot 230 (10) Lot 257	AF	Soil Adherence Factor	0.2	mg/cm^2-event	Child Resident; EPA, 2004 (Exhibit 3-5)	DA-event (mg/cm^2-event)= CS X CF X AF X ABS-d
			(11) Orlando property						
			(12) Lot 342 (13) Lot 360	ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	EPA, 2004	
				EF	Exposure Frequency	150	days/year	EPA, 1994	
				ED	Exposure Duration	6	years	EPA, 1994	
				BW	Body Weight	15	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1994	

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Trespasser	Older Child	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where
			(1) West of South Street	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			On-Facility and Vacant Lot 209	SA	Skin Surface Area Available for Contact	3138	cm^2	50th percentile skin exposure for: face, hands, forearms, and lower legs; age 7-14yrs; EPA, 2004 (Exhibit C-1)	
			(2) Old Railroad and Former Lower Mill Pond Area	AF	Soil Adherence Factor	0.2	mg/cm^2-event	Child Resident; EPA, 2004 (Exhibit 3-5)	DA-event (mg/cm^2-event)= CS X CF X AF X ABS-d
			(3) Lot 350	ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-5)	
				EF	Exposure Frequency	87	days/year	Five (5) non-winter months and four (4) days per week - May - September; (2)	
				ED	Exposure Duration	7	years	(2)	
				BW	Body Weight	37	kg	Mean for males and females age 7-14yrs; EPA, 1997 (Vol I: Table 7-3)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	7 years	
	Site Worker	Adult	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.RME	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where
			East of South Street On-Facility	CF	Conversion Factor	10^{-6}	kg/mg	- -	
				SA	Skin Surface Area Available for Contact	3,300	cm^2	non-residential outdoor worker; EPA, 2002	
				AF	Soil Adherence Factor	0.2	mg/cm^2	non-residential outdoor worker; EPA, 2002	DA-event (mg/cm^2-event)= CS X CF X AF X ABS-d
				ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	non-residential outdoor worker; EPA, 2002	
				EF	Exposure Frequency	150	days/year	EPA, 1994	
				ED	Exposure Duration	25	years	non-residential indoor/outdoor worker; EPA, 2002	
				BW	Body Weight	70	kg	non-residential indoor/outdoor worker; EPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	non-residential indoor/outdoor worker; EPA, 2002	

Footnotes:

(1) COPC-specific exposure point concentrations

(2) Professional Judgement

(3) Chemical -specific Dermal Absorption Fraction From Soil (Appendix J)

Sources:

EPA, 2004: Risk Assessment Guidance for Superfund Vol. 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.

EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24

EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.

EPA, 1994: EPA Region 1, Waste Management Division, Risk Updates. August 1994, Number 2, Attachment 2 and Attachment 3.

EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.1.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.CT	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) Lot 122, (2) Lot 124, (3) Lot 125,	IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1994	(mg/kg-day) = CS x IR-S x CF1 x FI
			(4) Gleason Court Vacant Lot,	CF	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			(5) Lot 208, (6) Lot 283, (7) Lot 282,	FI	Fraction Ingested	1	unitless	(2)	
			(8) Lot 210, (9) Lot 230, (10) Lot 257,	EF	Exposure Frequency	150	days/yr	EPA, 1994	
			(11) Orlando Property,	ED	Exposure Duration	7	yrs	EPA, 1994	
			(12) Lot 342, (13) Lot 360	BW	Body Weight	70	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	EPA, 1994	
		Child	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.CT	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) Lot 122, (2) Lot 124, (3) Lot 125,	IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1994	(mg/kg-day) = CS x IR-S x CF1 x FI
			(4) Gleason Court Vacant Lot	CF	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			(5) Lot 208, (6) Lot 283, (7) Lot 282,	FI	Fraction Ingested	1	unitless	(2)	
			(8) Lot 210, (9) Lot 230, (10) Lot 257,	EF	Exposure Frequency	150	days/yr	EPA, 1994	
			(11) Orlando Property	ED	Exposure Duration	2	yrs	EPA, 1994	
			(12) Lot 342, (13) Lot 360	BW	Body Weight	15	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	
	Trespasser	Older Child	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.CT	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) West of South Street On-Facility and Vacant Lot 209,	IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1994 (adult resident)	(mg/kg-day) = CS x IR-S x CF1 x FI
				CF	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			(2) Old Railroad and Former Lower Mill Pond Area,	FI	Fraction Ingested	1	unitless	(2)	
			(3) Lot 350	EF	Exposure Frequency	22	days/yr	Five (5) non-winter months and one (1) day per week - May - September; (2)	
				ED	Exposure Duration	2	yrs	EPA, 1994	
				BW	Body Weight	37	kg	Mean for males and females age 7-14yrs; EPA, 1997 (Vol I: Table 7-3)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	

TABLE 4.1.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Site Worker	Adult	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.CT	mg/kg	(1)	Chronic Daily Intake (CDI)
			East of South Street On-Facility	IR-S	Ingestion Rate of Soil	50	mg/day	non-residential indoor worker; EPA, 2002	(mg/kg-day) = CS x IR-S x CF1 x FI
				CF	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested	1	unitless	(2)	
				EF	Exposure Frequency	150	days/yr	EPA, 1994	
				ED	Exposure Duration	9	yrs	(4)	
				BW	Body Weight	70	kg	non-residential indoor/outdoor worker; EPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	9 years	
Dermal	Resident	Adult	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.CT	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT
			(1) Lot 122, (2) Lot 124, (3) Lot 125,	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(4) Gleason Court Vacant Lot, (5) Lot 208, (6) Lot 283, (7) Lot 282,	SA	Skin Surface Area Available for Contact	5,700	cm^2	50th percentile skin exposure: adult head, forearms, hands, lowerlegs; EPA, 2004	where
			(8) Lot 210, (9) Lot 230, (10) Lot 257, (11) Orlando Property,	AF	Soil Adherence Factor	0.01	mg/cm^2-	Adult Resident; EPA, 2004 (Exhibit 3-5)	DA-event (mg/cm^2-event)= CS X CF X
			(12) Lot 342, (13) Lot 360	ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-5)	
				EF	Exposure Frequency	150	days/yr	EPA, 1994	
				ED	Exposure Duration	7	yrs	EPA, 1994	
				BW	Body Weight	70	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	EPA, 1994	

TABLE 4.1.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
		Child	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.CT	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where
			(1) Lot 122, (2) Lot 124, (3) Lot 125,	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(4) Gleason Court Vacant Lot,	SA	Skin Surface Area Available for Contact	2,800	cm^2	50th percentile skin exposure for: head, forearms, hands, lowerlegs, feet; age <1 to 6 years; EPA, 2004	
			(5) Lot 208, (6) Lot 283, (7) Lot 282, (8) Lot 210, (9) Lot 230, (10) Lot 257,						
			(11) Orlando Property, (12) Lot 342, (13) Lot 360	AF	Soil Adherence Factor	0.04	mg/cm^2-event	Child Resident; EPA, 2004 (Exhibit 3-5)	DA-event (mg/cm^2-event)= CS X CF X
				ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-5)	
				EF	Exposure Frequency	150	days/yr	EPA, 1994	
				ED	Exposure Duration	2	yrs	EPA, 1994	
				BW	Body Weight	15	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	
	Trespasser	Older Child	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.CT	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where
			(1) West of South Street On-Facility	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			and Vacant Lot 209, (2) Old Railroad and Former Lower Mill Pond Area,	SA	Skin Surface Area Available for Contact	3138	cm^2	50th percentile skin exposure for: face, hands, forearms, and lower legs; age 7-14yrs; EPA, 2004 (Exhibit C-1)	
			(3) Lot 350	AF	Soil Adherence Factor	0.04	mg/cm^2-event	Child Resident; EPA, 2004 (Exhibit 3-5)	DA-event (mg/cm^2-event)= CS X CF X SAF X ABS-d
				ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	Assumed	
				EF	Exposure Frequency	22	days/yr	Five (5) non-winter months and one (1) day per week - May - September; (2)	
				ED	Exposure Duration	2	yrs	EPA, 1994	
				BW	Body Weight	37	kg	Mean for males and females age 7-14yrs; EPA, 1997 (Vol I: Table 7-3)	
				AT-C	Averaging Time (Cancer)	25550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	

TABLE 4.1.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil (0-1 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Site Worker	Adult	Surface soil (0-1 ft):	CS	Chemical Concentration in Soil	See Table 3.1.CT	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where DA-event (mg/cm^2-event)= CS X CF X SAF X ABS-d
			East of South Street On-Facility	CF	Conversion Factor	10^{-6}	kg/mg	- -	
				SA	Skin Surface Area Available for Contact	3,300	cm^2	non-residential outdoor worker; EPA, 2002	
				AF	Soil Adherence Factor	0.04	mg/cm^2-event	Geomean of the weighted soil adherence factor for a landscaper; EPA, 2004 (Exhibit 3-3)	
				ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	non-residential outdoor worker; EPA, 2002	
				EF	Exposure Frequency	150	days/yr	EPA, 1994	
				ED	Exposure Duration	9	yrs	(4)	
				BW	Body Weight	70	kg	non-residential indoor/outdoor worker; EPA, 2002	
				AT-C	Averaging Time (Cancer)	25550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	9 years	

Footnotes:

(1) COPC-specific exposure point concentrations

(2) Professional Judgement

(3) Chemical-specific Dermal Absorption Fraction from Soil- See Dermal Worksheet.

(4) Personal communication (Melissa Taylor of EPA Region I, 2000)

Sources:

EPA, 2004: Risk Assessment Guidance for Superfund Vol. 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.

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EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.

EPA, 1994: EPA Region 1, Waste Management Division, Risk Updates. August 1994, Number 2, Attachment 2 and Attachment 3.

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TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) East of South Street On-Facility,	IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1994	(mg/kg-day) = CS x IR x CF1 x FI
			(2) Gleason Court Vacant Lot,	CF1	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			Area,	FI	Fraction Ingested	1	unitless	(2)	
			(4) Lot 122, (5) Lot 124, (6) Lot 125,	EF	Exposure Frequency	150	days/yr	EPA, 1994	
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	ED	Exposure Duration	24	years	EPA, 1994	
			(10) Lot 210, (11) Lot 230, (12) Lot 257,	BW	Body Weight	70	kg	EPA, 1994	
			(13) Orlando Property,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			(14) Lot 342, (15) Lot 360, (16) Lot 350,	AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1994	
			(17) West of South Street On-Facility,						
			(18) Vacant Lot 209,						
			(19) East of South Street On-Facility SB-09						
		Child	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) East of South Street On-Facility,	IR-S	Ingestion Rate of Soil	200	mg/day	EPA, 1994	(mg/kg-day) = CS x IR x CF1 x FI
			(2) Gleason Court Vacant Lot,	CF1	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			Area,	FI	Fraction Ingested	1	unitless	(2)	
			(4) Lot 122, (5) Lot 124, (6) Lot 125,	EF	Exposure Frequency	150	days/yr	EPA, 1994	
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	ED	Exposure Duration	6	years	EPA, 1994	
			(10) Lot 210, (11) Lot 230, (12) Lot 257,	BW	Body Weight	15	kg	EPA, 1994	
			(13) Orlando Property,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			(14) Lot 342, (15) Lot 360, (16) Lot 350,	AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1994	
			(17) West of South Street On-Facility,						
			(18) Vacant Lot 209,						
			(19) East of South Street On-Facility SB-09						

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker	Adult	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) East of South Street On-Facility,	IR-S	Ingestion Rate of Soil	330	mg/day	EPA, 2002	(mg/kg-day) = CS x IR x CF1 x FI
			(2) Gleason Court Vacant Lot,	CF1	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			Area,	FI	Fraction Ingested	1	unitless	(2)	
			(4) Lot 122, (5) Lot 124, (6) Lot 125,	EF	Exposure Frequency	156	days/yr	Six (6) month project, six (6) days per week; (2)	
			(7) Lot 208, (8) Lot 283, (9) Lot 282,						
			(10) Lot 210, (11) Lot 230, (12) Lot 257,	ED	Exposure Duration	1	years	(2)	
			(13) Orlando Property, (14) Lot 342,	BW	Body Weight	70	kg	EPA, 2002	
			(15) West of South Street On-Facility,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 2002	
			(16) Vacant Lot 209,	AT-N	Averaging Time (Non-Cancer)	365	days	1 year	
			(17) East of South Street On-Facility SB-09						
	Site Worker	Adult	Soil (0-10 ft) On-Facility:	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) East of South Street,	IR-S	Ingestion Rate of Soil	100	mg/day	non-residential outdoor worker; EPA, 2002	(mg/kg-day) = CS x IR x CF1 x FI
			(2) West of South Street,						
			(3) East of South Street SB-09	CF1	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested	1	unitless	(2)	
				EF	Exposure Frequency	150	days/yr	EPA, 1994	
				ED	Exposure Duration	25	years	non-residential indoor/outdoor worker; EPA, 2002	
				BW	Body Weight	70	kg	non-residential indoor/outdoor worker; EPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	non-residential indoor/outdoor worker; EPA, 2002	

TABLE 4.2.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Resident	Adult	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where
			(1) East of South Street On-Facility,	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(2) Gleason Court Vacant Lot,	SA	Skin Surface Area Available for Contact	5,700	cm^2	50th percentile skin exposure: adult head, forearms, hands, lowerlegs; EPA, 2004	
			(3) Old Railroad and Former Lower Mill Pond						
			(4) Lot 122, (5) Lot 124, (6) Lot 125						
			(7) Lot 208, (8) Lot 283, (9) Lot 282, (10) Lot 210,	AF	Soil Adherence Factor	0.07	mg/cm^2	Adult Resident; EPA, 2004 (Exhibit 3-5)	DA-event (mg/cm^2-event)= CS X CF X AF X ABS-d
			(11) Lot 230, (12) Lot 257, (13) Orlando Property,						
			(14) Lot 342, (15) Lot 360, (16) Lot 350,	ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
			(17) West of South Street On-Facility,	EV	Event Frequency	1	events/day	Assumed	
			(18) Vacant Lot 209	EF	Exposure Frequency	150	days/year	EPA, 1994	
			(19) East of South Street On-Facility SB-09	ED	Exposure Duration	24	years	EPA, 1994	
				BW	Body Weight	70	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1994	
		Child	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where
			(1) East of South Street On-Facility	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(2) Gleason Court Vacant Lot	SA	Skin Surface Area Available for Contact	2,800	cm^2	50th percentile skin exposure for: head, forearms, hands, lowerlegs, feet; age <1 to 6 years; EPA, 2004	
			(3) Old Railroad and Former Lower Mill Pond Area						
			(4) Lot 122, (5) Lot 124, (6) Lot 125,						
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	AF	Soil Adherence Factor	0.2	mg/cm^2	Child Resident; EPA, 2004 (Exhibit 3-5)	DA-event (mg/cm^2-event)= CS X CF X AF X ABS-d
			(10) Lot 210, (11) Lot 230, (12) Lot 257						
			(13) Orlando Property, (14) Lot 342,	ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
			(15) Lot 360, (16) Lot 350	EV	Event Frequency	1	events/day	Assumed	
			(17) West of South Street On-Facility,	EF	Exposure Frequency	150	days/year	EPA, 1994	
			(18) Vacant Lot 209	ED	Exposure Duration	6	years	EPA, 1994	
			(19) East of South Street On-Facility SB-09	BW	Body Weight	15	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1994	

TABLE 4.2.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Construction Worker	Adult	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where DA-event (mg/cm^2-event)= CS X CF X AF X ABS-d
			(1) East of South Street On-Facility	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(2) Gleason Court Vacant Lot	SA	Skin Surface Area Available for Contact	3,300	cm^2/event	EPA, 2002	
			(3) Old Railroad and Former Lower Mill Pond Area	AF	Soil Adherence Factor	0.3	mg/cm^2	EPA, 2002	
			(4) Lot 122, (5) Lot 124, (6) Lot 125,	ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	EV	Event Frequency	1	events/day	EPA, 2002	
			(10) Lot 210, (11) Lot 230, (12) Lot 257, (13) Orlando Property, (14) Lot 342,	EF	Exposure Frequency	156	events/yr	Six (6) month project, six (6) days per week; (2)	
			(15) West of South Street On-Facility,	ED	Exposure Duration	1	years	(2)	
			(16) Vacant Lot 209	BW	Body Weight	70	kg	EPA, 2002	
			(17) East of South Street On-Facility SB-09	AT-C	Averaging Time (Cancer)	25550	days	EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	365	days	1 year	
	Site Worker	Adult	Soil (0-10 ft) On-Facility:	CS	Chemical Concentration in Soil	See Table 3.2.RME	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where DA-event (mg/cm^2-event)= CS X CF X AF X ABS-d
			(1) East of South Street	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(2)West of South Street	SA	Skin Surface Area Available for Contact	3300	cm^2	non-residential outdoor worker; EPA, 2002	
			(3) East of South Street SB-09	AF	Soil Adherence Factor	0.2	mg/cm^2	non-residential outdoor worker; EPA, 2002	
				ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	non-residential outdoor worker; EPA, 2002	
				EF	Exposure Frequency	150	days/year	EPA, 1994	
				ED	Exposure Duration	25	years	non-residential indoor/outdoor worker; EPA, 2002	
				BW	Body Weight	70	kg	non-residential indoor/outdoor worker; EPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	non-residential indoor/outdoor worker; EPA, 2002	

TABLE 4.2.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker	Adult	Fugitive Dust:	CS	Chemical Concentration in Soil	See Table 3.2.CT	mg/kg	(1)	Chronic Daily Exposure (CDE)
			(1) East of South Street On-Facility, (2) Gleason Court vacant lot,	ET	Exposure Time	12	hr/day	95th percentile time spent at work; EPA, 1997 (Vol III: Table 15-48)	$(mg/m^3) = ((CS/PEF) \times ET \times EF \times ED) / (AT \times CF1))$
			(3) Old Railroad and Former Lower Mill Pond Area,	EF	Exposure Frequency	156	days/yr	Six (6) month project, six (6) days per week; (2)	
			(4) Lot 122, (5) Lot 124,(6) Lot 125,	ED	Exposure Duration	1	years	(2)	
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 2002	
			(10) Lot 210, (11) Lot 230, (12) Lot 257,	AT-N	Averaging Time (Non-Cancer)	365	days	1 year	
			(13) Orlando Property, (14) Lot 342,	CF1	Conversion Factor	24	hr/day	--	
			(15) West of South Street On-Facility	PEF	Particulate Emission Factor	1E+09	m^3/kg	See Text Section 3.1.2.1	
			(16) Vacant Lot 209, (17) East of South Street On-Facility SB-09						

TABLE 4.2.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Footnotes:

(1) COPC-specific exposure point concentrations

(2) Professional Judgement

(3) Chemical -specific Dermal Absorption fraction from soil (Appendix J).

Sources:

EPA, 2004: Risk Assessment Guidance for Superfund Vol. 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.

EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24

EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.

EPA, 1994: EPA Region 1, Waste Management Division, Risk Updates. August 1994, Number 2, Attachment 2 and Attachment 3.

EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.2.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.CT	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) East of South Street On-Facility	IR-S	Ingestion Rate of Soil	50	mg/day	EPA, 1994	(mg/kg-day) = CS x IR x CF1 x FI
			(2) Gleason Court vacant lot,	CF1	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			(3) Old Railroad and Former Lower Mill Pond Area,	FI	Fraction Ingested	1	unitless	(2)	
				EF	Exposure Frequency	150	days/yr	EPA, 1994	
			(4) Lot 122, (5) Lot 124, (6) Lot 125,	ED	Exposure Duration	7	years	EPA, 1994	
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	BW	Body Weight	70	kg	EPA, 1994	
			(10) Lot 210, (11) Lot 230, (12) Lot 257,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			(13) Orlando Property, (14) Lot 342,	AT-N	Averaging Time (Non-Cancer)	2,555	days	EPA, 1994	
			(15) Lot 360, (16) Lot 350,						
			(17) West of South Street On-Facility						
			(18) Vacant Lot 209,						
			(19) East of South Street On-Facility SB-09						
		Child	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.CT	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) East of South Street On-Facility	IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1994	(mg/kg-day) = CS x IR x CF1 x FI
			(2) Gleason Court vacant lot,	CF1	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			(3) Old Railroad and Former Lower Mill Pond Area,	FI	Fraction Ingested	1	unitless	(2)	
				EF	Exposure Frequency	150	days/yr	EPA, 1994	
			(4) Lot 122, (5) Lot 124, (6) Lot 125,	ED	Exposure Duration	2	years	EPA, 1994	
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	BW	Body Weight	15	kg	EPA, 1994	
			(10) Lot 210, (11) Lot 230, (12) Lot 257,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			(13) Orlando Property, (14) Lot 342,	AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	
			(15) Lot 360, (16) Lot 350,						
			(17) West of South Street On-Facility						
			(18) Vacant Lot 209,						
			(19) East of South Street On-Facility SB-09						

TABLE 4.2.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Construction Worker	Adult	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.CT	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) East of South Street On-Facility	IR-S	Ingestion Rate of Soil	100	mg/day	Technical Review Workgroup for Lead, April 1999	(mg/kg-day) = CS x IR x CF1 x FI
			(2) Gleason Court vacant lot,	CF1	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			(3) Old Railroad and Former Lower Mill Pond Area,	FI	Fraction Ingested	1	unitless	(2)	
				EF	Exposure Frequency	78	days/yr	Three (3) month project, six (6) days per week; (2)	
			(4) Lot 122, (5) Lot 124,(6) Lot 125,						
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	ED	Exposure Duration	1	years	(2)	
			(10) Lot 210, (11) Lot 230, (12) Lot 257,	BW	Body Weight	70	kg	EPA, 2002	
			(13) Orlando Property, (14) Lot 342,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 2002	
			(15) West of South Street On-Facility	AT-N	Averaging Time (Non-Cancer)	365	days	1 year	
			(16) Vacant Lot 209,						
			(17) East of South Street On-Facility SB-09						
	Site Worker	Adult	Soil (0-10 ft) On-Facility:	CS	Chemical Concentration in Soil	See Table 3.2.CT	mg/kg	(1)	Chronic Daily Intake (CDI)
			(1) East of South Street,	IR-S	Ingestion Rate of Soil	50	mg/day	non-residential indoor worker; EPA, 2002	(mg/kg-day) = CS x IR x CF1 x FI
			(2)West of South Street,	CF1	Conversion Factor	10^{-6}	kg/mg	- -	x EF x ED x 1/BW x 1/AT
			(3) East of South Street On-Facility SB-09	FI	Fraction Ingested	1	unitless	(2)	
				EF	Exposure Frequency	150	days/yr	EPA, 1994	
				ED	Exposure Duration	9	years	(4)	
				BW	Body Weight	70	kg	non-residential indoor/outdoor worker; EPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	9 years	

TABLE 4.2.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Resident	Adult	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.CT	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT
			(1) East of South Street On-Facility	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(2) Gleason Court vacant lot,	SA	Skin Surface Area Available for Contact	5,700	cm^2	50th percentile skin exposure: adult head, forearms, hands, lowerlegs; EPA, 2004	where
			(3) Old Railroad and Former Lower Mill Pond Area,	AF	Soil Adherence Factor	0.01	mg/cm^2-event	Adult Resident; EPA, 2004 (Exhibit 3-5)	DA-event (mg/cm^2-event)= CS X CF X SAF X ABS-d
			(4) Lot 122, (5) Lot 124,(6) Lot 125,						
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
			(10) Lot 210, (11) Lot 230, (12) Lot 257,	EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-5)	
			(13) Orlando Property, (14) Lot 342,	EF	Exposure Frequency	150	days/yr	EPA, 1994	
			(15) Lot 360, (16) Lot 350,	ED	Exposure Duration	7	years	EPA, 1994	
			(17) West of South Street On-Facility	BW	Body Weight	70	kg	EPA, 1994	
			(18) Vacant Lot 209,	AT-C	Averaging Time (Cancer)	25550	days	EPA, 1989	
			(19) East of South Street On-Facility SB-09	AT-N	Averaging Time (Non-Cancer)	2,555	days	EPA, 1994	
		Child	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.CT	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT
			(1) East of South Street On-Facility	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(2) Gleason Court vacant lot,						
			(3) Old Railroad and Former Lower Mill Pond Area,	SA	Skin Surface Area Available for Contact	2,800	cm^2	50th percentile skin exposure for: head, forearms, hands, lowerlegs, feet; age <1 to 6 years; EPA, 2004	where
			(4) Lot 122, (5) Lot 124, (6) Lot 125,						DA-event (mg/cm^2-event)= CS X CF X
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	AF	Soil Adherence Factor	0.04	mg/cm^2-event	Child Resident; EPA, 2004 (Exhibit 3-5)	
			(10) Lot 210, (11) Lot 230, (12) Lot 257,						
			(13) Orlando Property, (14) Lot 342,	ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
			(14) Lot 342, (15) Lot 360, (16) Lot 350,	EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-5)	
			(17) West of South Street On-Facility	EF	Exposure Frequency	150	days/yr	EPA, 1994	
			(18) Vacant Lot 209,	ED	Exposure Duration	2	years	EPA, 1994	
			(19) East of South Street On-Facility SB-09	BW	Body Weight	15	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	

TABLE 4.2.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Construction Worker	Adult	Soil (0-10 ft):	CS	Chemical Concentration in Soil	See Table 3.2.CT	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT
			(1) East of South Street On-Facility	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(2) Gleason Court vacant lot,	SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2002	where
			(3) Old Railroad and Former Lower Mill Pond Area,	AF	Soil Adherence Factor	0.1	mg/cm^2-event	Construction worker geomean; EPA, 2004 (Exhibit C-3)	DA-event (mg/cm2-event)= CS X CF X SAF X ABS-d
			(4) Lot 122, (5) Lot 124, (6) Lot 125,	ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	EV	Event Frequency	1	events/day	EPA, 2002	
			(10) Lot 210, (11) Lot 230, (12) Lot 257,	EF	Exposure Frequency	78	days/yr	Three (3) month project, six (6) days per week; (2)	
			(13) Orlando Property, (14) Lot 342,						
			(15) West of South Street On-Facility	ED	Exposure Duration	1	years	(2)	
			(16) Vacant Lot 209,	BW	Body Weight	70	kg	EPA, 2002	
			(17) East of South Street On-Facility SB-09	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	365	days	1 year	
	Site Worker	Adult	Soil (0-10 ft) On-Facility:	CS	Chemical Concentration in Soil	See Table 3.2.CT	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT
			(1) East of South Street	CF	Conversion Factor	10^{-6}	kg/mg	- -	
			(2)West of South Street	SA	Skin Surface Area Available for Contact	3300	cm^2	non-residential outdoor worker; EPA, 2002	where
			(3) East of South Street On-Facility SB-09	AF	Soil Adherence Factor	0.04	mg/cm^2-event	Geomean of the weighted soil adherence factor for a landscaper; EPA, 2004 (Exhibit 3-3)	DA-event (mg/cm^2-event)= CS X CF X SAF X ABS-d
				ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	non-residential outdoor worker; EPA, 2002	
				EF	Exposure Frequency	150	days/yr	EPA, 1994	
				ED	Exposure Duration	9	years	(4)	
				BW	Body Weight	70	kg	non-residential indoor/outdoor worker; EPA, 2002	
				AT-C	Averaging Time (Cancer)	25550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	9 years	

TABLE 4.2.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker	Adult	Fugitive Dust:	CS	Chemical Concentration in Soil	See Table 3.2.CT	mg/kg	(1)	Chronic Daily Intake (CDI) (mg/m^3)=
			(1) East of South Street On-Facility, (2) Gleason Court vacant lot,	ET	Exposure Time	8	hr/day	50th percentile time spent at work; EPA, 1997 (Vol III: Table 15-48)	((CS/PEF) x ET x EF x ED) / (AT x CF1))
			(3) Old Railroad and Former Lower Mill Pond Area,	EF	Exposure Frequency	78	days/yr	Three (3) month project, six (6) days per week; (2)	
			(4) Lot 122, (5) Lot 124,(6) Lot 125,	ED	Exposure Duration	1	years	(2)	
			(7) Lot 208, (8) Lot 283, (9) Lot 282,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 2002	
			(10) Lot 210, (11) Lot 230, (12) Lot 257,	AT-N	Averaging Time (Non-Cancer)	365	days	1 year	
			(13) Orlando Property, (14) Lot 342,	CF1	Conversion Factor	24	hr/day		
			(15) West of South Street On-Facility	PEF	Particulate Emission Factor	1E+09	m^3/kg	See Text Section 3.1.2.1	
			(16) Vacant Lot 209,						
			(17) East of South Street On-Facility SB-09						

TABLE 4.2.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Footnotes:

(1) COPC-specific exposure point concentrations

(2) Professional Judgement

(3) Chemical -specific Dermal Absorption Efficiencies (PC and ABS)

(4) Personal communication (Melissa Taylor of EPA Region I, 2000)

Sources:

EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24

EPA, 2001: Risk Assessment Guidance for Superfund Vol. 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.

EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fc.

EPA, 1994: EPA Region 1, Waste Management Division, Risk Updates. August 1994, Number 2, Attachment 2 and Attachment 3.

EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.3.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Homegrown fruits and vegetables: (1) Lot 122 (2) Lot 125 (3) Lot 208 (4) Lot 283 (5) Lot 282 (6) Lot 210 (7)Lot 230 (8) Lot 257 (9) Orlando property (10) Lot 342 (11) Lot 360	CS_{efv}	Modeled chemical concentration in exposed fruits and vegetables (on dry weight basis)	See Table 3.3.supporting	mg/kg	(1)	Chronic Daily Intake (CDI) (mg/kg-day) = $[(CS_{efv} \times IR_{ef} \times WCF_f) + (CS_{efv} \times IR_{ev} \times WCF_v) + (CS_{rv} \times IR_{rv} \times WCF_v)]$ x CF1 x FI x EF x ED x 1/AT
				CS_{rv}	Modeled chemical concentration in root vegetables (on dry weight basis)	See Table 3.3.supporting	mg/kg	(1)	
				IR_{ef}, IR_{ev}, IR_{rv}	Ingestion Rate of Garden Fruits and Vegetables (as consumed, wet weight basis)	1.9; 1.4; 1.4	g/kg-d	For consumers of homegrown exposed fruit (ef), exposed vegetables (ev) and root vegetables (rv), respectively; 75th percentile from EPA, 1997 (Vol II: Tables 13-61, 13-63, and 13-65)	
				WCF_v	Wet-to-dry conversion factor for vegetables (exposed and root)	0.085	unitless	EPA, 1996	
				WCF_f	Wet-to-dry conversion factor for fruits	0.15	unitless	EPA, 1996	
				CF1	Conversion Factor	10^{-3}	kg/g	- -	
				FI	Fraction of Year Homegrown Produce Is Consumed	0.25	unitless	Assume 3 month growing season; EPA, 1996	
				EF	Exposure Frequency	350	days/yr	EPA, 1996	
				ED	Exposure Duration	24	yrs	EPA, 1996	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	
Ingestion	Resident	Child	Homegrown fruits and vegetables: (1) Lot 122 (2) Lot 125 (3) Lot 208 (4) Lot 283 (5) Lot 282 (6) Lot 210 (7)Lot 230 (8) Lot 257 (9) Orlando property (10) Lot 342 (11) Lot 360	CS_{efv}	Modeled chemical concentration in exposed fruits and vegetables (on dry weight basis)	See Table 3.3.supporting	mg/kg	(1)	Chronic Daily Intake (CDI) (mg/kg-day) = $[(CS_{efv} \times IR_{ef} \times WCF_f) + (CS_{efv} \times IR_{ev} \times WCF_v) + (CS_{rv} \times IR_{rv} \times WCF_v)]$ x CF1 x FI x EF x ED x 1/AT
				CS_{rv}	Modeled chemical concentration in root vegetables (on dry weight basis)	See Table 3.3.supporting	mg/kg	(1)	
				IR_{ef}, IR_{ev}, IR_{rv}	Ingestion Rate of Garden Fruits and Vegetables (as consumed, wet weight basis)	2.7; 2.9; 2.3	g/kg-d	For consumers of homegrown exposed fruit (ef), exposed vegetables (ev) and root vegetables (rv), respectively; 75th percentile from EPA, 1997 (Vol II: Tables 13-61, 13-63, and 13-65)	
				WCF_v	Wet-to-dry conversion factor for vegetables (exposed and root)	0.085	unitless	EPA, 1996	
				WCF_f	Wet-to-dry conversion factor for fruits	0.15	unitless	EPA, 1996	
				CF1	Conversion Factor	10^{-3}	kg/g	- -	
				FI	Fraction of Year Homegrown Produce Is Consumed	0.25	unitless	Assume 3 month growing season; EPA, 1996	

TABLE 4.3.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Plant Tissue

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
				EF	Exposure Frequency	350	days/yr	EPA, 1996	
				ED	Exposure Duration	6	yrs	EPA, 1996	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	

Footnotes: (1) COPC-specific exposure point concentrations

Sources: EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.

EPA, 1996: Soil Screening Guidance: Technical Background Document. EPA/540/R-95/128.

EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Homegrown fruits and vegetables from gardens:	CS_{efv}	Modeled chemical concentration in exposed fruits and vegetables (on dry weight basis)	See Table 3.4	mg/kg	(1)	Chronic Daily Intake (CDI) (mg/kg-day) =
			(1) East of South Street On-Facility,	CS_{rv}	Modeled chemical concentration in root vegetables (on dry weight basis)	See Table 3.4	mg/kg	(1)	$[(CS_{efv} \times IR_{ef} \times WCF_f) + (CS_{efv} \times IR_{ev} \times WCF_v) + (CS_{rv} \times IR_{rv} \times WCF_v)]$
			(2) Gleason Court Vacant Lot,						
			(3) Old Railroad and Former Lower Mill Pond Area,	IR_{ef}, IR_{ev}, IR_{rv}	Ingestion Rate of Garden Fruits and Vegetables (as consumed, wet weight basis)	1.9; 1.4; 1.4	g/kg-d	For consumers of homegrown exposed fruit (ef), exposed vegetables (ev) and root vegetables (rv), respectively; 75th percentile from EPA, 1997 (Vol II: Tables 13-61, 13-63, and 13-65)	x CF1 x FI x EF x ED x 1/AT
			(4) Lot 122, (5) Lot 124, (6) Lot 125,						
			(7) Lot 208, (8) Lot 283, (9) Lot 282,						
			(10) Lot 210, (11) Lot 230, (12) Lot 257,						
			(13) Orlando Property, (14) Lot 342,						
			(15) Lot 360, (16) Lot 350,						
			(17) West of South Street On-Facility,	WCF_v	Wet-to-dry conversion factor for vegetables (exposed and root)	0.085	unitless	EPA, 1996	
			(18) Vacant Lot 209						
				WCF_f	Wet-to-dry conversion factor for fruits	0.15	unitless	EPA, 1996	
				CF1	Conversion Factor	10^{-3}	kg/g	- -	
				FI	Fraction of Year Homegrown Produce Is Consumed	0.25	unitless	Assume 3 month growing season; EPA,1996	
				EF	Exposure Frequency	350	days/yr	EPA, 1996	
				ED	Exposure Duration	24	yrs	EPA, 1996	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1989	

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Plant Tissue

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Child	Homegrown fruits and vegetables from gardens:	CS_{efv}	Modeled chemical concentration in exposed fruits and vegetables (on dry weight basis)	See Table 3.4	mg/kg	(1)	Chronic Daily Intake (CDI) (mg/kg-day) =
			(1) East of South Street On-Facility,	CS_{rv}	Modeled chemical concentration in root vegetables (on dry weight basis)	See Table 3.4	mg/kg	(1)	$[(CS_{efv} \times IR_{ef} \times WCF_f) + (CS_{efv} \times IR_{ev} \times WCF_v) + (CS_{rv} \times IR_{rv} \times WCF_v)]$
			(2) Gleason Court Vacant Lot,						
			(3) Old Railroad and Former Lower Mill Pond Area,	IR_{ef}, IR_{ev}, IR_{rv}	Ingestion Rate of Garden Fruits and Vegetables (as consumed, wet weight basis)	2.7; 2.9; 2.3	g/kg-d	For consumers of homegrown exposed fruit (ef), exposed vegetables (ev) and root vegetables (rv), respectively; 75th percentile from EPA, 1997 (Vol II: Tables 13-61, 13-63, and 13-65)	x CF1 x FI x EF x ED x 1/AT
			(4) Lot 122, (5) Lot 124, (6) Lot 125,						
			(7) Lot 208, (8) Lot 283, (9) Lot 282,						
			(10) Lot 210, (11) Lot 230, (12) Lot 257,						
			(13) Orlando Property, (14) Lot 342,						
			(15) Lot 360, (16) Lot 350,						
			(17) West of South Street On-Facility,	WCF_v	Wet-to-dry conversion factor for vegetables (exposed and root)	0.085	unitless	EPA, 1996	
			(18) Vacant Lot 209						
				WCF_f	Wet-to-dry conversion factor for fruits	0.15	unitless	EPA, 1996	
				CF1	Conversion Factor	10^{-3}	kg/g	- -	
				FI	Fraction of Year Homegrown Produce Is Consumed	0.25	unitless	Assume 3 month growing season; EPA,1996	
				EF	Exposure Frequency	350	days/yr	EPA, 1996	
				ED	Exposure Duration	6	yrs	EPA, 1996	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1989	

Footnotes: (1) COPC-specific exposure point concentrations

Sources:
EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.
EPA, 1996: Soil Screening Guidance: Technical Background Document. EPA/540/R-95/128.
EPA, 1994: USEPA Region 1, Waste Management Division, Risk Updates. August 1994, Number 2, Attachment 2 and Attachment 3.
EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Indoor Air from:	CA	Modeled Air Concentration	See Table 3.5.RME	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) Lot 124, (2) Lot 125, (3) Lot 283, (4) Orlando Property (5) Off-Site Residential Building 1 (6) Off-Site Residential Building 2 (7) Off-Site Residential Building 3	ET	Exposure Time	24	hr/day	95th percentile time spent indoors at residence per day; EPA, 1997 (Vol III: Table 15-131)	
				EF	Exposure Frequency	350	days/yr	EPA, 1994	
				ED	Exposure Duration	24	yrs	EPA, 1994	
				CF1	Conversion Factor 1	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1994	
		Child	Indoor Air from:	CA	Modeled Air Concentration	See Table 3.5.RME	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) Lot 124, (2) Lot 125, (3) Lot 283, (4) Orlando Property, (5) Off-Site Residential Building 1 (6) Off-Site Residential Building 2 (7) Off-Site Residential Building 3	ET	Exposure Time	24	hr/day	95th percentile time spent indoors at residence per day; 1-4 years old; EPA, 1997 (Vol III: Table 15-131)	
				EF	Exposure Frequency	350	days/yr	EPA, 1994	
				ED	Exposure Duration	6	yrs	EPA, 1994	
				CF1	hours/day	24	hr/day	--	
				AT-C	Conversion Factor 2	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1994	
	Site Worker	Adult	Indoor Air from:	CA	Modeled Air Concentration	See Table 3.5.RME	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) East of South Street On-Facility (2) East of South Street On-Facility SB-09	ET	Exposure Time	12	hr/day	95th percentile time spent at work; EPA, 1997 (Vol III: Table 15-48)	
				EF	Exposure Frequency	250	days/yr	Industrial scenario; EPA, 2004 (Exhibit 3-5)	
				ED	Exposure Duration	25	yrs	non-residential indoor/outdoor worker; EPA, 2002	
				CF1	Conversion Factor 1	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	non-residential indoor/outdoor worker; EPA, 2002	

Footnotes:
(1) COPC-specific exposure point concentrations

Sources:
EPA, 2004: Risk Assessment Guidance For Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim Review Draft Interim. July 2004.
EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24
EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.
EPA, 1994: EPA Region 1, Waste Management Division, Risk Update. August 1994, Number 2, Attachment 2 and Attachment 3.
EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.5.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Indoor Air from: (1) Lot 124, (2) Lot 125, (3) Lot 283, (4) Orlando Property (5) Off-Site Residential Building 1 (6) Off-Site Residential Building 2 (7) Off-Site Residential Building 3	CA	Modeled Air Concentration	See Table 3.5.CT	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
				ET	Exposure Time	15	hr/day	50th percentile time spent indoors at residence per day; EPA, 1997 (Vol III: Table 15-131)	
				EF	Exposure Frequency	350	days/yr	EPA, 1994	
				ED	Exposure Duration	7	yrs	EPA, 1994	
				CF1	Conversion Factor 1	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	EPA, 1994	
		Child	Indoor Air from: (1) Lot 124, (2) Lot 125, (3) Lot 283, (4) Orlando Property, (5) Off-Site Residential Building 1 (6) Off-Site Residential Building 2 (7) Off-Site Residential Building 3	CA	Modeled Air Concentration	See Table 3.5.CT	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
				ET	Exposure Time	21	hr/day	50th percentile time spent indoors at residence per day; 1-4 years old; EPA, 1997 (Vol III: Table 15-131)	
				EF	Exposure Frequency	350	days/yr	EPA, 1994	
				ED	Exposure Duration	2	yrs	EPA, 1994	
				CF1	Conversion Factor 1	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	
	Site Worker	Adult	Indoor Air from East of South Street On-Facility SB-09	CA	Modeled Air Concentration	See Table 3.5.CT	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
				ET	Exposure Time	8	hr/day	50th percentile time spent at work; EPA, 1997 (Vol III: Table 15-48)	
				EF	Exposure Frequency	219	days/yr	Industrial scenario; EPA, 2004 (Exhibit 3-5)	
				ED	Exposure Duration	9	yrs	(3)	
				CF1	Conversion Factor 1	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	9 years	

Footnotes:
(1) COPC-specific exposure point concentrations
(2) Professional Judgement
(3) Personal communication (Melissa Taylor of EPA Region I, 2000)

Sources:
EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24
EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.
EPA, 1994: EPA Region 1, Waste Management Division, Risk Update. August 1994, Number 2, Attachment 2 and Attachment 3.
EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.6.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Indoor air from subsurface vapor intrusion into buildings:	CA	Modeled Air Concentration	See Table 3.6.RME	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) East of South Street On-Facility,	ET	Exposure Time	24	hr/day	95th percentile time spent indoors at residence per day; EPA, 1997 (Vol III: Table 15-131)	
			(2) Old Railroad and Former Lower Mill Pond Area,	EF	Exposure Frequency	350	days/yr	EPA, 1994	
			(3) Lot 124, (4) Lot 125, (5) Lot 208,	ED	Exposure Duration	24	yrs	EPA, 1994	
			(6) Lot 283, (7) Lot 257,	CF1	hours/day	24	hr/day	--	
			(8) Orlando Property,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			(9) Lot 360, (10) Lot 350,	AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1994	
			(11) West of South Street On-Facility,						
			(12) Lots South of the AOC,						
			(13) East of South Street On-Facility SB-09						
		Child	Indoor air from subsurface vapor intrusion into buildings:	CA	Modeled Air Concentration	See Table 3.6.RME	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) East of South Street On-Facility	ET	Exposure Time	24	hr/day	95th percentile time spent indoors at residence per day; 1-4 years old; EPA, 1997 (Vol III: Table 15-131)	
			(2) Old Railroad and Former Lower Mill Pond Area	EF	Exposure Frequency	350	days/yr	EPA, 1994	
			(3) Lot 124, (4) Lot 125, (5) Lot 208,	ED	Exposure Duration	6	yrs	EPA, 1994	
			(6) Lot 283, (7) Lot 257,	CF1	hours/day	24	hr/day	--	
			(8) Orlando Property	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			(9) Lot 360, (10) Lot 350,	AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1994	
			(11) West of South Street On-Facility						
			(12) Lots South of the AOC						
			(13) East of South Street On-Facility SB-09						

TABLE 4.6.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker	Adult	Trench vapor during excavation:	CA	Modeled Air Concentration	See Table 3.6.RME	mg/m3	(1)	Chronic Daily Exposure (CDE) (mg/m3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) East of South Street On-Facility,	ET	Exposure Time	12	hr/day	95th percentile time spent at work; EPA, 1997 (Vol III: Table 15-48)	
			(2) Gleason Court Vacant Lot,	EF	Exposure Frequency	156	days/yr	Six (6) month project, six (6) days per week; (2)	
			(3) Old Railroad and Former Lower Mill Pond Area,	ED	Exposure Duration	1	yrs	(2)	
			(4) Lot 124, (5) Lot 125, (6) Lot 208,	CF1	Conversion Factor	24	hr/day	--	
			(7) Lot 283, (8) Lot 282, (9) Lot 210,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 2002	
			(10) Lot 230, (11) Lot 257,	AT-N	Averaging Time (Non-Cancer)	365	days	1 year	
			(12) Orlando Property, (13) Lot 342,						
			(14) Lot 360, (15) Lot 350,						
			(16) West of South Street On-Facility,						
			(17) Lots South of the AOC,						
			(18) East of South Street On-Facility SB-09						
	Site Worker	Adult	Indoor air from On-Facility soil:	CA	Modeled Air Concentration	See Table 3.6.RME	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) East of South Street,	ET	Exposure Time	12	hr/day	95th percentile time spent at work; EPA, 1997 (Vol III: Table 15-48)	
			(2) West of South Street,	EF	Exposure Frequency	250	days/yr	Industrial scenario; EPA, 2004 (Exhibit 3-5)	
			(3) Lots South of the AOC,	ED	Exposure Duration	25	yrs	non-residential indoor/outdoor worker; EPA, 2002	
			(4) East of South Street SB-09	CF1	hours/day	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	non-residential indoor/outdoor worker; EPA, 2002	

Footnotes:
(1) COPC-specific exposure point concentrations
(2) Professional judgement

Sources:
EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24
EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.
EPA, 1994: EPA Region 1, Waste Management Division, Risk Update. August 1994, Number 2, Attachment 2 and Attachment 3.
EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.6.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Indoor air from subsurface vapor intrusion into buildings:	CA	Modeled Air Concentration	See Table 3.6.CT	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) East of South Street On-Facility	ET	Exposure Time	15	hr/day	50th percentile time spent indoors at residence per day; EPA, 1997 (Vol III: Table 15-131)	
			(2) Old Railroad and Former Lower Mill Pond Area						
			(3) Lot 124, (4) Lot 125, (5) Lot 208						
			(6) Lot 283, (7) Lot 257,	EF	Exposure Frequency	350	days/yr	EPA, 1994	
			(8) Orlando Property	ED	Exposure Duration	7	yrs	EPA, 1994	
			(9) Lot 360, (10) Lot 350,	CF1	Conversion Factor	24	hr/day	--	
			(11) West of South Street On-Facility	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			(12) Lots South of the AOC Facility SB-09	AT-N	Averaging Time (Non-Cancer)	2,555	days	EPA, 1994	
		Child	Indoor air from subsurface vapor intrusion into buildings:	CA	Modeled Air Concentration	See Table 3.6.CT	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) East of South Street On-Facility	ET	Exposure Time	21	hr/day	50th percentile time spent indoors at residence per day; 1-4 years old; EPA, 1997 (Vol III: Table 15-131)	
			(2) Old Railroad and Former Lower Mill Pond Area						
			(3) Lot 124, (4) Lot 125, (5) Lot 208,						
			(6) Lot 283, (7) Lot 257,						
			(8) Orlando Property	EF	Exposure Frequency	350	days/yr	EPA, 1994	
			(9) Lot 360, (10) Lot 350,	ED	Exposure Duration	2	yrs	EPA, 1994	
			(11) West of South Street On-Facility	CF1	Conversion Factor	24	hr/day	--	
			(12) Lots South of the AOC	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			(13) East of South Street On-Facility SB-09	AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	

TABLE 4.6.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Construction Worker	Adult	Trench vapor during excavation:	CA	Modeled Air Concentration	See Table 3.6.CT	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) East of South Street On-Facility	ET	Exposure Time	8	hr/day	50th percentile time spent at work; EPA, 1997 (Vol III: Table 15-48)	
			(2) Gleason Court Vacant Lot						
			(3) Old Railroad and Former Lower Mill Pond Area						
			(4) Lot 124, (5) Lot 125, (6) Lot 208,	EF	Exposure Frequency	78	days/yr	Three (3) month project, six (6) days per week; (2)	
			(7) Lot 283, (8) Lot 282, (9) Lot 210,						
			(10) Lot 230, (11) Lot 257,	ED	Exposure Duration	1	yrs	(2)	
			(12) Orlando Property	CF1	Conversion Factor	24	hr/day	--	
			(13) Lot 342, (14) Lot 360,(15) Lot 350,	AT-C	Averaging Time (Cancer)	25,550	days	EPA, 2002	
			(16) West of South Street On-Facility	AT-N	Averaging Time (Non-Cancer)	365	days	1 year	
			(17) Lots South of the AOC						
			(18) East of South Street On-Facility SB-09						
	Site Worker	Adult	Indoor air from On-Facility soil:	CA	Modeled Air Concentration	See Table 3.6.CT	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) East of South Street	ET	Exposure Time	8	hr/day	50th percentile time spent at work; EPA, 1997 (Vol III: Table 15-48)	
			(2) West of South Street						
			(3) Lots South of the AOC						
			(4) East of South Street SB-09	EF	Exposure Frequency	219	days/yr	Industrial scenario; EPA, 2004 (Exhibit 3-5)	
				ED	Exposure Duration	9	yrs	(3)	
				CF1	Conversion Factor	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential indoor/outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	9 years	

Footnotes:
(1) COPC-specific exposure point concentrations
(2) Professional Judgement
(3) Personal communication (Melissa Taylor of USEPA Region I, 2000)

Sources:
EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24
EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.
EPA, 1994: EPA Region 1, Waste Management Division, Risk Update. August 1994, Number 2, Attachment 2 and Attachment 3.
EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

Table 4.7.RME
Values Used for Daily Intake Equations
Reasonable Maximum Exposure
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Drinking Water from:	CW	Chemical Concentration in Water	See Table 3.7.RME	µg/L	See Table 3.7.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
			Off-site groundwater west of Neponset River	IR-W	Ingestion Rate Water	2	L/day	EPA, 1994	CW x IR x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA, 1994	
			Off-site groundwater east of Neponset River (SH-27)	ED	Exposure Duration	24	yrs	EPA, 1994	
				CF1	Conversion Factor 1	0.001	mg/µg	--	
			Off-site groundwater east of Neponset River (SH-28)	BW	Body Weight	70	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			Off-facility groundwater Lot 208 / Lot 209	AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1994	
		Child	Drinking Water from:	CW	Chemical Concentration in Water	See Table 3.7.RME	µg/L	See Table 3.7.RME	Chronic Daily Intake (CDI) (mg/kg-day) =
			Off-site groundwater west of Neponset River	IR-W	Ingestion Rate Water	1.5	L/day	90th percentile; 3-5 yrs; EPA, 1997 (Vol I: Table 3-33)	CW x IR x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA, 1994	
			Off-site groundwater east of Neponset River (SH-27)	ED	Exposure Duration	6	yrs	EPA, 1994	
				CF1	Conversion Factor 1	0.001	mg/µg	--	
			Off-site groundwater east of Neponset River (SH-28)	BW	Body Weight	15	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			Off-facility groundwater Lot 208 / Lot 209	AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1994	
Dermal	Resident	Adult	Tap Water from:	CW	Chemical Concentration in Water (used to calculate DA-event)	See Table 3.7.RME	µg/L	See Table 3.7.RME	Dermal Absorbed Dose (DAD) (mg/kg-day) =
			Off-site groundwater west of Neponset River	T(event)	Event Duration (used to calculate DA-event)	0.58	hr/event	EPA, 2004 (Exhibit 3-2)	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
			Off-site groundwater east of Neponset River (SH-27)	DA-event	Absorbed Dose per event	chem-specific	mg/cm^2-event	See Appendix H	See Appendix H for the equations used to calculate DA-event
			Off-site groundwater east of Neponset River (SH-28)	SA	Skin Surface Area Available for Contact	18,000	cm^2	50th percentile skin surface area for adult whole body; EPA, 2004 (Exhibit 3-2)	
			Off-facility groundwater Lot 208 / Lot 209	EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-2)	
				EF	Exposure Frequency	350	days/year	EPA, 1994	
				ED	Exposure Duration	24	yrs	EPA, 1994	
				BW	Body Weight	70	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1994	

Table 4.7.RME
Values Used for Daily Intake Equations
Reasonable Maximum Exposure
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
		Child	Tap Water from:	CW	Chemical Concentration in Water (used to calculate DA-event)	See Table 3.7.RME	µg/L	See Table 3.7.RME	Dermal Absorbed Dose (DAD) (mg/kg-day) =
			Off-site groundwater west of Neponset River	T(event)	Event Duration (used to calculate DA-event)	1	hr/event	EPA, 2004 (Exhibit 3-2)	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
			Off-site groundwater east of Neponset River (SH-27)	DA-event	Absorbed Dose per event	chem-specific	mg/cm^2-event	See Appendix H	See Appendix H for the equations used to calculate DA-event
			Off-site groundwater east of Neponset River (SH-28)	SA	Skin Surface Area Available for Contact	6,600	cm^2	50th percentile skin surface area for child whole body; EPA, 2004 (Exhibit 3-2)	
			Off-facility groundwater Lot 208 / Lot 209	EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-2)	
				EF	Exposure Frequency	350	days/year	EPA, 1994	
				ED	Exposure Duration	6	yrs	EPA, 1994	
				BW	Body Weight	15	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1994	
Inhalation	Resident	Adult	Vapors from Tap Water from:	InhR	Inhalation Rate	20	m^3/day	EPA, 1994	The dose due to inhalation of VOCs in shower vapor is assumed to be equal to the dose from ingestion of VOCs in household water (EPA, 1995). Per EPA Region 1 guidance, the VOC ingestion dose is converted to an inhalation exposure using the following equation: Chronic Daily Exposure (CDE) (mg/m^3) = CDI * BW * 1 / InhR
			Off-site groundwater west of Neponset River	BW	Body Weight	70	kg	EPA, 1994	
			Off-site groundwater east of Neponset River (SH-27)						
			Off-site groundwater east of Neponset River (SH-28)						
			Off-facility groundwater Lot 208 / Lot 209						
		Child	Vapors from Tap Water from:	InhR	Inhalation Rate	8	m^3/day	Mean for long-term exposures; age-weighted 1-7 yrs; EPA, 1997 (Vol I: Table 5-23)	The dose due to inhalation of VOCs in shower vapor is assumed to be equal to the dose from ingestion of VOCs in household water (EPA, 1995). Per EPA Region 1 guidance, the VOC ingestion dose is converted to an inhalation exposure using the following equation: Chronic Daily Exposure (CDE) (mg/m^3) = CDI * BW * 1 / InhR
			Off-site groundwater west of Neponset River	BW	Body Weight	15	kg	EPA, 1994	
			Off-site groundwater east of Neponset River (SH-27)						
			Off-site groundwater east of Neponset River (SH-28)						
			Off-facility groundwater Lot 208 / Lot 209						

Footnotes: NA = not applicaple

Sources: EPA, 2004: Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.

EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002F.

EPA, 1995: EPA Region 1, Waste Management Division, Risk Update. August 1995, Number 3.

EPA, 1994: EPA Region 1, Waste Management Division, Risk Update. August 1994, Number 2, Attachment 2 and Attachment 3.

EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

Table 4.7.CT

Values Used for Daily Intake Equations

Central Tendency

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Drinking Water from:	CW	Chemical Concentration in Water	See Table 3.7.CT	µg/L	See Table 3.7.CT	Chronic Daily Intake (CDI) (mg/kg-day) =
			Off-site groundwater west of Neponset River	IR-W	Ingestion Rate Water	1.4	L/day	EPA, 1994	CW x IR x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA, 1994	
			Off-site groundwater east of Neponset River (SH-27)	ED	Exposure Duration	7	yrs	EPA, 1994	
				CF1	Conversion Factor 1	0.001	mg/µg	--	
			Off-site groundwater east of Neponset River (SH-28)	BW	Body Weight	70	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			Off-facility groundwater Lot 208 / Lot 209	AT-N	Averaging Time (Non-Cancer)	2,555	days	EPA, 1994	
		Child	Drinking Water from:	CW	Chemical Concentration in Water	See Table 3.7.CT	µg/L	See Table 3.7.CT	Chronic Daily Intake (CDI) (mg/kg-day) =
			Off-site groundwater west of Neponset River	IR-W	Ingestion Rate Water	0.87	L/day	50th percentile; 3-5 yrs; EPA, 1997 (Vol I: Table 3-33)	CW x IR x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	EPA, 1994	
			Off-site groundwater east of Neponset River (SH-27)	ED	Exposure Duration	2	yrs	EPA, 1994	
				CF1	Conversion Factor 1	0.001	mg/µg	--	
			Off-site groundwater east of Neponset River (SH-28)	BW	Body Weight	15	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
			Off-facility groundwater Lot 208 / Lot 209	AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	
Dermal	Resident	Adult	Tap Water from:	CW	Chemical Concentration in Water (used to calculate DA-event)	See Table 3.7.CT	µg/L	See Table 3.7.CT	Dermal Absorbed Dose (DAD) (mg/kg-day) =
			Off-site groundwater west of Neponset River	T(event)	Event Duration (used to calculate DA-event)	0.25	hr/event	EPA, 2004 (Exhibit 3-2)	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
			Off-site groundwater east of Neponset River (SH-27)	DA-event	Absorbed Dose per event	chemical-specific	mg/cm^2-event	See Appendix H	See Appendix H for the equations used to calculate DA-event
			Off-site groundwater east of Neponset River (SH-28)	SA	Skin Surface Area Available for Contact	18,000	cm^2	50th percentile skin surface area for adult whole body; EPA, 2004 (Exhibit 3-2)	
			Off-facility groundwater Lot 208 / Lot 209	EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-2)	
				EF	Exposure Frequency	350	days/year	EPA, 1994	
				ED	Exposure Duration	7	yrs	EPA, 1994	
				BW	Body Weight	70	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	EPA, 1994	

Table 4.7.CT

Values Used for Daily Intake Equations

Central Tendency

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tap Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
		Child	Tap Water from:	CW	Chemical Concentration in Water (used to calculate DA-event)	See Table 3.7.CT	µg/L	See Table 3.7.CT	Dermal Absorbed Dose (DAD) (mg/kg-day) =
			Off-site groundwater west of Neponset River	T(event)	Event Duration (used to calculate DA-event)	0.33	hr/event	EPA, 2004 (Exhibit 3-2)	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
			Off-site groundwater east of Neponset River (SH-27)	DA-event	Absorbed Dose per event	chemical-specific	mg/cm^2-event	See Appendix H	See Appendix H for the equations used to calculate DA-event
			Off-site groundwater east of Neponset River (SH-28)	SA	Skin Surface Area Available for Contact	6,600	cm^2	50th percentile skin surface area for child whole body; EPA, 2004 (Exhibit 3-2)	
			Off-facility groundwater Lot 208 / Lot 209	EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-2)	
				EF	Exposure Frequency	350	days/year	EPA, 1994	
				ED	Exposure Duration	2	yrs	EPA, 1994	
				BW	Body Weight	15	kg	EPA, 1994	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	
Inhalation	Resident	Adult	Vapors from Tap Water from:	InhR	Inhalation Rate	20	m^3/day	EPA, 1994	The dose due to inhalation of VOCs in shower vapor is assumed to be equal to the dose from ingestion of VOCs in household water (EPA, 1995). Per EPA Region 1 guidance, the VOC ingestion dose is converted to an inhalation exposure using the following equation: Chronic Daily Exposure (CDE) (mg/m^3) = CDI * BW * 1 / InhR
			Off-site groundwater west of Neponset River	BW	Body Weight	70	kg	EPA, 1994	
			Off-site groundwater east of Neponset River (SH-27)						
			Off-site groundwater east of Neponset River (SH-28)						
			Off-facility groundwater Lot 208 / Lot 209						
		Child	Vapors from Tap Water from:	InhR	Inhalation Rate	7	m^3/day	Mean for long-term exposures; 1-2 yrs; EPA, 1997 (Vol I: Table 5 23)	The dose due to inhalation of VOCs in shower vapor is assumed to be equal to the dose from ingestion of VOCs in household water (EPA, 1995). Per EPA Region 1 guidance, the VOC ingestion dose is converted to an inhalation exposure using the following equation: Chronic Daily Exposure (CDE) (mg/m^3) = CDI * BW * 1 / InhR
			Off-site groundwater west of Neponset River						
			Off-site groundwater east of Neponset River (SH-27)	BW	Body Weight	15	kg	EPA, 1994	
			Off-site groundwater east of Neponset River (SH-28)						
			Off-facility groundwater Lot 208 / Lot 209						

Footnotes: NA = not applicable

Sources: EPA, 2004: Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.

EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002F.

EPA, 1995: EPA Region 1, Waste Management Division, Risk Update. August 1995, Number 3.

EPA, 1994: EPA Region 1, Waste Management Division, Risk Update. August 1994, Number 2, Attachment 2 and Attachment 3.

EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.8.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Dermal Contact in Excavation Trench)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Construction worker performing excavations	Adult	Groundwater:	CW	Chemical Concentration in Water (used to calculate DA-event)	See Table 3.8.RME	µg/L	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) =
			(1) East of South Street On-Facility	T(event)	Event Duration (used to calculate DA-event)	1	hr/event	Time spent in water in excavation trench; (2)	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
			(2) West of South Street On-Facility	DA-event	Absorbed Dose per event	chemical-specific	mg/cm^2-event	See Appendix H	See Appendix H for the equations used to calculate DA-event
			(3) West of South Street Off-Facility/Off-Site Groundwater Exposure Area	SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004 (Exhibit 3-5)	
				EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-5)	
				EF	Exposure Frequency	156	days/year	Six-month project; six days per week; (2)	
				ED	Exposure Duration	1	yrs	(2)	
				BW	Body Weight	70	kg	EPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	365	days	1 year	

Footnotes:
(1) COPC-specific exposure point concentrations
(2) Professional Judgement

Sources:
EPA, 2004: Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.
EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24

TABLE 4.8.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Dermal Contact in Excavation Trench)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Construction worker performing excavations	Adult	Groundwater:	CW	Chemical Concentration in Water (used to calculate DA-event)	See Table 3.8.CT	µg/L	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) =
			(1) East of South Street On-Facility	T(event)	Event Duration (used to calculate DA-event)	0.5	hr/event	Time spent in water in excavation trench; (2)	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
			(2) West of South Street On-Facility	DA-event	Absorbed Dose per event	chemical-specific	mg/cm^2-event	See Appendix H	See Appendix H for the equations used to calculate DA-event
			(3) West of South Street Off-Facility/Off-Site Groundwater Exposure Area	SA	Skin Surface Area Available for Contact	3,300	cm^2	EPA, 2004 (Exhibit 3-5)	
				EV	Event Frequency	1	events/day	EPA, 2004 (Exhibit 3-5)	
				EF	Exposure Frequency	78	days/year	Three-month project; six days per week; (2)	
				ED	Exposure Duration	1	yrs	(2)	
				BW	Body Weight	70	kg	EPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	365	days	1 year	

Footnotes:
(1) COPC-specific exposure point concentrations
(2) Professional Judgement

Sources:
EPA, 2004: Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.
EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24

TABLE 4.9.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Indoor air from subsurface vapor intrusion into buildings: (1) West of South Street On-Facility (2) West of South Street Off-Facility/Off-Site Groundwater Exposure Area	CA	Modeled Air Concentration	See Table 3.9.RME	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
				ET	Exposure Time	24	hr/day	95th percentile time spent indoors at residence per day; EPA, 1997 (Vol III: Table 15-131)	
				EF	Exposure Frequency	350	days/yr	EPA, 1994	
				ED	Exposure Duration	24	yrs	EPA, 1994	
				CF1	hours/day	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	EPA, 1994	
		Child	Indoor air from subsurface vapor intrusion into buildings: (1) West of South Street On-Facility (2) Lots South of the AOC (3) West of South Street Off-Facility/Off-Site Groundwater Exposure Area	CA	Modeled Air Concentration	See Table 3.9.RME	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
				ET	Exposure Time	24	hr/day	95th percentile time spent indoors at residence per day; 1-4 years old; EPA, 1997 (Vol III: Table 15-131)	
				EF	Exposure Frequency	350	days/yr	EPA, 1994	
				ED	Exposure Duration	6	yrs	EPA, 1994	
				CF1	hours/day	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	EPA, 1994	

TABLE 4.9.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Site Worker	Adult	Indoor air from subsurface vapor intrusion into buildings On-Facility:	CA	Modeled Air Concentration	See Table	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
			(1) West of South Street	ET	Exposure Time	12	hr/day	95th percentile time spent at work; EPA, 1997 (Vol III: Table 15-48)	
				EF	Exposure Frequency	250	days/yr	Industrial scenario; EPA, 2004 (Exhibit 3-5)	
				ED	Exposure Duration	25	yrs	non-residential outdoor worker; EPA, 2002	
				CF1	hours/day	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	non-residential outdoor worker; EPA, 2002	

Footnotes:

(1) COPC-specific exposure point concentrations

Sources:

EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24

EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.

EPA, 1994: EPA Region 1, Waste Management Division, Risk Update. August 1994, Number 2, Attachment 2 and Attachment 3.

EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.9.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Indoor air from subsurface vapor intrusion into buildings: (1) West of South Street On-Facility (2) West of South Street Off-Facility/Off-Site Groundwater Exposure Area	CA	Modeled Air Concentration	See Table 3.9.CT	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
				ET	Exposure Time	15	hr/day	50th percentile time spent indoors at residence per day; EPA, 1997 (Vol III: Table 15-131)	
				EF	Exposure Frequency	350	days/yr	EPA, 1994	
				ED	Exposure Duration	7	yrs	EPA, 1994	
				CF1	Conversion Factor	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	EPA, 1994	
		Child	Indoor air from subsurface vapor intrusion into buildings: (1) West of South Street On-Facility (2) West of South Street Off-Facility/Off-Site Groundwater Exposure Area	CA	Modeled Air Concentration	See Table 3.9.CT	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m^3) = CA x ET x EF x ED x 1/CF1 x 1/AT
				ET	Exposure Time	21	hr/day	50th percentile time spent indoors at residence per day; 1-4 years old; EPA, 1997 (Vol III: Table 15-131)	
				EF	Exposure Frequency	350	days/yr	EPA, 1994	
				ED	Exposure Duration	2	yrs	EPA, 1994	
				CF1	Conversion Factor	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	
	Site Worker	Adult	Indoor air from subsurface vapor intrusion into buildings On-Facility: (1) West of South Street	CA	Modeled Air Concentration	See Table 3.9.CT	mg/m^3	(1)	Chronic Daily Exposure (CDE) (mg/m3) = CA x ET x EF x ED x 1/CF1 x 1/AT
				ET	Exposure Time	8	hr/day	50th percentile time spent at work; EPA, 1997 (Vol III: Table 15-48)	
				EF	Exposure Frequency	219	days/yr	Industrial scenario; EPA, 2004 (Exhibit 3-5)	
				ED	Exposure Duration	9	yrs	(3)	
				CF1	Conversion Factor	24	hr/day	--	
				AT-C	Averaging Time (Cancer)	25,550	days	non-residential outdoor worker; EPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	9 years	

Footnotes:

(1) COPC-specific exposure point concentrations

(2) Professional Judgement

(3) Personal communication (Melissa Taylor of EPA Region I, 2000)

Sources:

EPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24

EPA, 1994: EPA Region 1, Waste Management Division, Risk Update. August 1994, Number 2, Attachment 2 and Attachment 3.

EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.

EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

TABLE 4.10.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Fisher	Adult	(1) Lewis Pond (2) Neponset River East of South Street (3) Neponset River West of South Street	CSED	Chemical Concentration in Sediment	See Table 3.10.RME	mg/kg	(1)	CDI (mg/kg-day) = CSED x IR-SED x FI x EF x ED x CF x 1/BW x 1/AT
				IR-SED	Ingestion Rate of Sediment	100	mg/day	Adult resident soil; EPA, 1994	
				FI	Fraction Ingested	1	unitless	(2)	
				EF	Exposure Frequency	65	days/year	Five (5) non-winter months and three (3) days/week; (2)	
				ED	Exposure Duration	24	years	(2)	
				CF	Conversion Factor	10^{-6}	kg/mg	--	
				BW	Body Weight	70	kg	EPA, 1997 (Vol I)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	24 years	
	Wader	Older Child	(1) Lewis Pond (2) Neponset River East of South Street (3) Neponset River West of South Street (4) Former Mill Tailrace	CSED	Chemical Concentration in Sediment	See Table 3.10.RME	mg/kg	(1)	CDI (mg/kg-day) = CSED x IR-SED x FI x EF x ED x CF x 1/BW x 1/AT
				IR-SED	Ingestion Rate of Sediment	100	mg/day	Adult resident soil; EPA, 1994	
				FI	Fraction Ingested	1	unitless	(2)	
				EF	Exposure Frequency	65	days/year	Five (5) non-winter months and three (3) days/week; (2)	
				ED	Exposure Duration	7	years	(2)	
				CF	Conversion Factor	10^{-6}	kg/mg	---	
				BW	Body Weight	37	kg	Mean for males and females age 7 14yrs; EPA, 1997 (Vol I: Table 7-3)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	7 years	
Dermal	Fisher	Adult	(1) Lewis Pond (2) Neponset River East of South Street (3) Neponset River West of South Street	CSED	Chemical Concentration in Sediment	See Table 3.10.RME	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where
				CF	Conversion Factor	10^{-6}	kg/mg	--	
				SA	Skin Surface Area Available for Contact	6,074	cm^2	50th percentile skin surface area for adult hands, forearms, lowerlegs, face, and feet; EPA, 2004 (Exhibit C-1)	
				AF	Soil Adherence Factor	0.07	mg/cm^2	Soil adherence factor for Adult Resident; EPA, 2004 (Exhibit 3-5)	DA event(mg/cm^2=event)= CSED x CF x SAF x ABS-d
				ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	Assumed	
				EF	Exposure Frequency	65	days/year	Five (5) non-winter months and three (3) days/week; (2)	
				ED	Exposure Duration	24	years	(2)	
				BW	Body Weight	70	kg	EPA, 1997 (Vol I)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	24 years	

TABLE 4.10.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Wader	Older Child	(1) Lewis Pond (2) Neponset River East of South Street (3) Neponset River West of South Street (4) Former Mill Tailrace	CSED	Chemical Concentration in Sediment	See Table 3.10.RME	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT where
				CF	Conversion Factor	10^{-6}	kg/mg	--	
				SA	Skin Surface Area Available for Contact	4,014	cm^2	50th percentile skin exposure for: face, hands, forearms, lower legs, and feet; age 7-14yrs; EPA, 2004 (Exhibit C-1)	
				AF	Soil Adherence Factor	0.2	mg/cm2-event	Soil adherence factor for Child Resident; EPA, 2004 (Exhibit 3-5)	DA event(mg/cm^2=event)= CSED x CF x SAF x ABS-d
				ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	Assumed	
				EF	Exposure Frequency	65	days/year	Five (5) non-winter months and three (3) days/week; (2)	
				ED	Exposure Duration	7	years	(2)	
				BW	Body Weight	37	kg	Mean for males and females age 7 14yrs; EPA, 1997 (Vol I: Table 7-3)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	7 years	

Footnotes:
(1) COPC-specific exposure point concentrations
(2) Professional Judgement
(3) Chemical -specific Dermal Absorption Efficiencies (Appendix J)

Sources:
EPA, 2004: Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.
EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.
EPA, 1994: EPA Region 1, Waste Management Division, Risk Update. August 1994, Number 2, Attachment 2 and Attachment 3.

TABLE 4.10.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Fisher	Adult	(1) Lewis Pond	CSED	Chemical Concentration in Sediment	See Table 3.10.CT	mg/kg	(1)	Chronic Daily Intake (CDI)
			(2) Neponset River East of South Street	IR-SED	Ingestion Rate of Sediment	50	mg/day	Adult resident soil; EPA, 1994	(mg/kg-day) = CSED x IR-SED x FI x EF x ED x CF x 1/BW x 1/AT
				FI	Fraction Ingested	1	unitless	(2)	
			(3) Neponset River West of South Street	EF	Exposure Frequency	15	days/year	Five (5) non-winter months and three (3) days per month; (2)	
				ED	Exposure Duration	7	years	EPA, 1994	
				CF	Conversion Factor	1.00E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA, 1997 (Vol I)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	7 years	
	Wader	Older Child	(1) Lewis Pond	CSED	Chemical Concentration in Sediment	See Table 3.10.CT	mg/kg	(1)	Chronic Daily Intake (CDI)
			(2) Neponset River East of South Street	IR-S	Ingestion Rate of Sediment	50	mg/day	Adult resident soil; EPA, 1994	(mg/kg-day) = CSED x IR-SED x FI x EF x ED x CF x 1/BW x 1/AT
			(3) Neponset River West of South Street	CF1	Conversion Factor	10-6	kg/mg	--	
			(4) Former Mill Tailrace	FI	Fraction Ingested	1	unitless	(2)	
				EF	Exposure Frequency	15	days/yr	Five (5) non-winter months and three (3) days per month; (2)	
				ED	Exposure Duration	2	yrs	EPA, 1994	
				BW	Body Weight	37	kg	Mean for males and females age 7-14yrs; EPA, 1997 (Vol I: Table 7-3)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	730	days	2 years	
Dermal	Fisher	Adult	(1) Lewis Pond	CSED	Chemical Concentration in Sediment	See Table 3.10.CT	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT
				CF	Conversion Factor	1.00E-06	kg/mg	--	
			(2) Neponset River East of South Street (3) Neponset River West of South Street	SA	Skin Surface Area Available for Contact	6,074	cm^2	50th percentile skin surface area for adult hands, forearms, lowerlegs, face, and feet; EPA, 2004 (Exhibit C-1)	where (DA-event) (mg/cm2-event) = CSED x CF x SAF x ABS-d
				AF	Soil Adherence Factor	0.01	mg/cm^2	Soil adherence factor for Adult Resident; EPA, 2004 (Exhibit 3-5)	
				ABS-d	Dermal Absorption Fraction	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	Assumed	
				EF	Exposure Frequency	15	days/year	Five (5) non-winter months and three (3) days per month; (2)	
				ED	Exposure Duration	7	years	EPA, 1994	
				BW	Body Weight	70	kg	EPA, 1997 (Vol I)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	7 years	

TABLE 4.10.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Wader	Older Child	(1) Lewis Pond	CSED	Chemical Concentration in Sediment	See Table 3.10.CT	mg/kg	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW x 1/AT
			(2) Neponset River East of South Street	CF1	Conversion Factor	10-6	kg/mg	--	
			(3) Neponset River West of South Street (4) Former Mill Tailrace	SA	Skin Surface Area Available for Contact	4,014	cm^2	50th percentile skin exposure for: face, hands, forearms, lower legs, and feet; age 7-14yrs; EPA, 2004 (Exhibit C-1)	where DA-event) (mg/cm2-event) = CSED x CF x SAF x ABS-d
				AF	Soil Adherence Factor	0.04	mg/cm^2	Soil adherence factor for Child Resident; EPA, 2004 (Exhibit 3-5)	
				ABS-d	Dermal Absorption Fraction Absorption Factor	(3)	unitless	EPA, 2004	
				EV	Event Frequency	1	events/day	Assumed	
				EF	Exposure Frequency	15	days/yr	Five (5) non-winter months and three (3) days per month; (2)	
				ED	Exposure Duration	2	yrs	EPA, 1994	
				BW	Body Weight	37	kg	Mean for males and females age 7-14yrs; EPA, 1997 (Vol I: Table 7-3)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	730	days	2 years	

Footnotes:
(1) COPC-specific exposure point concentrations
(2) Professional Judgement
(3) Chemical -specific Dermal Absorption Efficiencies (Appendix J)

Sources:
EPA, 2004: Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.
EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.
EPA, 1994: EPA Region 1, Waste Management Division, Risk Update. August 1994, Number 2, Attachment 2 and Attachment 3.

TABLE 4.11.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Fisher	Adult	(1) Neponset River East of South Street (2) Neponset River West of South Street	CW	Chemical Concentration in Water (used to calculate DA-event)	See Table 3.11.RME	mg/L	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) =
				T(event)	Event Duration (used to calculate DA-event)	1	hr/event	(3)	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				DA-event	Absorbed Dose per event	chemical-specific	mg/cm^2-event	See Appendix H	See Appendix H for the equations used to calculate DA-event
				SA	Skin Surface Area Available for Contact	6,074	cm^2	50th percentile skin surface area for adult hands, forearms, lowerlegs, face, and feet; EPA, 2004 (Exhibit C-1)	
				EV	Event Frequency	1	events/day	(3)	
				EF	Exposure Frequency	65	days/year	Five (5) non-winter months and three (3) days/week; (3)	
				ED	Exposure Duration	24	years	(3)	
				BW	Body Weight	70	kg	EPA, 1997 (Vol I)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	24 years	
	Wader	Older Child	(1) Neponset River East of South Street (2) Neponset River West of South Street (3) Former Mill Tailrace	CW	Chemical Concentration in Water (used to calculate DA-event)	See Table 3.11.RME	mg/L	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) =
				T(event)	Event Duration (used to calculate DA-event)	1	hr/event	(3)	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				DA-event	Absorbed Dose per event	chemical-specific	mg/cm^2-event	See Appendix H	See Appendix H for the equations used to calculate DA-event
				SA	Skin Surface Area Available for Contact	4,014	cm^2	50th percentile skin exposure for: face, hands, forearms, lower legs, and feet; age 7-14yrs; EPA, 2004 (Exhibit C-1)	
				EV	Event Frequency	1	events/day	(3)	
				EF	Exposure Frequency	65	days/year	Five (5) non-winter months and three (3) days/week; (3)	
				ED	Exposure Duration	7	years	(3)	
				BW	Body Weight	37	kg	Mean for males and females age 7-14yrs; EPA, 1997 (Vol I: Table 7-3)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	7 years	

Footnotes:
(1) COPC-specific exposure point concentrations
(2) Chemical-Specific Permeability Coefficient. See Dermal Worksheet in Appendix J.
(3) Professional Judgement

Sources:
EPA, 2004: Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.
EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.

TABLE 4.11.CT

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Blackburn and Union Privileges Site

Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Fisher	Adult	(1) Neponset River East of South Street	CW	Chemical Concentration in Water (used to calculate DA-event)	See Table 3.11.CT	mg/L	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) =
			(2) Neponset River West of South Street	T(event)	Event Duration (used to calculate DA-event)	1	hr/event	(3)	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
				DA-event	Absorbed Dose per event	chemical-specific	mg/cm^2-event	See Appendix H	See Appendix H for the equations used to calculate DA-event
				SA	Skin Surface Area Available for Contact	6,074	cm^2	50th percentile skin surface area for adult hands, forearms, lowerlegs, face, and feet; EPA, 2004 (Exhibit C-1)	
				EV	Event Frequency	1	events/day	(3)	
				EF	Exposure Frequency	15	days/year	Five (5) non-winter months and three (3) days per month; (3)	
				ED	Exposure Duration	7	years	EPA, 1994	
				BW	Body Weight	70	kg	EPA, 1997 (Vol I)	
				AT-C	Averaging Time (Cancer)	25,550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	2,555	days	EPA, 1994	
	Wader	Older Child	(1) Neponset River East of South Street	CW	Chemical Concentration in Water (used to calculate DA-event)	See Table 3.11.CT	mg/L	(1)	Dermal Absorbed Dose (DAD) (mg/kg-day) =
			(2) Neponset River West of South Street	T(event)	Event Duration (used to calculate DA-event)	1	hr/event	(3)	DA-event x SA x EV x EF x ED x 1/BW x 1/AT
			(3) Former Mill Tailrace	DA-event	Absorbed Dose per event	chemical-specific	mg/cm^2-event	See Appendix H	See Appendix H for the equations used to calculate DA-event
				SA	Skin Surface Area Available for Contact	4,014	cm^2	50th percentile skin exposure for: face, hands, forearms, lower legs, and feet; age 7-14yrs; EPA, 2004 (Exhibit C-1)	
				EV	Event Frequency	1	events/day	(3)	
				EF	Exposure Frequency	15	days/yr	Five (5) non-winter months and three (3) days per month; (3)	
				ED	Exposure Duration	2	yrs	EPA, 1994	
				BW	Body Weight	37	kg	Mean for males and females age 7-14yrs; EPA, 1997 (Vol I: Table 7-3)	
				AT-C	Averaging Time (Cancer)	25550	days	70-year lifetime	
				AT-N	Averaging Time (Non-Cancer)	730	days	EPA, 1994	

Footnotes:

(1) COPC-specific exposure point concentrations

(2) Chemical-Specific Permeability Coefficient. See Dermal Worksheet in Appendix J.

(3) Professional Judgement

Sources:

EPA, 2004: Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.
EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fc.
EPA, 1994: EPA Region 1, Waste Management Division, Risk Updates. August 1994, Number 2, Attachment 2 and Attachment 3.

Table 4.12.RME
Values Used for Daily Intake Equations
Reasonable Maximum Exposure
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Tissue

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Fisher	Adult	Fish from: (1) Lewis Pond (2) Neponset River	CF	Chemical Concentration in Fish	See Table 3.12.RME	mg/kg	(1)	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR-F x FI x EF x ED x 1/BW x 1/AT
				IR-F	Ingestion Rate of Fish	0.013	kg/meal	95th percentile adult fish ingestion rate for freshwater anglers in Maine from Ebert et al. (1992) as referenced in EPA, 1997 (Vol II: Table 10-84)	
				FI	Fraction Ingested from Contaminated Source	1	unitless	(2)	
				EF	Exposure Frequency	365	meals/year	EPA, 1997 (Vol II)	
				ED	Exposure Duration	24	years	(2)	
				BW	Body Weight	70	kg	EPA, 1997 (Vol I)	
				AT-C	Averaging Time - Cancer	25,550	days	70-year lifetime	
				AT-N	Averaging Time - Non-Cancer	8,760	days	24 years	
	Fish Consumer	Child	Fish from: (1) Lewis Pond (2) Neponset River	CF	Chemical Concentration in Fish	See Table 3.12.RME	mg/kg	(1)	CDI (mg/kg-day) = CS x IR-F x FI x EF x ED x 1/BW x 1/AT
				IR-F	Ingestion Rate of Fish	0.0065	kg/meal	50% of adult ingestion rate (Pao et al., 1982)	
				FI	Fraction Ingested from Contaminated Source	1	unitless	(2)	
				EF	Exposure Frequency	365	meals/year	EPA, 1997 (Vol II)	
				ED	Exposure Duration	6	years	(2)	
				BW	Body Weight	15	kg	EPA, 1997 (Vol I)	
				AT-C	Averaging Time - Cancer	25,550	days	70-year lifetime	
				AT-N	Averaging Time - Non-Cancer	2,190	days	6 years	

Footnotes: (1) COPC-Specific exposure point concentrations.
(2) Professional Judgement

Sources: EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.
Pao, E. M., K. H. Fleming, P. M. Guenther, and S.J. Mickle. 1982. Foods commonly eaten by individuals: Amount per day and per eating occasion. Home Economics Research Report Number 44. U.S. Department of Agriculture, Hyattsville, MD.

Table 4.12.CT
Values Used for Daily Intake Equations
Central Tendency
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Tissue

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Fisher	Adult	Fish from: (1) Lewis Pond (2) Neponset River	CF	Chemical Concentration in Fish	See Table 3.12.CT	mg/kg	(1)	Chronic Daily Intake (CDI) (mg/kg-day) = CF x IR-F x FI x EF x ED x 1/BW x 1/AT
				IR-F	Ingestion Rate of Fish	0.005	kg/meal	Mean adult fish ingestion rate for freshwater anglers in Maine from Ebert et al. (1992) as referenced in EPA, 1997 (Vol II: Table 10-84)	
				FI	Fraction Ingested from Contaminated Source	1	unitless	(2)	
				EF	Exposure Frequency	365	meals/year	EPA, 1997 (Vol II)	
				ED	Exposure Duration	7	years	EPA, 1994	
				BW	Body Weight	70	kg	EPA, 1997 (Vol I)	
				AT-C	Averaging Time - Cancer	25,550	days	70-year lifetime	
				AT-N	Averaging Time - Non-Cancer	2,555	days	EPA, 1994	
	Fish Consumer	Child	Fish from: (1) Lewis Pond (2) Neponset River	CF	Chemical Concentration in Fish	See Table 3.12.CT	mg/kg	(1)	Chronic Daily Intake (CDI) (mg/kg-day) = CF x IR-F x FI x EF x ED x 1/BW x 1/AT
				IR-F	Ingestion Rate of Fish	0.0025	kg/meal	50% of adult ingestion rate (Pao et al., 1982)	
				FI	Fraction Ingested from Contaminated Source	1	unitless	(2)	
				EF	Exposure Frequency	365	meals/year	EPA, 1997 (Vol II)	
				ED	Exposure Duration	2	years	EPA, 1994	
				BW	Body Weight	15	kg	EPA, 1997 (Vol I)	
				AT-C	Averaging Time - Cancer	25,550	days	70-year lifetime	
				AT-N	Averaging Time - Non-Cancer	730	days	EPA, 1994	

Footnotes:
(1) COPC-specific exposure point concentrations
(2) Professional Judgement

Sources:
EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.
EPA, 1994: EPA Region 1, Waste Management Division, Risk Updates. August 1994, Number 2, Attachment 2 and Attachment 3.
Pao, E. M., K. H. Fleming, P. M. Guenther, and S.J. Mickle. 1982. Foods commonly eaten by individuals: Amount per day and per eating occasion. Home Economics Research Report Number 44. U.S. Department of Agriculture, Hyattsville, MD.

APPENDIX H
Dermal Worksheet

DERMAL WORKSHEET
INTERMEDIATE VARIABLES FOR CALCULATING DA-event[1]
Blackburn and Union Privileges Site
Walpole, Massachusetts

Chemical of Potential Concern	Media [2]	Dermal Absorption Fraction (soil) [3]	FA	K_p		T(event)		Tau		T*		B
			Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
Inorganics												
Antimony	Water	-	-	1.0E-03	cm/hour	-	-	-	-	-	-	-
Arsenic	Soil/Sediment/Water	3.0E-02	-	1.0E-03	cm/hour	-	-	-	-	-	-	-
Barium	Water	-	-	1.0E-03	cm/hour	-	-	-	-	-	-	-
Cadmium	Sediment/Water	1.0E-03	-	1.0E-03	cm/hour	-	-	-	-	-	-	-
Chromium	Water	-	-	2.0E-03	cm/hour	-	-	-	-	-	-	-
Cyanide	Water	-	-	1.0E-03	cm/hour	-	-	-	-	-	-	-
Manganese	Water	-	-	1.0E-03	cm/hour	-	-	-	-	-	-	-
Nickel	Water	-	-	2.0E-04	cm/hour	-	-	-	-	-	-	-
Selenium	Water	-	-	1.0E-03	cm/hour	-	-	-	-	-	-	-
Thallium	Water	-	-	1.0E-03	cm/hour	-	-	-	-	-	-	-
Vanadium	Water	-	-	1.0E-03	cm/hour	-	-	-	-	-	-	-
Zinc	Water	-	-	6.0E-04	cm/hour	-	-	-	-	-	-	-
Volatile Organic Compounds (VOCs)												
Benzene	Water	-	1	1.5E-02	cm/hour	-	-	0.29	hr/day	0.70	hr	0.1
Carbazole	Water	-	1	4.3E-02	cm/hour	-	-	0.91	hr/day	2.18	hr	0.2
Ethylbenzene	Water	-	1	4.9E-02	cm/hour	-	-	0.42	hr/day	1.01	hr	0.2
2-Hexanone	Water	-	1	3.5E-03	cm/hour	-	-	0.38	hr/day	0.92	hr	0.0
Methylphenol (4-)	Water	-	1	7.7E-03	cm/hour	-	-	0.43	hr/day	1.03	hr	0.0
Methyl tert-butyl ether (MTBE)	Water	-	1	3.3E-03	cm/hour	-	-	0.33	hr/day	0.79	hr	0.0
Styrene	Water	-	1	3.7E-02	cm/hour	-	-	0.41	hr/day	0.98	hr	0.1
Toluene	Water	-	1	3.1E-02	cm/hour	-	-	0.35	hr/day	0.84	hr	0.1
Trichloroethene	Water	-	1	1.2E-02	cm/hour	-	-	0.58	hr/day	1.39	hr	0.1
Xylene (m,p-)	Water	-	1	5.3E-02	cm/hour	-	-	0.42	hr/day	1.01	hr	0.2
Semivolatile Organic Compounds (SVOCs)												
Acenaphthene	Water	-	1	8.4E-02	cm/hour	-	-	0.77	hr/day	1.84	hr	0.4
Acenaphthylene	Water	-	1	1.1E-01	cm/hour	-	-	0.75	hr/day	1.79	hr	0.5
Anthracene	Soil	1.3E-01	-	-	-	-	-	-	-	-	-	-
Benz(a)anthracene	Soil/Sediment/Water	1.3E-01	1	4.7E-01	cm/hour	-	-	2.03	hr/day	8.53	hr	2.8
Benzo(a)pyrene	Soil/Sediment/Water	1.3E-01	1	7.0E-01	cm/hour	-	-	2.69	hr/day	11.67	hr	4.3
Benzo(b)fluoranthene	Soil/Sediment/Water	1.3E-01	1	7.0E-01	cm/hour	-	-	2.77	hr/day	12.03	hr	4.3
Benzo(k)fluoranthene	Soil	1.3E-01	-	-	-	-	-	-	-	-	-	-
bis(2-ethylhexyl)phthalate	Water	-	0.9	2.5E-02	cm/hour	-	-	16.64	hr/day	39.93	hr	0.2
Chrysene	Soil/Sediment	1.3E-01	-	-	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	Soil/Sediment/Water	1.3E-01	0.6	1.5E+00	cm/hour	-	-	3.88	hr/day	17.57	hr	9.7
Fluorene	Water	-	1	1.1E-01	cm/hour	-	-	0.90	hr/day	2.15	hr	0.6
Indeno(1,2,3-cd)pyrene	Soil/Sediment/Water	1.3E-01	0.6	1.0E+00	cm/hour	-	-	3.78	hr/day	16.83	hr	6.7
Methylnaphthalene (2-)	Soil/Water	1.3E-01	1	8.9E-02	cm/hour	-	-	0.66	hr/day	1.58	hr	0.4
Naphthalene	Soil/Water	1.3E-01	1	4.7E-02	cm/hour	-	-	0.56	hr/day	1.34	hr	0.2
Phenanthrene	Soil/Sediment	1.3E-01	-	-	-	-	-	-	-	-	-	-
Pyrene	Soil/Water	1.3E-01	1	2.8E-01	cm/hour	-	-	1.43	hr/day	5.66	hr	1.5

DERMAL WORKSHEET
INTERMEDIATE VARIABLES FOR CALCULATING DA-event[(1)]
Blackburn and Union Privileges Site
Walpole, Massachusetts

Reference: United States Environmental Protection Agency (USEPA), 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. OSWER. EPA/540/R/99/005.

[(1)] DA-event for inorganics = K_p x CW x CF1 x CF2 x T(event)

DA-event for organics, if T(event) ≤ T* = 2 x FA x K_p x CW x CF1 x CF2 x $\sqrt{[(6 \times Tau \times T(event))/\pi]}$

DA-event for organics, if T(event) > T* = FA x K_p x CW x CF1 x CF2 x $\{[T(event)/(1 + B)] + [2 \times Tau \times ((1 + 3B + 3B^2)/(1+B)^2)]\}$

Where:

FA = Fraction Absorbed Water

K_p = Dermal Permeability Coefficient of Chemical in Water (cm/hr)

CW = Chemical Concentration in Water (ug/L or mg/L). Values are exposure scenario-specific. See Table 4s in Appendix G.

CF1 = Conversion Factor (0.001 mg/ug) [Needed for groundwater dose equation only because concentration in water is ug/L.]

CF2 = Conversion Factor (0.001 L/cm^3)

T(event) = Event Duration (t_{event}) (hr/event). Values are exposure scenario-specific. See Table 4s in Appendix G.

Tau = Lag Time per event (τ_{event}) (hr/event)

T* = Time to Reach Steady-State (t*) (hr) = 2.4 x Tau

B = Dimensionless Ratio of the Permeability Coefficient of a Chemical Through the Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermis

[(2)] Values for water are used in both the groundwater and surface water dose equations.

[(3)] Applied soil dermal absorption factors for sediment.

APPENDIX I
IEUBK and Adult Lead Model, Lead Worksheets

TABLE I1.1a
RAGS D IEUBK LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Child Resident at Lot 257, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	566	mg/kg	NA	400	mg/kg	EPA Region IX Residential Soil PRG

2. Lead Model Questions

Question	Response
What lead model (version and date) was used?	Version 1.0 Build 261 (used August 2005)
Where are the input values located in the risk assessment report?	Located in Appendix F
What range of media concentrations were used for the model?	470 – 657 mg/kg
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	The arithmetic mean lead exposure point concentration (EPC) of 566 mg/kg was entered to determine the blood lead levels of the child resident. (Tabulated data can be found in the Draft Remedial Investigation Report (SHA, 2005))
Was soil sample taken from top 2 cm? If not, why?	The current child resident is evaluated using data from the 0-1 foot soil interval.
Was soil sample sieved? What size screen was used? If not sieved, provide rationale.	Not Applicable
What was the point of exposure/ location?	Residential exposure at Lot 257
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I1.1b)
Was the model run using default values only?	Yes
Was the default soil bioavailability used?	Yes
Was the default soil ingestion rate used?	Yes
If non-default values were used, where are the rationales for the values located in the risk assessment report?	Updated FDA dietary lead intake values are used.

3. Final Result

Medium	Result	Comment/RBRG [1]
Soil	Input value of 566 mg/kg in soil results in 13.40% probability of a child resident's blood lead concentration exceeding 10 ug/dL. Geometric mean blood lead = 5.941 ug/dL. This exceeds the blood lead goal as described in the 1994 OSWER Directive of no more than 5% probability of a child's blood lead concentration exceeding 10 ug/dL blood lead.	Based on site conditions, a PRG of 400 (mg/kg) is indicated for soil.

Table I1.1b

IEUBK Lead Model Results for the Child Resident at Lot 257

LEAD MODEL FOR WINDOWS Version 1.0

==========

Model Version: 1.0 Build 261
Site Name: Blackburn & Union Privileges Site
Run Mode: Research

==========

The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	3.160
1-2	2.600
2-3	2.870
3-4	2.740
4-5	2.610
5-6	2.740
6-7	2.990

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200

1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 ug Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 406.200 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	566.000	406.200
1-2	566.000	406.200
2-3	566.000	406.200
3-4	566.000	406.200
4-5	566.000	406.200
5-6	566.000	406.200
6-7	566.000	406.200

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

****

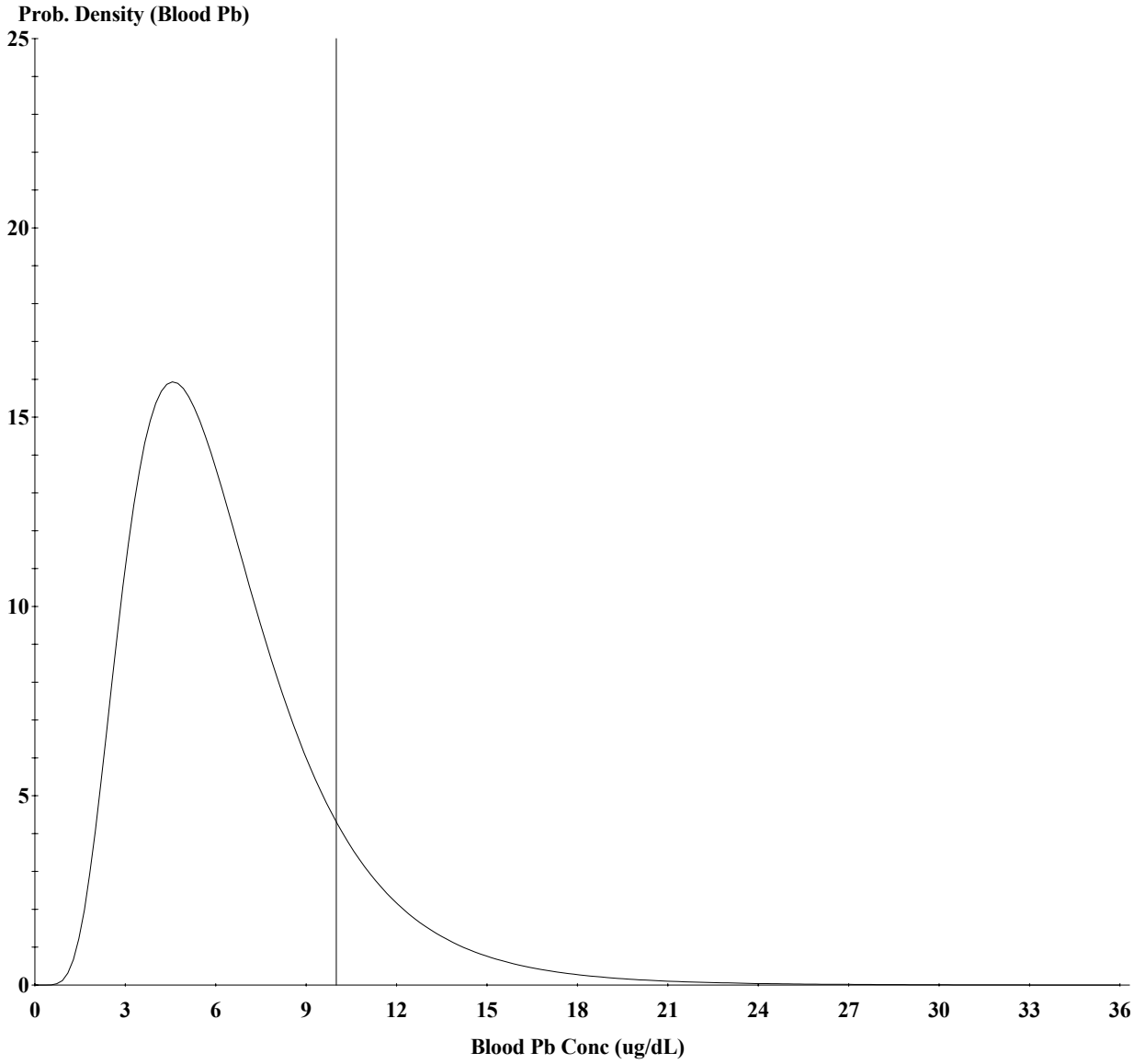
IEUBK Lead Model Results for the Child Resident at Lot 257

CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (ug/day)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	1.371	0.000	0.347
1-2	0.034	1.103	0.000	0.848
2-3	0.062	1.243	0.000	0.901
3-4	0.067	1.210	0.000	0.936
4-5	0.067	1.199	0.000	1.010
5-6	0.093	1.277	0.000	1.081
6-7	0.093	1.404	0.000	1.108

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	10.576	12.314	6.6
1-2	16.429	18.415	7.5
2-3	16.778	18.985	7.0
3-4	17.103	19.316	6.7
4-5	13.175	15.450	5.5
5-6	12.032	14.484	4.6
6-7	11.453	14.059	4.1

IEUBK Lead Model Results for the Child Resident at Lot 257



Cutoff = 10.000 ug/dl
Geo Mean = 5.941
GSD = 1.600
% Above = 13.395
% Below = 86.605

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Research

TABLE I1.2a
RAGS D IEUBK LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Future Child Resident at Off-Facility Groundwater Lot 208/209, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Water	36	ug/L	NA	15	ug/L	Recommended Drinking Water Action Level

2. Lead Model Questions

Question	Response
What lead model (version and date) was used?	Version 1.0 Build 261 (used August 2005)
Where are the input values located in the risk assessment report?	Located in Appendix F
What range of media concentrations were used for the model?	1.1 – 170 ug/L
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	The arithmetic mean lead exposure point concentration (EPC) of 36 ug/L was entered to determine the blood lead levels of the child resident. (Tabulated data can be found in the Draft Remedial Investigation Report (SHA, 2005))
Was soil sample taken from top 2 cm? If not, why?	Not Applicable
Was soil sample sieved? What size screen was used? If not sieved, provide rationale.	Not Applicable
What was the point of exposure/ location?	Residential exposure at Off-Facility Groundwater Lot 208/209
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I1.3b)
Was the model run using default values only?	Yes
Was the default soil bioavailability used?	Yes
Was the default soil ingestion rate used?	Yes
If non-default values were used, where are the rationales for the values located in the risk assessment report?	Updated FDA dietary lead intake values are used.

3. Final Result

Medium	Result	Comment/RBRG [1]
Groundwater	Input value of 36 ug/L in soil results in 8.08% probability of a child resident's blood lead concentration exceeding 10 ug/dL. Geometric mean blood lead = 5.180 ug/dL. This exceeds the blood lead goal as described in the 1994 OSWER Directive of no more than 5% probability of a child's blood lead concentration exceeding 10 ug/dL blood lead.	None

Table I1.2b

IEUBK Lead Model Results for the Future Child Resident at Off-Facility Groundwater Lot 208/209

LEAD MODEL FOR WINDOWS Version 1.0

==========

Model Version: 1.0 Build 261
Site Name: Blackburn & Union Privileges Site
Run Mode: Research

==========

The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	3.190
1-2	2.600
2-3	2.870
3-4	2.740
4-5	2.610
5-6	2.740
6-7	2.990

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)

.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 36.000 ug Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 150.000 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	200.000	150.000
1-2	200.000	150.000
2-3	200.000	150.000
3-4	200.000	150.000
4-5	200.000	150.000
5-6	200.000	150.000
6-7	200.000	150.000

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

****

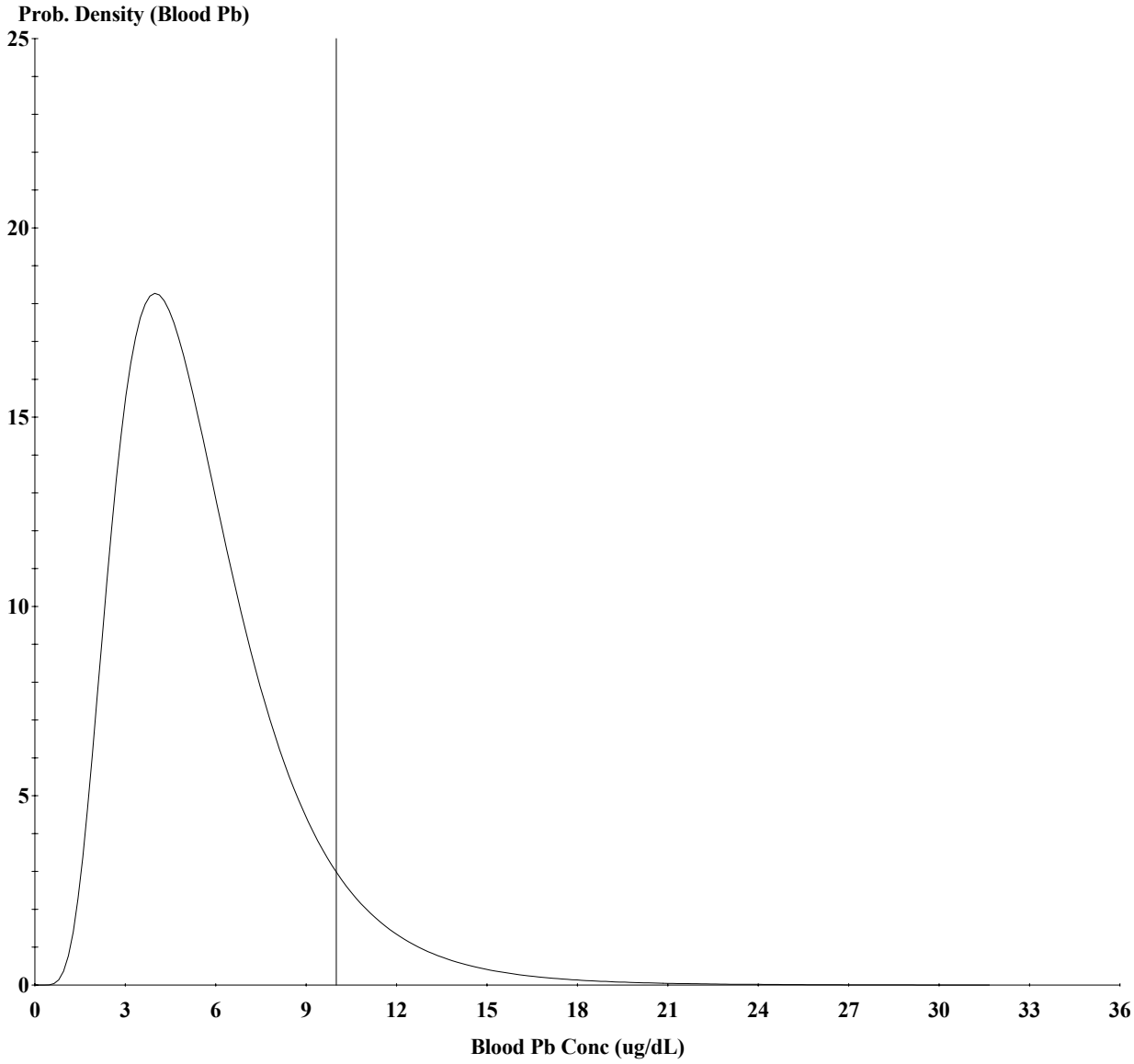
IEUBK Lead Model Results for the Future Child Resident at Off-Facility Groundwater Lot 208/209

CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (ug/day)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	1.444	0.000	3.259
1-2	0.034	1.137	0.000	7.868
2-3	0.062	1.274	0.000	8.310
3-4	0.067	1.235	0.000	8.601
4-5	0.067	1.201	0.000	9.109
5-6	0.093	1.271	0.000	9.688
6-7	0.093	1.395	0.000	9.911

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	3.981	8.705	4.7
1-2	6.108	15.147	6.1
2-3	6.202	15.848	5.9
3-4	6.298	16.201	5.6
4-5	4.762	15.138	5.1
5-6	4.322	15.374	4.7
6-7	4.105	15.504	4.4

IEUBK Lead Model Results for the Future Child Resident at Off-Facility Groundwater Lot 208/209



Cutoff = 10.000 ug/dl
Geo Mean = 5.180
GSD = 1.600
% Above = 8.083
% Below = 91.917

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Research

TABLE I1.3a
RAGS D IEUBK LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Future Child Resident for On-Site Groundwater, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Water	21	ug/L	NA	15	ug/L	Recommended Drinking Water Action Level

2. Lead Model Questions

Question	Response
What lead model (version and date) was used?	Version 1.0 Build 262 (used December 2005)
Where are the input values located in the risk assessment report?	Located in Appendix F
What range of media concentrations were used for the model?	.36 – 575 ug/L
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	The arithmetic mean lead exposure point concentration (EPC) of 21 ug/L was entered to determine the blood lead levels of the child resident. (Tabulated data can be found in the Draft Remedial Investigation Report (SHA, 2005))
Was soil sample taken from top 2 cm? If not, why?	Not Applicable
Was soil sample sieved? What size screen was used? If not sieved, provide rationale.	Not Applicable
What was the point of exposure/ location?	Residential exposure at On-Site Groundwater exposure point
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I1.4b)
Was the model run using default values only?	Yes
Was the default soil bioavailability used?	Yes
Was the default soil ingestion rate used?	Yes
If non-default values were used, where are the rationales for the values located in the risk assessment report?	Updated FDA dietary lead intake values are used.

3. Final Result

Medium	Result	Comment/RBRG [1]
Groundwater	Input value of 21 ug/L in groundwater results in 3.01% probability of a child resident's blood lead concentration exceeding 10 ug/dL. Geometric mean blood lead = 4.133 ug/dL. This does not exceed the blood lead goal as described in the 1994 OSWER Directive of no more than 5% probability of a child's blood lead concentration exceeding 10 ug/dL blood lead.	None

Table I1.3b

IEUBK Lead Model Results for the Future Child Resident at the On-Site Groundwater Exposure Point

LEAD MODEL FOR WINDOWS Version 1.0

==========

Model Version: 1.0 Build 262
Site Name: Blackburn & Union Privileges Site
Run Mode: Research

==========

The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	3.160
1-2	2.600
2-3	2.870
3-4	2.740
4-5	2.610
5-6	2.740
6-7	2.990

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)

IEUBK Lead Model Results for the Future Child Resident at the On-Site Groundwater Exposure Point

.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 21.000 ug Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 150.000 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	200.000	150.000
1-2	200.000	150.000
2-3	200.000	150.000
3-4	200.000	150.000
4-5	200.000	150.000
5-6	200.000	150.000
6-7	200.000	150.000

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

****

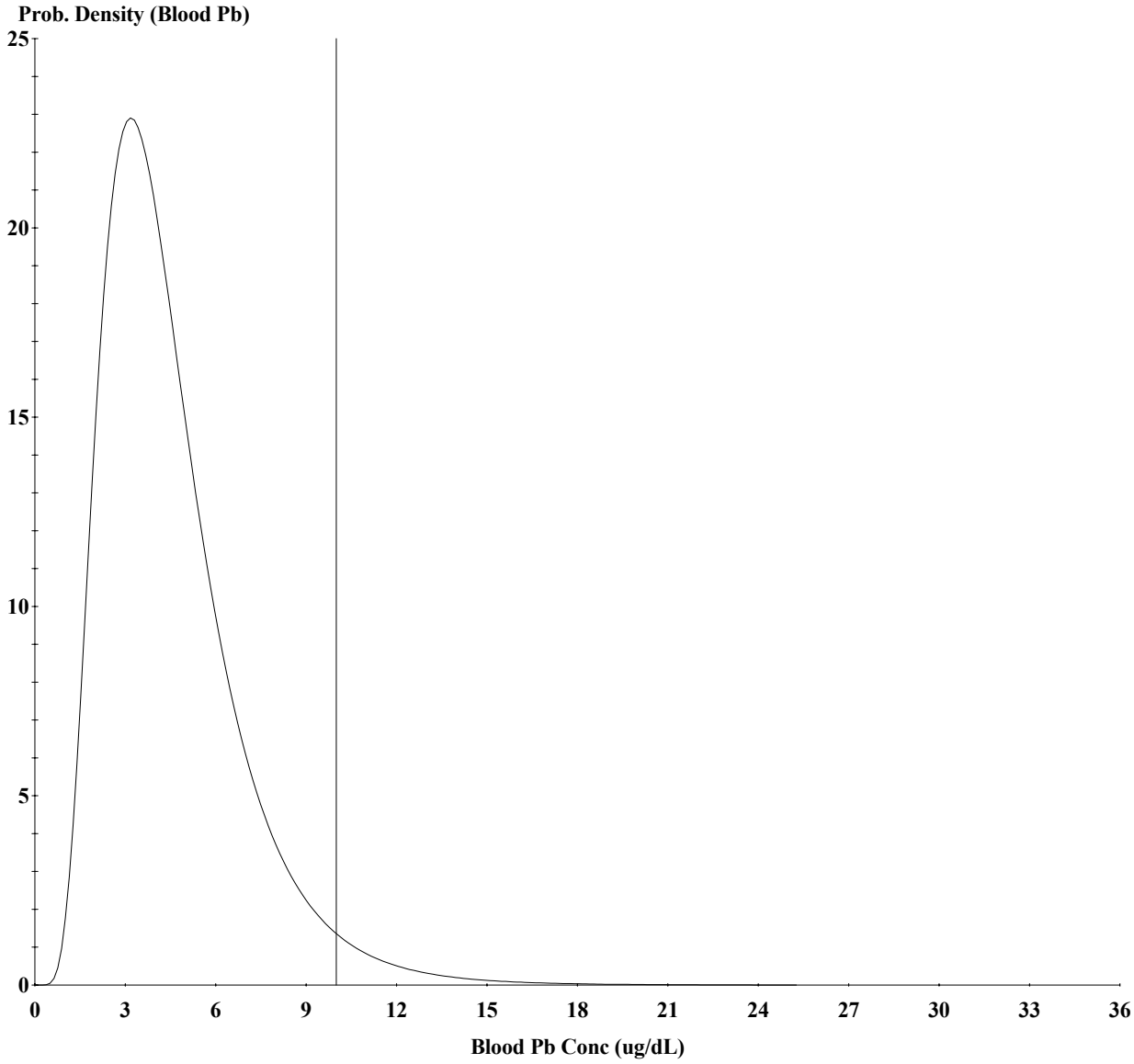
IEUBK Lead Model Results for the Future Child Resident at the On-Site Groundwater Exposure Point

CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (ug/day)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	1.451	0.000	1.929
1-2	0.034	1.167	0.000	4.715
2-3	0.062	1.305	0.000	4.967
3-4	0.067	1.262	0.000	5.127
4-5	0.067	1.225	0.000	5.421
5-6	0.093	1.296	0.000	5.759
6-7	0.093	1.420	0.000	5.885

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	4.041	7.442	4.0
1-2	6.274	12.190	5.0
2-3	6.355	12.689	4.7
3-4	6.436	12.892	4.5
4-5	4.858	11.570	4.0
5-6	4.405	11.553	3.6
6-7	4.179	11.578	3.3

IEUBK Lead Model Results for the Future Child Resident at the On-Site Groundwater Exposure Point



Cutoff = 10.000 ug/dl
Geo Mean = 4.133
GSD = 1.600
% Above = 3.006
% Below = 96.994

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Research

TABLE I1.4a
RAGS D IEUBK LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Child Fish Consumer at Lewis Pond, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Fish	0.223	mg/kg	Mean Detected Concentration	NA	mg/kg	No Screening Value Available

2. Lead Model Questions

Question	Response
What lead model (version and date) was used?	Version 1.0 Build 261 (used April 2005)
Where are the input values located in the risk assessment report?	Located in Appendix F
What range of media concentrations were used for the model?	0.063 – 0.48 mg/kg
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	The arithmetic mean lead exposure point concentration (EPC) of 0.223 mg/kg was entered to determine the blood lead levels of the child fish consumer. (Tabulated data can be found in the Draft Remedial Investigation Report (SHA, 2005))
Was soil sample taken from top 2 cm? If not, why?	Not Applicable
Was soil sample sieved? What size screen was used? If not sieved, provide rationale.	Not Applicable
What was the point of exposure/ location?	Lewis Pond
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I1.5b)
Was the model run using default values only?	Yes
Was the default soil bioavailability used?	Not Applicable
Was the default soil ingestion rate used?	Not Applicable
If non-default values were used, where are the rationales for the values located in the risk assessment report?	Updated FDA dietary lead intake values are used.

3. Final Result

Medium	Result	Comment/RBRG [1]
Fish	Input value of 0.223 mg/kg in fish results in 0.496% probability of a child resident's blood lead concentration exceeding 10 ug/dL. Geometric mean blood lead = 2.976 ug/dL. This does not exceed the blood lead goal as described in the 1994 OSWER Directive of no more than 5% probability of a child's blood lead concentration exceeding 10 ug/dL blood lead.	None

Table I1.4b

IEUBK Lead Model Results for the Child Resident Consuming Fish from Lewis Pond

IEUBK LEAD MODEL FOR WINDOWS Version 1.0

==========

Model Version: 1.0 Build 261
Site Name: Blackburn and Union Privileges Site
Run Mode: Research

==========

The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	3.720
1-2	3.160
2-3	3.430
3-4	3.300
4-5	3.170
5-6	3.300
6-7	3.550

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500

2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 ug Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 150.000 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	200.000	150.000
1-2	200.000	150.000
2-3	200.000	150.000
3-4	200.000	150.000
4-5	200.000	150.000
5-6	200.000	150.000
6-7	200.000	150.000

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

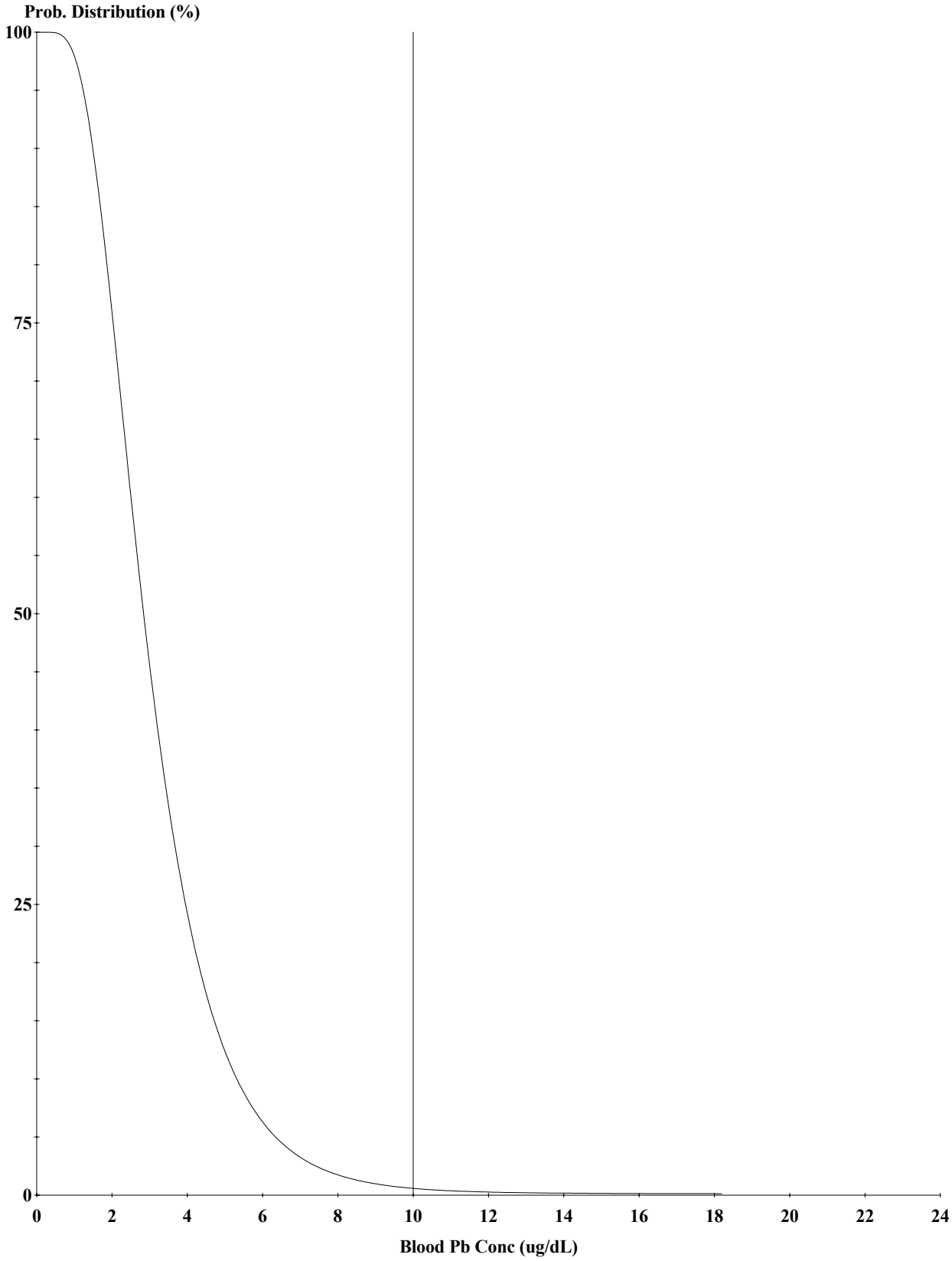
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

IEUBK Lead Model Results for the Child Resident Consuming Fish from Lewis Pond

Year	Air (ug/day)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	1.733	0.000	0.373
1-2	0.034	1.462	0.000	0.925
2-3	0.062	1.602	0.000	0.972
3-4	0.067	1.557	0.000	1.000
4-5	0.067	1.521	0.000	1.056
5-6	0.093	1.593	0.000	1.120
6-7	0.093	1.720	0.000	1.143

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	4.098	6.225	3.4
1-2	6.463	8.885	3.7
2-3	6.528	9.164	3.4
3-4	6.591	9.215	3.2
4-5	4.966	7.609	2.7
5-6	4.497	7.304	2.3
6-7	4.262	7.218	2.1

IEUBK Lead Model Results for the Child Resident Consuming Fish from Lewis Pond



Cutoff = 10.000 ug/dl
Geo Mean = 2.976
GSD = 1.600
% Above = 0.496

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Research

TABLE I1.5a
RAGS D IEUBK LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Child Fish Consumer at Neponset River, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Fish	0.197	mg/kg	Mean Detected Concentration	NA	mg/kg	No Screening Value Available

2. Lead Model Questions

Question	Response
What lead model (version and date) was used?	Version 1.0 Build 261 (used April 2005)
Where are the input values located in the risk assessment report?	Located in Appendix F
What range of media concentrations were used for the model?	0.11 – 0.61 mg/kg
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	The arithmetic mean lead exposure point concentration (EPC) of 0.197 mg/kg was entered to determine the blood lead levels of the child fish consumer. (Tabulated data can be found in the Draft Remedial Investigation Report (SHA, 2005))
Was soil sample taken from top 2 cm? If not, why?	Not Applicable
Was soil sample sieved? What size screen was used? If not sieved, provide rationale.	Not Applicable
What was the point of exposure/ location?	Neponset River
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I1.6b)
Was the model run using default values only?	Yes
Was the default soil bioavailability used?	Yes
Was the default soil ingestion rate used?	Yes
If non-default values were used, where are the rationales for the values located in the risk assessment report?	Updated FDA dietary lead intake values are used.

3. Final Result

Medium	Result	Comment/RBRG [1]
Fish	Input value of 0.197 mg/kg in fish results in 0.485% probability of a child resident's blood lead concentration exceeding 10 ug/dL. Geometric mean blood lead = 2.965 ug/dL. This does not exceed the blood lead goal as described in the 1994 OSWER Directive of no more than 5% probability of a child's blood lead concentration exceeding 10 ug/dL blood lead.	None

Table I1.5b

IEUBK Lead Model Results for the Child Resident Consuming Fish from Neponset River

IEUBK LEAD MODEL FOR WINDOWS Version 1.0

==========

Model Version: 1.0 Build 261
Site Name: Blackburn and Union Privileges Site
Run Mode: Research

==========

The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	3.650
1-2	3.090
2-3	3.360
3-4	3.230
4-5	3.100
5-6	3.230
6-7	3.480

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500

2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 ug Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 150.000 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	200.000	150.000
1-2	200.000	150.000
2-3	200.000	150.000
3-4	200.000	150.000
4-5	200.000	150.000
5-6	200.000	150.000
6-7	200.000	150.000

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

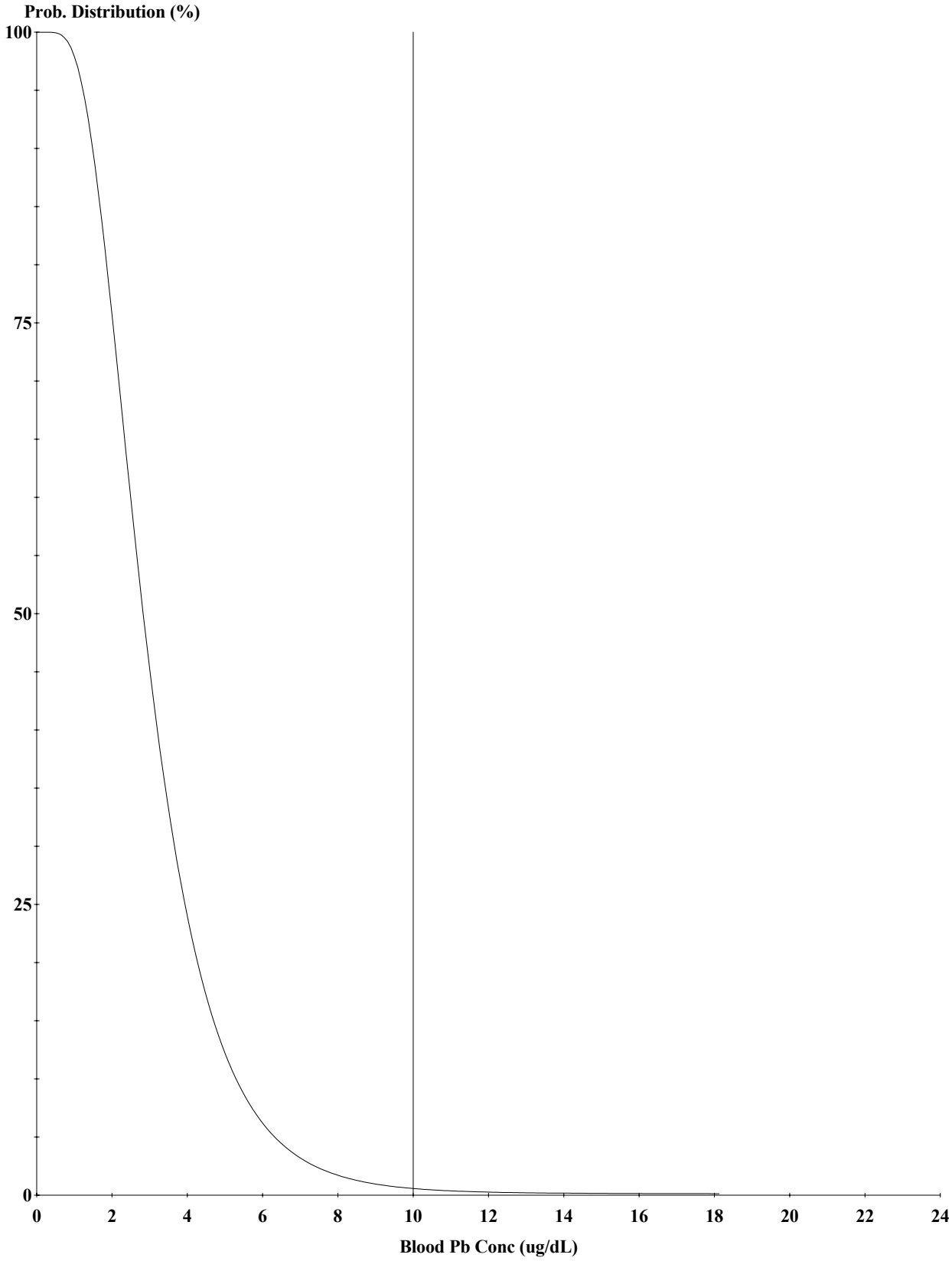
****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

IEUBK Lead Model Results for the Child Resident Consuming Fish from Neponset River

Year	Air (ug/day)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	1.701	0.000	0.373
1-2	0.034	1.430	0.000	0.925
2-3	0.062	1.570	0.000	0.972
3-4	0.067	1.524	0.000	1.000
4-5	0.067	1.488	0.000	1.056
5-6	0.093	1.560	0.000	1.120
6-7	0.093	1.686	0.000	1.143

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	4.100	6.194	3.4
1-2	6.465	8.854	3.7
2-3	6.529	9.133	3.4
3-4	6.593	9.184	3.2
4-5	4.967	7.577	2.7
5-6	4.498	7.272	2.3
6-7	4.262	7.185	2.1

IEUBK Lead Model Results for the Child Resident Consuming Fish from Neponset River



Cutoff = 10.000 ug/dl
Geo Mean = 2.965
GSD = 1.600
% Above = 0.485

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Research

TABLE I1.6a
RAGS D IEUBK LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Child Resident, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	400	mg/kg	NA	400	mg/kg	EPA Region IX Residential Soil PRG

2. Lead Model Questions

Question	Response
What lead model (version and date) was used?	Version 1.0 Build 261 (used April 2005)
Where are the input values located in the risk assessment report?	NA
What range of media concentrations were used for the model?	Concentration was entered to determine the soil lead concentration corresponding to <5% probability of children exceeding a blood lead level of 10 ug/dL.
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Not Applicable
Was soil sample taken from top 2 cm? If not, why?	Not Applicable
Was soil sample sieved? What size screen was used? If not sieved, provide rationale.	Not Applicable
What was the point of exposure/ location?	Residential exposure
Where are the output values located in the risk assessment report?	Located in Appendix I
Was the model run using default values only?	Yes
Was the default soil bioavailability used?	Yes
Was the default soil ingestion rate used?	Yes
If non-default values were used, where are the rationales for the values located in the risk assessment report?	Updated FDA dietary lead intake values are used.

3. Final Result

Medium	Result	Comment/RBRG [1]
Soil	Input value of 400 mg/kg in soil results in a 4.978% probability of a child resident's blood lead concentration exceeding 10 ug/dL. Geometric mean blood lead = 4.611 ug/dL. This does not exceed the blood lead goal as described in the 1994 OSWER Directive of no more than 5% probability of a child's blood lead concentration exceeding 10 ug/dL blood lead.	Based on site conditions, a PRG of 400 mg/kg is indicated for soil.

Table I1.6b

IEUBK Lead Model Results the Calculation of a Target Risk-based Lead Concentration for the Child Resident

The lead concentration in soil above which there is less than a 5% probability that the blood lead level of a 0 - 72 month old is greater than 10 ug/dL is 400 mg/kg. The model results for exposure to 400 mg/kg lead in soil are shown below:

LEAD MODEL FOR WINDOWS Version 1.0

==========

Model Version: 1.0 Build 261
Site Name: Blackburn & Union Privileges Site
Run Mode: Research

==========

The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	3.160
1-2	2.600
2-3	2.870
3-4	2.740
4-5	2.610
5-6	2.740
6-7	2.990

****** Drinking Water ******

IEUBK Lead Model Results for the Calculation of a Target Risk-based Lead Concentration for the Child Resident

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 ug Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 290.000 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	400.000	290.000
1-2	400.000	290.000
2-3	400.000	290.000
3-4	400.000	290.000
4-5	400.000	290.000
5-6	400.000	290.000
6-7	400.000	290.000

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

IEUBK Lead Model Results for the Calculation of a Target Risk-based Lead Concentration for the Child Resident

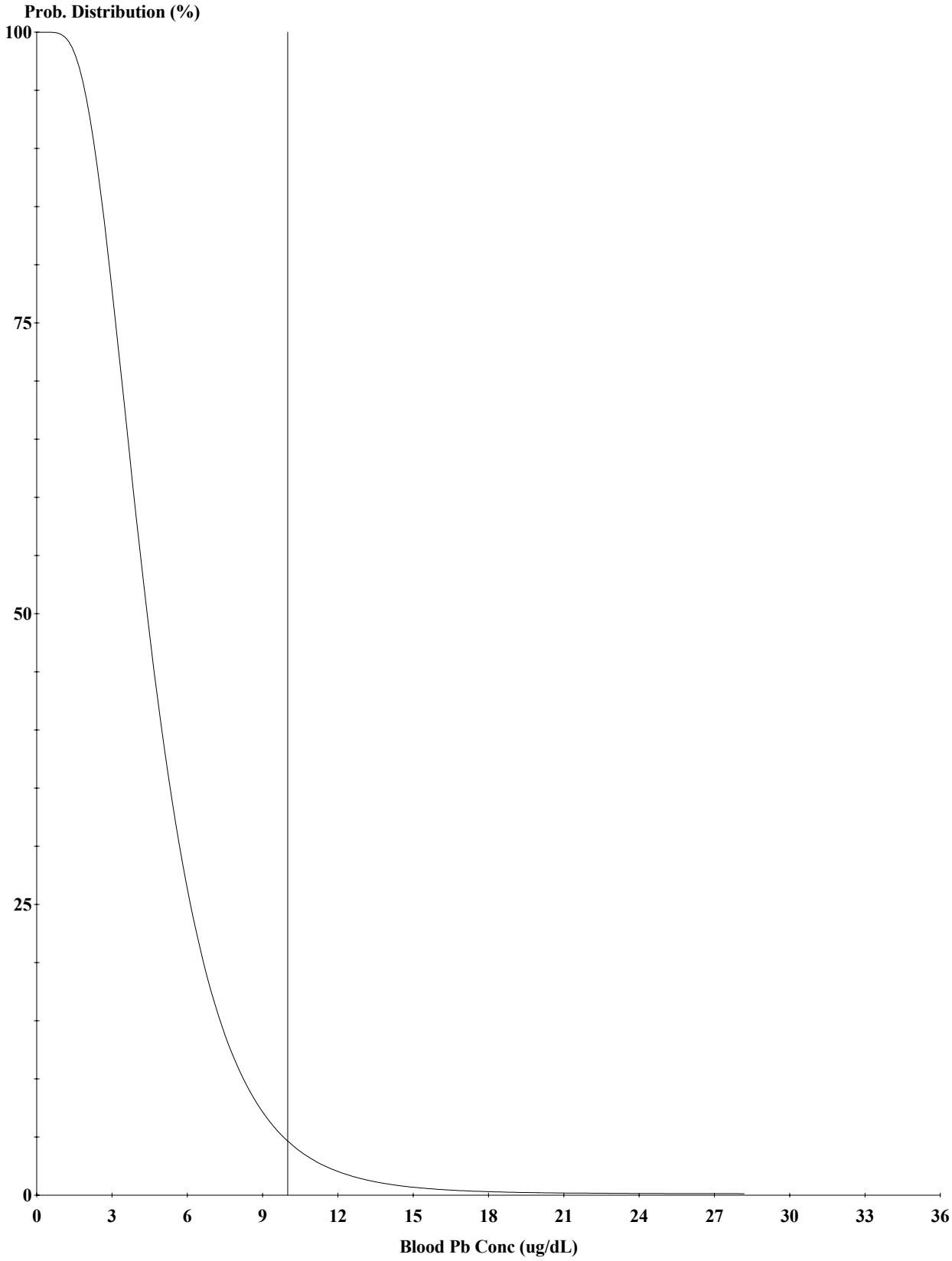
Maternal Blood Concentration: 2.500 ug Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (ug/day)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	1.416	0.000	0.358
1-2	0.034	1.146	0.000	0.882
2-3	0.062	1.286	0.000	0.932
3-4	0.067	1.247	0.000	0.965
4-5	0.067	1.223	0.000	1.031
5-6	0.093	1.298	0.000	1.099
6-7	0.093	1.425	0.000	1.124

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	7.758	9.554	5.1
1-2	12.126	14.189	5.8
2-3	12.325	14.605	5.4
3-4	12.511	14.789	5.2
4-5	9.545	11.865	4.2
5-6	8.685	11.175	3.6
6-7	8.250	10.892	3.2

IEUBK Lead Model Results for the Calculation of a Target Risk-based Lead Concentration for the Child Resident



Cutoff = 10.000 ug/dl
Geo Mean = 4.611
GSD = 1.600
% Above = 4.978

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Research

APPENDIX I2
ADULT LEAD MODEL DOCUMENTATION
Blackburn &Union Privileges Site
Walpole, Massachusetts

Lead is a COPC for the adolescent wader exposed to sediment, the adult fisher exposed to sediment and/or fish tissue, and the adult site worker and construction worker exposed to soil. The EPA document *Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risk Associated with Adult Exposures to Lead in Soil* (USEPA, 1996, with 2003 update) was used to evaluate the potential risk from lead exposure for the wader, fisher, site worker, and construction worker. The Technical Review Workgroup (TRW) methodology is typically used to evaluate nonresidential soil exposure for women of childbearing age because a developing fetus is considered a sensitive receptor from lead exposure. The model predicts an estimate of the upper 95th percentile fetal blood lead concentrations, and predictions are compared to the blood lead concentration goal of 10 µg/dL (USEPA, 1994a). A detailed discussion of this model can be found in the USEPA TRW report (USEPA, 1996).

ALM Model Description

The following equation was used to predict blood lead levels from exposure to lead-contaminated soil, sediment, or fish tissue.

$$PbB_{fetal,0.95} = R_{fetal/maternal} \times GSD_i^{1.645} \times \left[\frac{PbS \times BKSF \times IR_s \times AF_s \times EF_s}{AT} + PbB_0 \right]$$

Where:

$PbB_{fetal,0.95}$ is the 95th percentile blood lead concentration (µg/dL) among fetuses born to women having exposures to the specified lead concentrations;

$R_{fetal/maternal}$ is the ratio between the fetal blood lead concentration at birth and the maternal blood lead concentration. The factor $R_{fetal/maternal}$ is used to relate adult blood level to fetal blood. The EPA TRW recommends a value of 0.9 for $R_{fetal/maternal}$.

GSD_i is the individual geometric standard deviation in blood lead concentrations among adult women who have similar lead exposures.

PbS is the lead EPC in medium to which an individual is exposed (in µg/g).

BKSF is the quasi-steady state biokinetic slope factor relating increase in adult blood lead concentrations to average daily uptake (in µg/dL blood lead increase per µg/day of lead uptake). The EPA TRW recommends a value of 0.4.

IR_s is the ingestion rate of exposure medium (in g/day).

AF_s is the absolute gastrointestinal absorption fraction for ingested lead in soil, dust, sediment, and fish tissue. A value of 0.12 is used in the model based on an absorption

factor for soluble lead of 0.20 and a relative bioavailability of 0.6 as described in the EPA TRW report.

EF_s is the exposure frequency for contact with soil, sediment, or fish tissue (in days of exposure during the averaging period).

AT is the averaging time.

PbB_0 is the baseline blood lead concentration.

It is "reasonable to apply this model to adolescent receptors (*e.g.*, wader scenarios), provided that appropriate values can be selected for important model parameters: (1) exposure frequency (EF); (2) exposure duration (ED); (3) baseline blood lead (PbB_0); (4) absorption fraction (AF)" (USEPA, 2005). Receptor-specific GSD, IR, EF, AT and PbB_0 values and a site-specific PbS value were used to assess lead exposure. Default values were used for other input variables ($R_{fetal/maternal}$, BKSF and AF_s), due to a lack of receptor-specific information.

ALM Model Input Values

Statistics on blood lead concentrations for women were selected from the Third National Health and Nutrition Evaluation Survey (NHANES III) (USEPA, 2002). The geometric standard deviation (GSD) of blood lead concentrations among women between the ages of 17 and 25 who live in the Northeast Region of the U.S. is 2.01. Of available data, this GSD value best reflects the adolescent wader under consideration. The geometric mean (GM) blood lead concentration (PbB_0) is 1.67 µg/dL for this same group of women. These values were used in ALM modeling for the current or future wader. The geometric standard deviation (GSD) of blood lead concentrations among women between the ages of 36 and 45 who live in the Northeast Region of the U.S. is 1.99. Of available data, this GSD value best reflects the adult fisher, site worker, and construction worker under consideration. The geometric mean (GM) blood lead concentration (PbB_0) is 2.30 µg/dL for this same group of women. These values were used in ALM modeling for the current or future fisher, current or future site worker, and future construction worker. This GM selection incorporates regional and age stratification, but not racial stratification. USEPA (2005) recommends stratifying by either region or race, but not both, because of resulting small sample sizes. Values for non-hispanic white 17-25 year olds are lower than values for Northeast Region 17-25 year olds; therefore, the higher regional values were selected.

Wader and Fisher

For the adolescent wader, the lead EPC (PbS) is the arithmetic mean lead concentration in sediment at Lewis Pond (1,110 µg/g). The highest mean lead concentration for the current or future wader scenarios was measured at this exposure point. For the adult fisher, the lead EPC (PbS) is the arithmetic mean lead concentration in fish at Neponset River (0.197 µg/g), in fish and sediment at Lewis Pond (1,110 and 0.223 µg/g, respectively), and in sediment at the Former Mill Tailrace (328 µg/g). The highest mean lead concentration for current or future fisher

scenarios was measured at Lewis Pond. These concentrations might underestimate exposure because samples were not sieved to collect the size fraction most likely to adhere to skin (i.e. < 250 µm) (USEPA, 2005).

The wader and fisher exposure frequency (EF_s) is assumed to be 1 day per week during the five non-winter months of the year (22 days/year). The actual central tendency frequency of exposure for these receptors is 3 days per month for the 5 non-winter months, however, the ALM is not valid for such small exposure frequencies. Therefore, sensitivity analyses were conducted using an EF_s of 22 days/year because exposures occurring less than 1 day per week for fewer than 90 days are insufficient for the blood lead concentration to become nearly constant over time. These "infrequent exposures…would be expected to produce oscillations in blood lead concentrations associated with the absorption and subsequent clearance of lead from the blood between each exposure event. These site-specific assumptions correspond to EPA's minimum criteria for satisfying the steady state assumption of the ALM model (USEPA, 2005).

The wader's averaging time is assumed to be site-specific, 152 days per year, or the 5 warmer months of the year.

Default values were used for other input variables ($R_{fetal/maternal}$, BKSF and AF_s), due to a lack of receptor-specific information.

Site Worker

The lead EPC (PbS) is the arithmetic mean lead concentration in soil 0-10 feet deep at East of South Street On-Facility (291 µg/g). The highest mean lead concentration for current and future site worker scenarios was measured at this exposure point. This concentration might underestimate exposure because samples were not sieved to collect the size fraction most likely to adhere to skin (i.e. < 250 µm) (USEPA, 2005).

The site worker's exposure frequency (EF_s) is assumed to be 150 days/year (EPA, 1994b). This site-specific assumption is greater than EPA's minimum criteria for satisfying the steady state assumption of the ALM model (USEPA, 2005).

The site worker's averaging time is assumed to be site-specific, 152 days per year, or the 5 non-winter months of the year.

Default values were used for other input variables ($R_{fetal/maternal}$, BKSF and AF_s), due to a lack of receptor-specific information.

Construction Worker

The lead EPC (PbS) is the arithmetic mean lead concentration in soil 0-3 feet deep at Lot 257 (395 µg/g). The highest mean lead concentration for future construction worker scenarios was measured at this exposure point. This concentration might underestimate exposure because

samples were not sieved to collect the size fraction most likely to adhere to skin (i.e. < 250 µm) (EPA, 2005).

An ingestion rate of soil (IR_s) of 100 mg/day was used in the ALM for the adult construction worker based on recommended values for contact-intensive adult scenarios (such as an agricultural or construction worker) in the ALM Frequently Asked Questions (EPA, 2005).

The construction worker's exposure frequency (EF_s) is assumed to be 6 days per week during a 3 month project (78 days). These site-specific assumptions are greater than EPA's minimum criteria for satisfying the steady state assumption of the ALM model (EPA, 2005).

The construction worker's averaging time is assumed to be site-specific, 91 days per year, or a 3 month project.

Default values were used for other input variables ($R_{fetal/maternal}$, BKSF and AF_s), due to a lack of receptor-specific information.

Results of Adult Lead Modeling

Results of the ALM calculations for the site worker, construction worker, wader and fisher are shown in the RAGS D Adult Lead Worksheets (Appendix I2).

References

United States Environmental Protection Agency (USEPA). **1994a.** Memorandum from Elliott P. Laws to Regional Administrators I-X. Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, DC 20460. OSWER Directive #9355.4-12 August 1994.

United States Environmental Protection Agency (USEPA). **1994b.** EPA Region 1, Waste Management Division, Risk Updates. August 1994, Number 2, Attachment 2 and Attachment 3.

United States Environmental Protection Agency (USEPA). **1996**. Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil. Final. Technical Review Workgroup for Lead. EPA-540-R-03-001. January 2003 update.

United States Environmental Protection Agency (USEPA). **2002.** Blood Lead Concentrations of U.S. Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III). OSWER 9285.7-52. March 2002.

United States Environmental Protection Agency (USEPA). **2005.** Adult Lead Methodology Frequently Asked Questions (http://www.epa.gov/superfund/programs/lead/almfaq.htm).

TABLE I2.1a
RAGS D ADULT LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Older Child Wader, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Sediment	1,110	mg/kg	Mean Detected Value	400	mg/kg	EPA Region IX Residential Soil PRG

2. Lead Model Questions

Question	Response
What lead model was used? Provide reference and version	EPA Interim Adult Lead Model (1996, with 2003 update) and NHANES III blood lead concentration data (EPA, 2002)
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	Not applicable
Where are the input values located in the risk assessment report?	Located in Appendix F.
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean. Samples used in calculation are listed in Table 20 of this report, and lead concentration data are in Table 15B of the Draft Remedial Investigation Report (SHA, 2004).
What was the point of exposure and location?	Lewis Pond (the highest mean lead concentration for current/future older child wader scenarios was measured at this exposure point)
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I2.3b)
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale in Appendix I.	2.01 (NHANES III, Northeast Region, 17-25 year old)
What baseline blood lead concentration (PbB_0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale in Appendix I.	1.67 (NHANES III, Northeast Region, 17-25 year old)
Was the default exposure frequency (EF; 219 days/year) used?	No, 22 days/year (Actual CTE EF is 15 days/yr based on three days per month for five non-winter months, however the ALM is not valid for such a small EF. Therefore, we conducted this sensitivity analysis using the minimum ALM requirement for EF of one day per week, increasing the EF from 15 days/yr to 22 days/yr). See ALM discussion in Appendix I for further discussion.
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	Yes
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Located in Appendix I.

3. Final Result

Medium	Result	Comment/RBRG [1]
Sediment	Input value of 1,110 ppm in sediment results in a geometric mean blood lead concentration prediction of 2.1 µg/dL for an older child wader. This predicted concentration corresponds to 0.8% probability of fetuses of older child waders with blood lead concentrations greater than 10 µg/dL. This fetal blood lead prediction does not exceed the goal of no more than 5% probability of a child's (fetuses of exposed women) blood lead concentration exceeding 10 ug/dL blood lead. The fetal blood lead prediction at the other older child wader exposure point (i.e. the former mill tailrace) also meets the goal that no more than 5% probability of fetuses of exposed women have blood lead concentrations that exceed 10 µg/dL.	5,336 ppm

Table I2.1b Calculations of Preliminary Remediation Goals (PRGs)
Older Child Wader

Exposure Variable	PRG Equation[1] 1*	2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario			
					Using Equation 1		Using Equation 2	
					GSDi = Hom	GSDi = Het	GSDi = Hom	GSDi = Het
$PbB_{fetal,\ 0.95}$	X	X	95th percentile PbB in fetus	ug/dL	10	10	10	10
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.01	2.01	2.01	2.01
PbB_0	X	X	Baseline PbB	ug/dL	1.67	1.67	1.67	1.67
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.050	0.050
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,\ D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,\ D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	22	22	22	22
$AT_{S,\ D}$	X	X	Averaging time (same for soil and dust)	days/yr	152	152	152	152
PRG	**Preliminary Remediation Goal**			**ppm**	**5,336**	**5,336**	**5,336**	**5,336**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same PRG.

***Equation 1, based on Eq. 4 in USEPA (1996).**

$$PRG = \frac{([PbB_{95}fetal/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*(IR_{S+D}*AF_{S,D}*EF_{S,D})}$$

****Equation 2, alternate approach based on Eq. 4 and Eq. A-19 in USEPA (1996).**

$$PRG = \frac{([PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])}$$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table I2.1c Calculations of Blood Lead Concentrations (PbBs)
Older Child Wader

Exposure Variable	PbB Equation[1] 1*	2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario			
					Using Equation 1		Using Equation 2	
					GSDi = Hom	GSDi = Het	GSDi = Hom	GSDi = Het
PbS	X	X	Soil lead concentration	ug/g or ppm	1110	1110	1110	1110
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.01	2.01	2.01	2.01
PbB_0	X	X	Baseline PbB	ug/dL	1.67	1.67	1.67	1.67
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.050	0.050
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	22	22	22	22
$AT_{S,D}$	X	X	Averaging time (same for soil and dust)	days/yr	152	152	152	152
PbB_{adult}	**PbB of adult worker, geometric mean**			**ug/dL**	**2.1**	**2.1**	**2.1**	**2.1**
$PbB_{fetal,\ 0.95}$	**95th percentile PbB among fetuses of adult workers**			**ug/dL**	**5.8**	**5.8**	**5.8**	**5.8**
PbB_t	**Target PbB level of concern (e.g., 10 ug/dL)**			**ug/dL**	**10.0**	**10.0**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**			**%**	**0.8%**	**0.8%**	**0.8%**	**0.8%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

***Equation 1, based on Eq. 1, 2 in USEPA (1996).**

PbB_{adult} =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal,\ 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

****Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).**

PbB_{adult} =	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal,\ 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

TABLE I2.2a
RAGS D ADULT LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Adult Fisher, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Sediment; Fish	1,110; 0.223	mg/kg	Mean Detected Value	400	mg/kg	EPA Region IX Residential Soil PRG

2. Lead Model Questions

Question	Response
What lead model was used? Provide reference and version	EPA Interim Adult Lead Model (1996, with 2003 update) and NHANES III blood lead concentration data (EPA, 2002)
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	Not applicable
Where are the input values located in the risk assessment report?	Located in Appendix F.
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean. Samples used in calculation are listed in Tables 20 and 22 of this report, and lead concentration data are in Tables 15B and 16Aof the Draft Remedial Investigation Report (SHA, 2004).
What was the point of exposure and location?	Lewis Pond (the highest mean lead concentration in sediment and fish for current/future adult fisher scenarios were measured at this exposure point)
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I2.4b and I2.4c)
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale in Appendix I.	1.99 (NHANES III, Northeast Region, 36-45 year old)
What baseline blood lead concentration (PbB_0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale in Appendix I.	2.3 (NHANES III, Northeast Region, 36-45 year old)
Was the default exposure frequency (EF; 219 days/year) used?	No, 22 days/year (Actual CTE EF is 15 days/yr based on three days per month for five non-winter months, however the ALM is not valid for such a small EF. Therefore, we conducted this sensitivity analysis using the minimum ALM requirement for EF of one day per week, increasing the EF from 15 days/yr to 22 days/yr). See ALM discussion in Appendix I for further discussion.
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	Yes
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Located in Appendix I.

3. Final Result

Medium	Result	Comment/RBRG
Sediment; Fish	Input values of 1,110 ppm in sediment and 0.223 ppm in fish results in a 95th percentile blood lead concentration prediction of 7.9 µg/dL for an adult fisher. This predicted concentration corresponds to 2.3% probability of fetuses of adult fishers with blood lead concentrations greater than 10 µg/dL. This fetal blood lead prediction does not exceed the goal of no more than 5% probability of a child's (fetuses of exposed women) blood lead concentration exceeding 10 ug/dL blood lead.	No RBRG was calculated for multimedia exposure (sediment & fish)

Table I2.2b
LEAD EVALUATION
RESIDENTIAL / RECREATIONAL ADULT FISHER - RME SCENARIO
Lewis Pond
Blackburn and Union Privileges Site
Walpole, Massachusetts

Scenario	Sediment Lead PbS (ug/g)	Sediment Ingestion IRs (g/day)	Fish Lead PbF (ug/g)	Fish Ingestion IRf (g/meal)	Fish Exposure Frequency EFs (meals/AT)	Sediment Absorption Factor AFs[1] (unitless)	Fish Absorption Factor AFf[2] (unitless)	Exposure Frequency EFs (days)	Averaging Time AT (days)	Initial Adult Blood Lead[3] $PbB_{adult,0}$ (ug/dl)	Biokinetic Slope Factor BKSF[4] (unitless)	Geometric Standard Deviation GSD[3] (unitless)	Ratio of Fetal to Maternal Blood Lead $R_{fetal/maternal}$[5] (unitless)	PbB of Adult Fisher PbB_{adult} ug/dL	95th percentile PbB among fetuses of adult fishers $PbB_{fetal,0.95}$ ug/dL	Exceeds target PbB level of concern (10 ug/dL)? PbB_t ug/dL	Probability that fetal PbB > PbB_t, assuming lognormal distribution %
Adult Fisher in Lewis Pond	1110	0.05	0.223	85	22	0.12	0.12	22	152	2.3	0.4	1.99	0.9	2.82	7.9	**No**	2.3%

References:

[1] USEPA, TRW 1996 (with 2003 update)

[2] USEPA, TRW, Adult Lead Model FAQs http://www.epa.gov/superfund/programs/lead/almfaq.htm

[3] EPA. 2002. Blood Lead Concentrations of U.S. Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III). OSWER 9285.7-52.

[4] Pocock et al. (1983) and Sherlock et al. (1984) in USEPA TRW December 1996

[5] R = constant of proportionality between fetal blood lead at birth and maternal blood lead, 0.9 based on Goyer (1990) and Graziano (1990)

TABLE I2.3a
RAGS D ADULT LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Adult Fisher, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Fish	0.197	mg/kg	Mean Detected Value	None	mg/kg	

2. Lead Model Questions

Question	Response
What lead model was used? Provide reference and version	EPA Interim Adult Lead Model (1996, with 2003 update) and NHANES III blood lead concentration data (EPA, 2002)
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	Not applicable
Where are the input values located in the risk assessment report?	Located in Appendix F.
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean. Samples used in calculation are listed in Table 22 of this report, and lead concentration data are in Table 16A of the Draft Remedial Investigation Report (SHA, 2004).
What was the point of exposure and location?	Neponset River
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I2.5b)
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale in Appendix I.	1.99 (NHANES III, Northeast Region, 36-45 year old)
What baseline blood lead concentration (PbB_0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale in Appendix I.	2.3 (NHANES III, Northeast Region, 36-45 year old)
Was the default exposure frequency (EF; 219 days/year) used?	No, 22 days/year (Actual CTE EF is 15 days/yr based on three days per month for five non-winter months, however the ALM is not valid for such a small EF. Therefore, we conducted this sensitivity analysis using the minimum ALM requirement for EF of one day per week, increasing the EF from 15 days/yr to 22 days/yr). See ALM discussion in Appendix I for further discussion.
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	Yes
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Located in Appendix I.

3. Final Result

Medium	Result	Comment/RBRG [1]
Fish	The input value of 0.197 ppm in fish results in a geometric mean blood lead concentration prediction of 2.4 µg/dL for an adult fisher. This predicted concentration corresponds to 1.3% probability of fetuses of adult fishers with blood lead concentrations greater than 10 µg/dL. This fetal blood lead prediction does not exceed the goal of no more than 5% probability of a child's (fetuses of exposed women) blood lead concentration exceeding 10 ug/dL blood lead.	2.2 mg/kg

Table I2.3b Calculations of Preliminary Remediation Goals (PRGs)
Adult Fisher (Neponset River)

Exposure Variable	PRG Equation[1] 1*	PRG Equation[1] 2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario Using Equation 1 GSDi = Hom	Values for Non-Residential Exposure Scenario Using Equation 1 GSDi = Het
$PbB_{fetal,\ 0.95}$	X	X	95th percentile PbB in fetus	ug/dL	10	10
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	1.99	1.99
PbB_0	X	X	Baseline PbB	ug/dL	2.30	2.30
IR_S	X		Fish ingestion rate	g/day	85.000	85.000
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--
K_{SD}		X	Mass fraction of soil in dust	--	--	--
$AF_{S,\ D}$	X	X	Absorption fraction (for fish)	--	0.12	0.12
$EF_{S,\ D}$	X	X	Exposure frequency	days/wk	22	22
$AT_{S,\ D}$	X	X	Averaging time	days/wk	152	152
PRG	**Preliminary Remediation Goal**			**ppm**	**2.2**	**2.2**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same PRG.

***Equation 1, based on Eq. 4 in USEPA (1996).**

$$PRG = \frac{([PbB_{95}fetal/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*(IR_{S+D}*AF_{S,D}*EF_{S,D})}$$

****Equation 2, alternate approach based on Eq. 4 and Eq. A-19 in USEPA (1996).**

$$PRG = \frac{([PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])}$$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table I2.3c Calculations of Blood Lead Concentrations (PbBs)
Adult Fisher (Neponset River)

Exposure Variable	PbB Equation[1] 1*	2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario Using Equation 1 GSDi = Hom	GSDi = Het
PbS	X	X	Fish lead concentration	ug/g or ppm	0.197	0.197
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	1.99	1.99
PbB_0	X	X	Baseline PbB	ug/dL	2.30	2.30
IR_S	X		Fish ingestion rate (including soil-derived indoor dust)	g/day	85.000	85.000
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--
K_{SD}		X	Mass fraction of soil in dust	--	--	--
$AF_{S,D}$	X	X	Absorption fraction (for fish)	--	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency	days/yr	22	22
$AT_{S,D}$	X	X	Averaging time	days/yr	152	152
PbB_{adult}	**PbB of adult worker, geometric mean**			**ug/dL**	**2.4**	**2.4**
$PbB_{fetal,\ 0.95}$	**95th percentile PbB among fetuses of adult workers**			**ug/dL**	**6.7**	**6.7**
PbB_t	**Target PbB level of concern (e.g., 10 ug/dL)**			**ug/dL**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**			**%**	**1.3%**	**1.3%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

***Equation 1, based on Eq. 1, 2 in USEPA (1996).**

PbB_{adult} =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal,\ 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

****Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).**

PbB_{adult} =	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal,\ 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

TABLE I2.4a
RAGS D ADULT LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Adult Fisher, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Sediment	328	mg/kg	Mean Detected Value	400	mg/kg	EPA Region IX Residential Soil PRG

2. Lead Model Questions

Question	Response
What lead model was used? Provide reference and version	EPA Interim Adult Lead Model (1996, with 2003 update) and NHANES III blood lead concentration data (EPA, 2002)
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	Not applicable
Where are the input values located in the risk assessment report?	Located in Appendix F.
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean. Samples used in calculation are listed in Table 20 of this report, and lead concentration data are in Table 15B of the Draft Remedial Investigation Report (SHA, 2004).
What was the point of exposure and location?	Former Mill Tailrace
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I2.6b)
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale in Appendix I.	1.99 (NHANES III, Northeast Region, 36-45 year old)
What baseline blood lead concentration (PbB_0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale in Appendix I.	2.3 (NHANES III, Northeast Region, 36-45 year old)
Was the default exposure frequency (EF; 219 days/year) used?	No, 22 days/year (Actual CTE EF is 15 days/yr based on three days per month for five non-winter months, however the ALM is not valid for such a small EF. Therefore, we conducted this sensitivity analysis using the minimum ALM requirement for EF of one day per week, increasing the EF from 15 days/yr to 22 days/yr). See ALM discussion in Appendix I for further discussion.
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	Yes
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Located in Appendix I.

3. Final Result

Medium	Result	Comment/RBRG [1]
Sediment	Input value of 328 ppm in sediment results in a geometric mean blood lead concentration prediction of 2.4 µg/dL for an adult fisher. This predicted concentration corresponds to 1.3% probability of fetuses of adult fishers with blood lead concentrations greater than10 µg/dL. This fetal blood lead prediction does not exceed the goal of no more than 5% probability of a child's (fetuses of exposed women) blood lead concentration exceeding 10 ug/dL blood lead.	3,691 ppm

Table I2.4b Calculations of Preliminary Remediation Goals (PRGs)
Adult Fisher (Former Mill Tailrace)

Exposure Variable	PRG Equation[1] 1*	2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario			
					Using Equation 1		Using Equation 2	
					GSDi = Hom	GSDi = Het	GSDi = Hom	GSDi = Het
$PbB_{fetal,\ 0.95}$	X	X	95th percentile PbB in fetus	ug/dL	10	10	10	10
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	1.99	1.99	1.99	1.99
PbB_0	X	X	Baseline PbB	ug/dL	2.30	2.30	2.30	2.30
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.050	0.050
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,\ D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,\ D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	22	22	22	22
$AT_{S,\ D}$	X	X	Averaging time (same for soil and dust)	days/yr	152	152	152	152
PRG	**Preliminary Remediation Goal**			**ppm**	**3,691**	**3,691**	**3,691**	**3,691**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same PRG.

***Equation 1, based on Eq. 4 in USEPA (1996).**

$$PRG = \frac{([PbB_{95}fetal/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*(IR_{S+D}*AF_{S,D}*EF_{S,D})}$$

****Equation 2, alternate approach based on Eq. 4 and Eq. A-19 in USEPA (1996).**

$$PRG = \frac{([PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])}$$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table I2.4c Calculations of Blood Lead Concentrations (PbBs)
Adult Fisher (Former Mill Tailrace)

Exposure Variable	PbB Equation[1] 1*	PbB Equation[1] 2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario			
					Using Equation 1		Using Equation 2	
					GSDi = Hom	GSDi = Het	GSDi = Hom	GSDi = Het
PbS	X	X	Sediment lead concentration	ug/g or ppm	328	328	328	328
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	1.99	1.99	1.99	1.99
PbB_0	X	X	Baseline PbB	ug/dL	2.30	2.30	2.30	2.30
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.050	0.050
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	22	22	22	22
$AT_{S,D}$	X	X	Averaging time (same for soil and dust)	days/yr	152	152	152	152
PbB_{adult}	**PbB of adult worker, geometric mean**			**ug/dL**	**2.4**	**2.4**	**2.4**	**2.4**
$PbB_{fetal,\ 0.95}$	**95th percentile PbB among fetuses of adult workers**			**ug/dL**	**6.7**	**6.7**	**6.7**	**6.7**
PbB_t	**Target PbB level of concern (e.g., 10 ug/dL)**			**ug/dL**	**10.0**	**10.0**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**			**%**	**1.3%**	**1.3%**	**1.3%**	**1.3%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

***Equation 1, based on Eq. 1, 2 in USEPA (1996).**

PbB_{adult} =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal,\ 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

****Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).**

PbB_{adult} =	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal,\ 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

TABLE I2.5a
RAGS D ADULT LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Adult Site Worker, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	291	mg/kg	Mean Detected Value	800	mg/kg	EPA Region IX Industrial Soil PRG

2. Lead Model Questions

Question	Response
What lead model was used? Provide reference and version	EPA Interim Adult Lead Model (1996, with 2003 update) and NHANES III blood lead concentration data (EPA, 2002)
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	Not applicable
Where are the input values located in the risk assessment report?	Located in Appendix F.
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean. Samples used in calculation are listed in Tables 3 and 5 of this report, and lead concentration data are in Tables 11B and 12B of the Draft Remedial Investigation Report (SHA, 2004).
What was the point of exposure and location?	East of South Street On-Facility in 0-10 foot soil (the highest mean lead concentration for current and future site worker scenarios was measured at this exposure point)
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I2.1b)
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale in Appendix I.	1.99 (NHANES III, Northeast Region, 36-45 year old)
What baseline blood lead concentration (PbB_0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale in Appendix I.	2.3 (NHANES III, Northeast Region, 36-45 year old)
Was the default exposure frequency (EF; 219 days/year) used?	No, 150 days/year (5 non-winter months)
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	Yes
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Located in Appendix I.

3. Final Result

Medium	Result	Comment/RBRG [1]
Soil	Input value of 291 ppm in soil results in a geometric mean blood lead concentration prediction of 3 µg/dL for an adult site worker. This predicted concentration corresponds to 2.8% probability of fetuses of adult site workers with blood lead concentrations greater than 10 µg/dL. This fetal blood lead prediction does not exceed the goal of no more than 5% probability of a child's (fetuses of exposed women) blood lead concentration exceeding 10 ug/dL blood lead. Since the input value is the highest mean soil lead concentration across all current or future site worker exposure points, less than 5% probability of fetuses of exposed women have blood lead concentrations that exceed 10 µg/dL at all other site worker exposure points.	541 ppm

Table I2.5b Calculations of Preliminary Remediation Goals (PRGs)
Adult Site Worker

Exposure Variable	PRG Equation[1] 1*	2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario			
					Using Equation 1		Using Equation 2	
					GSDi = Hom	GSDi = Het	GSDi = Hom	GSDi = Het
$PbB_{fetal,\ 0.95}$	X	X	95th percentile PbB in fetus	ug/dL	10	10	10	10
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	1.99	1.99	1.99	1.99
PbB_0	X	X	Baseline PbB	ug/dL	2.30	2.30	2.30	2.30
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.050	0.050
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,\ D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,\ D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	150	150	150	150
$AT_{S,\ D}$	X	X	Averaging time (same for soil and dust)	days/yr	152	152	152	152
PRG	**Preliminary Remediation Goal**			**ppm**	**541**	**541**	**541**	**541**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same PRG.

***Equation 1, based on Eq. 4 in USEPA (1996).**

$$PRG = \frac{([PbB_{95}fetal/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*(IR_{S+D}*AF_{S,D}*EF_{S,D})}$$

****Equation 2, alternate approach based on Eq. 4 and Eq. A-19 in USEPA (1996).**

$$PRG = \frac{([PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])}$$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table I2.5c Calculations of Blood Lead Concentrations (PbBs)
Adult Site Worker

Exposure Variable	PbB Equation[1] 1*	2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario: Using Equation 1 GSDi = Hom	Using Equation 1 GSDi = Het	Using Equation 2 GSDi = Hom	Using Equation 2 GSDi = Het
PbS	X	X	Soil lead concentration	ug/g or ppm	291	291	291	291
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	1.99	1.99	1.99	1.99
PbB_0	X	X	Baseline PbB	ug/dL	2.30	2.30	2.30	2.30
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.050	0.050
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S, D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S, D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	150	150	150	150
$AT_{S, D}$	X	X	Averaging time (same for soil and dust)	days/yr	152	152	152	152
PbB_{adult}	**PbB of adult worker, geometric mean**			**ug/dL**	**3.0**	**3.0**	**3.0**	**3.0**
$PbB_{fetal, 0.95}$	**95th percentile PbB among fetuses of adult workers**			**ug/dL**	**8.3**	**8.3**	**8.3**	**8.3**
PbB_t	**Target PbB level of concern (e.g., 10 ug/dL)**			**ug/dL**	**10.0**	**10.0**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**			**%**	**2.8%**	**2.8%**	**2.8%**	**2.8%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

***Equation 1, based on Eq. 1, 2 in USEPA (1996).**

PbB_{adult} =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal, 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

****Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).**

PbB_{adult} =	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal, 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

TABLE I2.6a
RAGS D ADULT LEAD WORKSHEET
Site Name: Blackburn and Union Privileges Site, Walpole, MA
Receptor: Adult Construction Worker, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	395	mg/kg	Mean Detected Value	800	mg/kg	EPA Region IX Industrial Soil PRG

2. Lead Model Questions

Question	Response
What lead model was used? Provide reference and version	EPA Interim Adult Lead Model (1996, with 2003 update) and NHANES III blood lead concentration data (EPA, 2002)
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	Not applicable
Where are the input values located in the risk assessment report?	Located in Appendix F.
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean. Samples used in calculation are listed in Table 5 of this report, and lead concentration data are in Table 15B of the Draft Remedial Investigation Report (SHA, 2004).
What was the point of exposure and location?	Lot 257 in 0-3 foot soil (the highest mean lead concentration for future construction worker scenarios was measured at this exposure point)
Where are the output values located in the risk assessment report?	Located in Appendix I (Table I2.2b)
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale in Appendix I.	1.99 (NHANES III, Northeast Region, 36-45 year old)
What baseline blood lead concentration (PbB_0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale in Appendix I.	2.3 (NHANES III, Northeast Region, 36-45 year old)
Was the default exposure frequency (EF; 219 days/year) used?	No, 78 days/year (3 month project, 6 days per week)
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	No, 100 mg/day
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Located in Appendix I.

3. Final Result

Medium	Result	Comment/RBRG [1]
Soil	Input value of 395 ppm in soil results in a geometric mean blood lead concentration prediction of 3.9 µg/dL for an adult site worker. This predicted concentration corresponds to 6.5% probability of fetuses of adult site workers with blood lead concentrations greater than 10 µg/dL. This fetal blood lead prediction exceeds the goal of no more than 5% probability of a child's (fetuses of exposed women) blood lead concentration exceeding 10 ug/dL blood lead. Mean soil lead concentration at all other future construction worker exposure points result in fetal blood lead predictions that meet the goal of no more than 5% probability of fetuses of exposed women having blood lead concentrations greater than 10 µg/dL.	312 ppm

Table I2.6b Calculations of Preliminary Remediation Goals (PRGs)
Adult Construction Worker

Exposure Variable	PRG Equation[1] 1*	2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario			
					Using Equation 1		Using Equation 2	
					GSDi = Hom	GSDi = Het	GSDi = Hom	GSDi = Het
$PbB_{fetal,\ 0.95}$	X	X	95th percentile PbB in fetus	ug/dL	10	10	10	10
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	1.99	1.99	1.99	1.99
PbB_0	X	X	Baseline PbB	ug/dL	2.30	2.30	2.30	2.30
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.100	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.100	0.100
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,\ D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,\ D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	78	78	78	78
$AT_{S,\ D}$	X	X	Averaging time (same for soil and dust)	days/yr	91	91	91	91
PRG	**Preliminary Remediation Goal**			**ppm**	**312**	**312**	**312**	**312**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same PRG.

***Equation 1, based on Eq. 4 in USEPA (1996).**

$$PRG = \frac{([PbB_{95}fetal/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*(IR_{S+D}*AF_{S,D}*EF_{S,D})}$$

****Equation 2, alternate approach based on Eq. 4 and Eq. A-19 in USEPA (1996).**

$$PRG = \frac{([PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])}$$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table I2.6c Calculations of Blood Lead Concentrations (PbBs)
Adult Construction Worker

Exposure Variable	PbB Equation[1] 1*	PbB Equation[1] 2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario			
					Using Equation 1		Using Equation 2	
					GSDi = Hom	GSDi = Het	GSDi = Hom	GSDi = Het
PbS	X	X	Soil lead concentration	ug/g or ppm	395	395	395	395
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	1.99	1.99	1.99	1.99
PbB_0	X	X	Baseline PbB	ug/dL	2.30	2.30	2.30	2.30
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.100	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.100	0.100
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S, D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S, D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	78	78	78	78
$AT_{S, D}$	X	X	Averaging time (same for soil and dust)	days/yr	91	91	91	91
PbB_{adult}	**PbB of adult worker, geometric mean**			**ug/dL**	**3.9**	**3.9**	**3.9**	**3.9**
$PbB_{fetal, 0.95}$	**95th percentile PbB among fetuses of adult workers**			**ug/dL**	**11.0**	**11.0**	**11.0**	**11.0**
PbB_t	**Target PbB level of concern (e.g., 10 ug/dL)**			**ug/dL**	**10.0**	**10.0**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**			**%**	**6.5%**	**6.5%**	**6.5%**	**6.5%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

***Equation 1, based on Eq. 1, 2 in USEPA (1996).**

PbB_{adult} =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal, 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

****Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).**

PbB_{adult} =	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal, 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

APPENDIX J
RAGS Table 5 and 6 Series

Table 5.1

NON-CANCER TOXICITY DATA - ORAL/DERMAL

Blackburn & Union Privileges Site

Walpole, Massachusetts

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal[1]	Absorbed RfD for Dermal [2]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) [3] (MM/DD/YYYY)
Volatile Organic Compounds										
Benzene	Chronic	4.0E-03	mg/kg-day	1	4.0E-03	mg/kg-day	Hematological; Immunological	300	IRIS	4/17/2003
Chloroform	Chronic	1.0E-02	mg/kg-day	1	1.0E-02	mg/kg-day	Hepatic	1000	IRIS	10/19/2001
Ethylbenzene	Chronic	1.0E-01	mg/kg-day	1	1.0E-01	mg/kg-day	Hepatic; Renal	1000	IRIS	6/1/1991
Methylene chloride (Dichloromethane)	Chronic	6.0E-02	mg/kg-day	1	6.0E-02	mg/kg-day	Hepatic	100	IRIS	3/1/1988
Methyl tert-butyl ether (MTBE)	Chronic	3.0E-01	mg/kg-day	1	3.0E-01	mg/kg-day	Hepatic; Renal	300	ATSDR	8/1/1996
Styrene	Chronic	2.0E-01	mg/kg-day	1	2.0E-01	mg/kg-day	Hematological; Hepatic; Renal	1000	IRIS	9/1/1990
Toluene	Chronic	8.0E-02	mg/kg-day	1	8.0E-02	mg/kg-day	Renal; Hepatic	3000	IRIS	9/23/2005
Trichloroethylene (TCE)	Chronic	3.0E-04	mg/kg-day	1	3.0E-04	mg/kg-day	Hepatic; Renal; Developmental; Immunological	3000	NCEA Draft	8/1/2001
Xylenes (mixed isomers)	Chronic	2.0E-01	mg/kg-day	1	2.0E-01	mg/kg-day	Whole Body	1000	IRIS	2/21/2003
Semivolatile Organic Compounds										
Non-Carcinogenic PAHs										
Acenaphthene	Chronic	6.0E-02	mg/kg-day	1	6.0E-02	mg/kg-day	Hepatic	3000	IRIS	4/1/1994
Acenaphthylene	Chronic	3.0E-02	mg/kg-day	1	3.0E-02	mg/kg-day	Renal	3000	IRIS (pyrene)	7/1/1993
Fluorene	Chronic	4.0E-02	mg/kg-day	1	4.0E-02	mg/kg-day	Hematological	3000	IRIS	11/1/1990
2-Methylnaphthalene	Chronic	4.0E-03	mg/kg-day	1	4.0E-03	mg/kg-day	Respiratory	1000	IRIS	12/22/2003
Naphthalene	Chronic	2.0E-02	mg/kg-day	1	2.0E-02	mg/kg-day	Whole Body	3000	IRIS	9/17/1998
Pyrene	Chronic	3.0E-02	mg/kg-day	1	3.0E-02	mg/kg-day	Renal	3000	IRIS	7/1/1993
Carcinogenic PAHs										
Benz(a)anthracene	Chronic	3.0E-02	mg/kg-day	1	3.0E-02	mg/kg-day	Renal	3000	IRIS (pyrene)	7/1/1993
Benzo(a)pyrene	Chronic	3.0E-02	mg/kg-day	1	3.0E-02	mg/kg-day	Renal	3000	IRIS (pyrene)	7/1/1993
Benzo(b)fluoranthene	Chronic	3.0E-02	mg/kg-day	1	3.0E-02	mg/kg-day	Renal	3000	IRIS (pyrene)	7/1/1993
Dibenz(ah)anthracene	Chronic	3.0E-02	mg/kg-day	1	3.0E-02	mg/kg-day	Renal	3000	IRIS (pyrene)	7/1/1993
Indeno(1,2,3-cd)pyrene	Chronic	3.0E-02	mg/kg-day	1	3.0E-02	mg/kg-day	Renal	3000	IRIS (pyrene)	7/1/1993
Phthalates										
Bis(2-ethylhexyl)phthalate (DEHP)	Chronic	2.0E-02	mg/kg-day	1	2.0E-02	mg/kg-day	Hepatic	1000	IRIS	5/1/1991
Phenols										
4-Methylphenol	Chronic	5.0E-03	mg/kg-day	1	5.0E-03	mg/kg-day	Neurological; Respiratory; Developmental; Whole Body	1000	HEAST	7/31/1997
4-Nitrophenol	Chronic	8.0E-03	mg/kg-day	1	8.0E-03	mg/kg-day	Hepatic; Renal; Respiratory	3000	EPA NCEA	1/27/1995
Other SVOCs										
Carbazole	Chronic	NA	NA	1	NA	NA	NA	NA	NA	NA

Table 5.1

NON-CANCER TOXICITY DATA - ORAL/DERMAL

Blackburn & Union Privileges Site

Walpole, Massachusetts

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal[1]	Absorbed RfD for Dermal [2]		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) [3] (MM/DD/YYYY)
Metals										
Antimony	Chronic	4.0E-04	mg/kg-day	0.15	6.0E-05	mg/kg-day	Whole Body; Hepatic	1000	IRIS (potassium antimony tartrate)	2/1/1991
Arsenic	Chronic	3.0E-04	mg/kg-day	1	3.0E-04	mg/kg-day	Integumental; Cardiovascular	3	IRIS	2/1/1993
Barium	Chronic	2.0E-01	mg/kg-day	0.07	1.4E-02	mg/kg-day	Renal	300	IRIS	7/11/2005
Cadmium (in groundwater or suface water)	Chronic	5.0E-04	mg/kg-day	0.05	2.5E-05	mg/kg-day	Renal	10	IRIS	2/1/1994
Chromium VI	Chronic	3.0E-03	mg/kg-day	0.025	7.5E-05	mg/kg-day	None observed	900	IRIS	9/3/1998
Lead	Chronic	NA	NA	1	NA	NA	NA	NA	NA	NA
Manganese	Chronic	7.0E-02	mg/kg-day	0.04	2.8E-03	mg/kg-day	Neurological	1	IRIS (10 mg/day RfD minus 5 mg/day background ingestion)	5/1/1996
Manganese (water ingestion pathways only)	Chronic	2.4E-02	mg/kg-day	NA	NA	NA	Neurological	3	IRIS (10 mg/day RfD minus 5 mg/day background ingestion, divided by MF of 3)	5/1/1996
Mercury	Chronic	3.0E-04	mg/kg-day	1	3.0E-04	mg/kg-day	Immunological	1000	IRIS (mercuric chloride)	5/1/1995
Nickel	Chronic	2.0E-02	mg/kg-day	0.04	8.0E-04	mg/kg-day	Whole Body; Hepatic	300	IRIS (nickel soluble salts)	12/1/1996
Selenium	Chronic	5.0E-03	mg/kg-day	1	5.0E-03	mg/kg-day	Neurological; Hepatic; Hematological; Integumental	3	IRIS	9/1/1991
Thallium	Chronic	6.6E-05	mg/kg-day	1	6.6E-05	mg/kg-day	None observed	3000	IRIS (thallium sulfate, MW adjusted)	9/1/1990
Vanadium	Chronic	5.0E-03	mg/kg-day	0.026	1.3E-04	mg/kg-day	Renal	100	IRIS (vanadium pentoxide, corrected for 56% vanadium content as directed by STSC 1/7/2005)	12/1/1996
Zinc	Chronic	3.0E-01	mg/kg-day	1	3.0E-01	mg/kg-day	Hematological	3	IRIS	8/3/2005
Inorganic Chemicals										
Cyanide (free)	Chronic	2.0E-02	mg/kg-day	1	2.0E-02	mg/kg-day	Whole Body; Endocrine; Neurological	500	IRIS	2/1/1993

Notes:

(1) The source of the "Oral Absorption Efficiency for Dermal" is Exhibit 4.1 in RAGS Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. EPA, 2004.

(2) The derivation of the absorbed RfDs for dermal exposure can be found in Section 4.5 of the text.

(3) Dates indicate the last time the toxicity value was updated. IRIS was searched in April, 2005.

NA = Not Available

ATSDR = Agency for Toxic Substances and Disease Registry

HEAST = Health Effects Assessment Summary Table

IRIS = Integrated Risk Information System

NCEA = National Center for Environmental Assessment

STSC = Superfund Risk Technical Support Center

Table 5.2

NON-CANCER TOXICITY DATA -- INHALATION

Blackburn & Union Privileges Site

Walpole, Massachusetts

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units			Source(s)	Date(s) (1) (MM/DD/YYYY)
Volatile Organic Compounds							
Benzene	Chronic	3.0E-02	mg/m3	Hematological; Immunological	300	IRIS	4/17/2003
Chloroform	Chronic	5.0E-02	mg/m3	Renal; Hepatic; Neurological	100	STSC	1/22/2003
Ethylbenzene	Chronic	1.0E+00	mg/m3	Developmental	300	IRIS	3/1/1991
Methylene chloride (Dichloromethane)	Chronic	1.0E+00	mg/m3	Hepatic	30	ATSDR	9/1/2000
Methyl tert-butyl ether (MTBE)	Chronic	3.0E+00	mg/m3	Hepatic; Renal; Neurological	100	IRIS	9/1/1993
Styrene	Chronic	1.0E+00	mg/m3	Neurological	30	IRIS	7/1/1993
Toluene	Chronic	5.0E+00	mg/m3	Neurological	10	IRIS	9/23/2005
Trichloroethylene (TCE)	Chronic	4.0E-02	mg/m3	Neurological; Hepatic; Endocrine	1000	NCEA Draft	8/1/2001
Xylenes (mixed isomers)	Chronic	1.0E-01	mg/m3	Neurological	300	IRIS	2/21/2003
Semivolatile Organic Compounds							
Non-Carcinogenic PAHs							
Acenaphthene	Chronic	NA	NA	NA	NA	NA	NA
Acenaphthylene	Chronic	NA	NA	NA	NA	NA	NA
Fluorene	Chronic	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	Chronic	3.0E-03	mg/m3	Respiratory	3000	IRIS (naphthalene)	9/17/1998
Naphthalene	Chronic	3.0E-03	mg/m3	Respiratory	3000	IRIS	9/17/1998
Pyrene	Chronic	NA	NA	NA	NA	NA	NA

Notes:

(1) Dates indicate the last time the toxicity value was updated. IRIS was searched in April, 2005.

NA = Not Available

ATSDR = Agency for Toxic Substances and Disease Registry

IRIS = Integrated Risk Information System

NCEA = National Center for Environmental Assessment

STSC = Superfund Risk Technical Support Center

Table 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

Blackburn & Union Privileges Site

Walpole, Massachusetts

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal[1]	Absorbed Cancer Slope Factor for Dermal[2]		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s)[3] (MM/DD/YYYY)
Volatile Organic Compounds								
Benzene	1.5E-02 to 5.5E-02	1/(mg/kg-day)	1	1.5E-02 to 5.5E-02	1/(mg/kg-day)	A	IRIS Oral Slope Factor Range	1/9/2000
Chloroform	NA	NA	1	NA	NA	B2 *	IRIS (mode of action is non-linear, chronic RfD is protective of cancer)	10/19/2001
Ethylbenzene	NA	NA	1	NA	NA	D	IRIS	8/1/1991
Methylene chloride (Dichloromethane)	7.5E-03	1/(mg/kg-day)	1	7.5E-03	1/(mg/kg-day)	B2	IRIS	2/1/1995
Methyl tert-butyl ether (MTBE)	1.8E-03	1/(mg/kg-day)	1	1.8E-03	1/(mg/kg-day)	---	CalEPA	3/1/1999
Styrene	NA	NA	1	NA	NA	NA	NA	NA
Toluene	NA	NA	1	NA	NA	inadequate information to assess the carcinogenic potential	IRIS	9/23/2005
Trichloroethylene (TCE)	2.0E-02 to 4.0E-01	1/(mg/kg-day)	1	2.0E-02 to 4.0E-01	1/(mg/kg-day)	B1	NCEA Draft Range	8/1/2001
Xylenes (mixed isomers)	NA	NA	1	NA	NA	data are inadequate for an assessment of the carcinogenic potential	IRIS	2/21/2003
Semivolatile Organic Compounds								
Non-Carcinogenic PAHs								
Acenaphthene	NA	NA	1	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	1	NA	NA	D	IRIS	1/1/1991
Fluorene	NA	NA	1	NA	NA	D	IRIS	12/1/1990
2-Methylnaphthalene	NA	NA	1	NA	NA	data are inadequate to assess carcinogenic potential	IRIS	12/22/2003
Naphthalene	NA	NA	1	NA	NA	C	IRIS	9/17/1998
Pyrene	NA	NA	1	NA	NA	D	IRIS	1/1/1991
Carcinogenic PAHs								
Benz(a)anthracene	7.3E-01	1/(mg/kg-day)	1	7.3E-01	1/(mg/kg-day)	B2	IRIS (benzo(a)pyrene); USEPA, 1993	11/1/1994
Benzo(a)pyrene	7.3E+00	1/(mg/kg-day)	1	7.3E+00	1/(mg/kg-day)	B2	IRIS	11/1/1994
Benzo(b)fluoranthene	7.3E-01	1/(mg/kg-day)	1	7.3E-01	1/(mg/kg-day)	B2	IRIS (benzo(a)pyrene); USEPA, 1993	11/1/1994
Dibenz(ah)anthracene	7.3E+00	1/(mg/kg-day)	1	7.3E+00	1/(mg/kg-day)	B2	IRIS (benzo(a)pyrene); USEPA, 1993	11/1/1994
Indeno(1,2,3-cd)pyrene	7.3E-01	1/(mg/kg-day)	1	7.3E-01	1/(mg/kg-day)	B2	IRIS (benzo(a)pyrene); USEPA, 1993	11/1/1994
Phthalates								
Bis(2-ethylhexyl)phthalate (DEHP)	1.4E-02	1/(mg/kg-day)	1	1.4E-02	1/(mg/kg-day)	B2	IRIS	2/1/1993
Phenols								
4-Methylphenol	NA	NA	1	NA	NA	C	IRIS	8/1/1991
4-Nitrophenol	NA	NA	1	NA	NA	NA	NA	NA

Table 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

Blackburn & Union Privileges Site

Walpole, Massachusetts

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal[1]	Absorbed Cancer Slope Factor for Dermal[2]		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s)[3] (MM/DD/YYYY)
Other SVOCs								
Carbazole	2.0E-02	1/(mg/kg-day)	1	2.0E-02	1/(mg/kg-day)	B2	HEAST	7/31/1997
Metals								
Antimony	NA	NA	0.15	NA	NA	NA	NA	NA
Arsenic	1.5E+00	1/(mg/kg-day)	1	1.5E+00	1/(mg/kg-day)	A	IRIS	4/10/1998
Barium	NA	NA	0.07	NA	NA	D	IRIS	3/30/1998
Cadmium (in groundwater or suface water)	NA	NA	0.05	NA	NA	B1	IRIS	6/1/1992
Chromium VI	NA	NA	0.025	NA	NA	D	IRIS	9/3/1998
Lead	NA	NA	1	NA	NA	B2	IRIS	11/1/1993
Manganese	NA	NA	0.04	NA	NA	D	IRIS	12/1/1996
Manganese (water ingestion pathways only)	NA	NA	NA	NA	NA	D	IRIS	12/1/1996
Mercury	NA	NA	1	NA	NA	C	IRIS (mercuric chloride)	6/1/1995
Nickel	NA	NA	0.04	NA	NA	NA	NA	NA
Selenium	NA	NA	1	NA	NA	D	IRIS	7/1/1993
Thallium	NA	NA	1	NA	NA	D	IRIS (thallium sulfate)	9/1/1990
Vanadium	NA	NA	0.026	NA	NA	NA	NA	NA
Zinc	NA	NA	1	NA	NA	data are inadequate to assess carcinogenic potential	IRIS	8/3/2005
Inorganic Chemicals								
Cyanide (free)	NA	NA	1	NA	NA	D	IRIS	3/1/1991

Notes:

(1) The source of the "Oral Absorption Efficiency for Dermal" is Exhibit 4.1 in RAGS Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. EPA, 2004.

(2) The derivation of the absorbed CSFs for dermal exposure can be found in Section 4.5 of the text.

(3) Dates indicate the last time the toxicity value was updated. IRIS was searched in April, 2005.

*Consistent with the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005), USEPA has determined that chloroform is likely to be carcinogenic to humans by all routes of exposure under high-exposure conditions that lead to cytotoxicity and regenerative hyperplasia in susceptible tissues. Chloroform is not likely to be carcinogenic to humans by any route of exposure under exposure conditions that do not cause cytotoxicity and cell regeneration (IRIS, 2001).

NA = Not Available

CalEPA = California Environmental Protection Agency

HEAST = Health Effects Assessment Summary Table

IRIS = Integrated Risk Information System

NCEA = National Center for Environmental Assessment

Table 6.2

CANCER TOXICITY DATA - INHALATION

Blackburn & Union Privileges Site

Walpole, Massachusetts

Chemical of Potential Concern	Unit Risk		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds					
Benzene	2.2E-06 to 7.8E-06	1/(ug/m3)	A	IRIS Unit Risk Range	1/9/2000
Chloroform	2.3E-05	1/(ug/m3)	B2 *	IRIS	10/19/2001
Ethylbenzene	1.1E-06	1/(ug/m3)	Likely	STSC (provisional value) This value has been withdrawn by NCEA.	10/12/1999
Methylene chloride (Dichloromethane)	4.7E-07	1/(ug/m3)	B2	IRIS	2/1/1995
Methyl tert-butyl ether (MTBE)	2.6E-07	1/(ug/m3)	---	CalEPA	3/1/1999
Styrene	NA	NA	NA	NA	NA
Toluene	NA	NA	inadequate information to assess the carcinogenic potential	IRIS	9/23/2005
Trichloroethylene (TCE)	2.0E-06 to 1.1E-04	1/(ug/m3)	B1	CalEPA (low end); NCEA Draft Range (high end)	12/19/02; 8/1/2001
Xylenes (mixed isomers)	NA	NA	data are inadequate for an assessment of the carcinogenic potential	IRIS	2/21/2003
Semivolatile Organic Compounds					
Non-Carcinogenic PAHs					
Acenaphthene	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	D	IRIS	1/1/1991
Fluorene	NA	NA	D	IRIS	12/1/1990
2-Methylnaphthalene	NA	NA	data are inadequate to assess carcinogenic potential	IRIS	12/22/2003
Naphthalene	NA	NA	C	IRIS	9/17/1998
Pyrene	NA	NA	D	IRIS	1/1/1991

Notes:

(1) Dates indicate the last time the toxicity value was updated. IRIS was searched in April, 2005.

*Consistent with the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005), USEPA has determined that chloroform is likely to be carcinogenic to humans by all routes of exposure under high-exposure conditions that lead to cytotoxicity and regenerative hyperplasia in susceptible tissues. Chloroform is not likely to be carcinogenic to humans by any route of exposure under exposure conditions that do not cause cytotoxicity and cell regeneration (IRIS, 2001).

**USEPA is in the process of reviewing toxicity and carcinogenicity from the inhalation route. Until new toxicity values are final, we will evaluate the carcinogenic potential of chloroform using the IUR in IRIS.

NA = Not Available

CalEPA = California Environmental Protection Agency

IRIS = Integrated Risk Information System

NCEA = National Center for Environmental Assessment

STSC = Superfund Risk Technical Support Center

Email Correspondence: Early Life Exposure to Benzo(a)pyrene

From: levinson.sarah@epamail.epa.gov
Sent: Wednesday, February 08, 2006 12:29 PM
To: Donna J. Vorhees
Subject: RE: Blackburn & Union: Early Life Exposure to B(a)P

Yes, I'm sorry for the confusion, CSF should have been used in the comment you called attention to.

As to the criteria for evaluating the adequacy of data from which early life CSFs may be developed , EPA is working on developing guidance. It is my understanding that we will rely on our Office of Research and Development and our IRIS program to undertake thorough chemical specific reviews.

Sarah Levinson
US EPA Region 1
617-918-1390

From: "Donna J. Vorhees" dvorhees@menziecura.com
Sent: 02/08/2006 08:56 AM
To: Sarah Levinson/R1/USEPA/US@EPA
Cc: Dave Lederer/R1/USEPA/US@EPA,
'"Brad Green"'<bgreen@sanbornhead.com>
Subject: RE: Blackburn & Union: Early Life Exposure to B(a)P

Sarah,

Thank you for your prompt response. To meet the goals of transparency and clarity, we plan to add your email message to the HHRA appendix with COPC toxicity values (i.e. RAGS Part D Tables 5 and 6). Before doing so, we would appreciate your response to the following questions:

In your email message, what do you mean by ".the reason for employing the default ADAFs for B(a)P is that based on the current database, this compound does not presently meet EPA's requirements for deriving chemical specific ADAFs"? Did you mean to say that data for B(a)P do not meet EPA's requirements for deriving a chemical-specific, early life cancer slope factor (CSF)? Our understanding is that ADAFs are used only to evaluate exposures to mutagenic chemicals with insufficient data to derive early life CSFs. One would calculate an early life CSF, not a "chemical-specific ADAF," for mutagenic chemicals with sufficient data. Also, what are EPA's data requirements for deriving a chemical-specific, early life CSF? The Early Life guidance (last paragraph of Section 3.2.1.2) explains why some types of data were judged to be better than other types of data for developing ADAFs, but we do not see discussion specific to the

development of chemical-specific, early life CSFs. My purpose in asking these questions is not to belabor this issue, but to make sure that the analyses are presented in the HHRA clearly and accurately.

Thank you,

Donna

-----Original Message-----
From: levinson.sarah@epamail.epa.gov
[mailto:levinson.sarah@epamail.epa.gov]

Sent: Monday, February 06, 2006 9:54 AM
To: Donna J. Vorhees
Cc: Lederer.Dave@epamail.epa.gov
Subject: Re: Blackburn & Union: Early Life Exposure to B(a)P

Dave mentioned this to me the other day and I'm pleased that MC has agreed to include the risk calculations for the documented mutagenic mode of action compounds in the Blackburn & Union risk assessment as requested by EPA.
In response to your email, it appears that your understanding is correct, in that EPA Region 1 seeks quantification of the risk to B(a)P, and the 6 other carcinogenic PAHs benz[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene in accordance with EPA's Supplemental Guidance for Assessing Sesceptibility from Early-Life Exposure to Carcinogens (2005). Based on my conversations with EPA HQ, it is appropriate to utilize the default ADAFs (age dependent adjustment factors) as contained in the noted EPA guidance, together with the B(a)P potency estimates from EPA's IRIS database for cancer risk evaluations involving B(a)P because B(a)P has a demonstrated and documented mutagenic mode of action. Because the carcinogenic potencies of the 6 other carcinogenic PAHs are expressed relative to the potency of B(a)P (EPA 1993), HQ has also indicated that the default ADAFs as contained in the noted EPA's 2005 guidance are also appropriate to use when quantifying the cancer risk posed by the 6 other carcinogenic PAHs. EPA's 1993 provisional PAH relative potency factors for the 6 carcinogenic PAHs together with the default ADAFs of 2005 are thus both to be used when quantitating risk to benz[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene.
Based on my recent conversations with EPA HQ, the reason for employing the default ADAFs for B(a)P is that based on the current database, this compound does not presently meet EPA's requirements for deriving chemical specific ADAFs. At such time that EPA undertakes a review of the IRIS chemical file for B(a)P, EPA will review all available information and will evaluate at that time, whether a chemical-specific ADAF or the default ADAF for B(a)P is warranted.

Sarah Levinson

US EPA Region 1
617-918-1390

"Donna J. Vorhees" <dvorhees@menziecura.com>
To: Sarah Levinson/R1/USEPA/US@EPA
02/02/2006 02:33 PM
Cc: "'Brad Green'" <bgreen@sanbornhead.com>, Dave Lederer/R1/USEPA/US@EPA
Subject: Blackburn & Union: Early Life Exposure to B(a)P

Dear Sarah,

During a conference call on January 30th, Dave Lederer offered the option of M&E calculating risks associated with early life exposure to B(a)P that would be integrated into the uncertainty analysis section of the Baseline Human Health Risk Assessment (HHRA). We explained that it would be more efficient for MCA to do the calculations, and Dave asked me to email you with the list of PAHs that should be included in these calculations. We assume that the pending EPA guidance would require evaluation of B(a)P and the six other carcinogenic PAHs with relative potency factors: benz[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene.

We will calculate risks from early life exposure to these PAHs in the uncertainty analysis section of the HHRA unless we hear otherwise from you. In addition, would you please provide written documentation of your discussions with EPA headquarters regarding EPA's expectations for this evaluation? I assume your discussions involve the PAHs that should be evaluated and why data are not sufficient at this time to support use of anything other than default adjustment factors for PAHs. The early life guidance document does not provide this specific information, and you indicated in a voicemail message on January 12th that you could provide more information about these consultations.

Thank you,
Donna

_____
Donna J. Vorhees, Sc.D.
Menzie-Cura & Associates, Inc.
8 Winchester Place, Suite 202
Winchester, MA 01890
Telephone: 781--782-6143
Facsimile: 781-368-1025
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APPENDIX K
RAGS Table 7 Series (Calculation of Cancer Risks and Non-Cancer Hazards)

Table 7.1 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 122	Ingestion	Benzo(a)pyrene	0.385	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Arsenic	14.3	mg/kg	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	8.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
				Manganese	203	mg/kg	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	36.7	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								5.E-06					0.03
			Dermal	Benzo(a)pyrene	0.385	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Arsenic	14.3	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.003
			Exp. Route Total								8.E-07					0.003
	Exposure Medium Total										8.E-07					0.003
	Plant tissue	Gleason Court Lot 122	Ingestion	Arsenic	NA	NA	2.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-05	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
	Exposure Medium Total										3.E-05					0.2
Soil Total											3.E-05					0.2
											Total of Receptor Risks Across All Media 3.E-05					Total of Receptor Hazards Across All Media 0.2

Note: NA = not available/not applicable

Table 7.1 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 122	Ingestion	Benzo(a)pyrene	0.385	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Arsenic	14.3	mg/kg	7.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	8.E-05	mg/kg/day	3.E-04	mg/kg-day	0.3
				Manganese	203	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	36.7	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								1.E-05					0.3
			Dermal	Benzo(a)pyrene	0.385	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	14.3	mg/kg	6.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-07	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								1.E-06					0.02
	Exposure Medium Total										1.E-06					0.02
	Plant tissue	Gleason Court Lot 122	Ingestion	Arsenic	NA	NA	7.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	9.E-05	mg/kg/day	3.E-04	mg/kg-day	0.3
	Exposure Medium Total										1.E-05					0.3
Soil Total											1.E-05					0.3
											Total of Receptor Risks Across All Media					2.E-05
																Total of Receptor Hazards Across All Media
																0.6

Note: NA = not available/not applicable

Table 7.2 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 124	Ingestion	Benzo(a)pyrene	0.64	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	0.87	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.075	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Vanadium	32	mg/kg	6.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								1.E-06					0.004
			Dermal	Benzo(a)pyrene	0.64	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Benzo(b)fluoranthene	0.87	mg/kg	9.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Dibenz(ah)anthracene	0.075	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000008
			Exp. Route Total								6.E-07					0.00002
Soil Total											2.E-06					0.004
Soil Gas	Indoor Air	Gleason Court Lot 124	Inhalation	Trichloroethylene (TCE)	1.31E-05	mg/m3	4.E-06	mg/m3	1.E-04	1/(ug/m3)	5.E-07	1.E-05	mg/m3	4.E-02	mg/m3	0.0003
				1,2,4-Trimethylbenzene	0.000117	mg/m3	4.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	3.33E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	6.E-03	mg/m3	0.005
				Naphthalene	3.56E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											5.E-07					0.04
										Total of Receptor Risks Across All Media	2.E-06				Total of Receptor Hazards Across All Media	0.04

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.2 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 124	Ingestion	Benzo(a)pyrene	0.64	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(b)fluoranthene	0.87	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenz(ah)anthracene	0.075	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Vanadium	32	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								3.E-06					0.04
			Dermal	Benzo(a)pyrene	0.64	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	0.87	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Dibenz(ah)anthracene	0.075	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
			Exp. Route Total								1.E-06					0.0001
Soil Total											4.E-06					0.04
Soil Gas	Indoor Air	Gleason Court Lot 124	Inhalation	Trichloroethylene (TCE)	1.31E-05	mg/m3	1.E-06	mg/m3	1.E-04	1/(ug/m3)	1.E-07	1.E-05	mg/m3	4.E-02	mg/m3	0.0003
				1,2,4-Trimethylbenzene	0.000117	mg/m3	1.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	3.33E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	6.E-03	mg/m3	0.005
				Naphthalene	3.56E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											1.E-07					0.04
										Total of Receptor Risks Across All Media	4.E-06				Total of Receptor Hazards Across All Media	0.07

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.3 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 125	Ingestion	Benz(a)anthracene	1.2	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	1.4	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(b)fluoranthene	1.7	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Dibenz(ah)anthracene	0.12	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	7.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	2	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.004
				Manganese	252	mg/kg	5.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	26.9	mg/kg	5.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								3.E-06					0.009
			Dermal	Benz(a)anthracene	1.2	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(a)pyrene	1.4	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	1.7	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.12	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-08	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	2	mg/kg	5.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-08	1.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0005
			Exp. Route Total								1.E-06					0.0005
	Exposure Medium Total										5.E-06					0.01
	Plant tissue	Gleason Court Lot 125	Ingestion	Arsenic	NA	NA	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
	Exposure Medium Total										4.E-06					0.02
Soil Total											9.E-06					0.03
Soil Gas	Indoor Air	Gleason Court Lot 125	Inhalation	Trichloroethylene (TCE)	8.82E-06	mg/m3	3.E-06	mg/m3	1.E-04	1/(ug/m3)	3.E-07	8.E-06	mg/m3	4.E-02	mg/m3	0.0002
				1,2,4-Trimethylbenzene	0.000117	mg/m3	4.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	3.33E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	6.E-03	mg/m3	0.005
				Naphthalene	3.56E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											3.E-07					0.04
										Total of Receptor Risks Across All Media	9.E-06				Total of Receptor Hazards Across All Media	0.07

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.3 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 125	Ingestion	Benz(a)anthracene	1.2	mg/kg	6.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-07	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(a)pyrene	1.4	mg/kg	7.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	1.7	mg/kg	8.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-07	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	0.12	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	2	mg/kg	9.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Manganese	252	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	26.9	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								8.E-06					0.09
			Dermal	Benz(a)anthracene	1.2	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Benzo(a)pyrene	1.4	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Benzo(b)fluoranthene	1.7	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	0.12	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Arsenic	2	mg/kg	8.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	9.E-07	mg/kg/day	3.E-04	mg/kg-day	0.003
			Exp. Route Total								2.E-06					0.003
	Exposure Medium Total										1.E-05					0.09
	Plant tissue	Gleason Court Lot 125	Ingestion	Arsenic	NA	NA	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
	Exposure Medium Total										2.E-06					0.04
Soil Total											1.E-05					0.1
Soil Gas	Indoor Air	Gleason Court Lot 125	Inhalation	Trichloroethylene (TCE)	8.82E-06	mg/m3	7.E-07	mg/m3	1.E-04	1/(ug/m3)	8.E-08	8.E-06	mg/m3	4.E-02	mg/m3	0.0002
				1,2,4-Trimethylbenzene	0.000117	mg/m3	1.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	3.33E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	6.E-03	mg/m3	0.005
				Naphthalene	3.56E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											8.E-08					0.04
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		0.2

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.4 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Vacant Lot	Ingestion	Benzo(a)pyrene	0.29	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Arsenic	19.3	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Manganese	232	mg/kg	5.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	29	mg/kg	6.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								6.E-06					0.04
			Dermal	Benzo(a)pyrene	0.29	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	9.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
			Dermal	Arsenic	19.3	mg/kg	5.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
			Exp. Route Total								9.E-07					0.005
Soil Total											7.E-06					0.05
											Total of Receptor Risks Across All Media 7.E-06					Total of Receptor Hazards Across All Media 0.05

Note: NA = not available/not applicable

Table 7.4 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Vacant Lot	Ingestion	Benzo(a)pyrene	0.29	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Arsenic	19.3	mg/kg	9.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.4
				Manganese	232	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	29	mg/kg	1.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								1.E-05					0.4
			Dermal	Benzo(a)pyrene	0.29	mg/kg	5.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
			Dermal	Arsenic	19.3	mg/kg	8.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	9.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
			Exp. Route Total								2.E-06					0.03
Soil Total											2.E-05					0.4
											Total of Receptor Risks Across All Media 2.E-05					Total of Receptor Hazards Across All Media 0.4

Note: NA = not available/not applicable

Table 7.5 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Orlando Property	Ingestion	Benz(a)anthracene	1.57	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(a)pyrene	1.29	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(b)fluoranthene	1.49	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Dibenz(ah)anthracene	0.074	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Indeno(1,2,3-cd)pyrene	0.326	mg/kg	7.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Arsenic	3.31	mg/kg	7.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
				Chromium VI	16.4	mg/kg	3.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-03	mg/kg-day	0.003
				Manganese	404	mg/kg	8.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.003
				Vanadium	32.4	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								4.E-06					0.02
			Dermal	Benz(a)anthracene	1.57	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	1.29	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	1.49	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.074	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000008
				Indeno(1,2,3-cd)pyrene	0.326	mg/kg	3.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Arsenic	3.31	mg/kg	8.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0008
			Exp. Route Total								1.E-06					0.0008
	Exposure Medium Total										5.E-06					0.02
	Indoor Air	Orlando Property	Inhalation	Naphthalene	0.00106	mg/m3	3.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.3
	Exposure Medium Total										---					0.3
	Plant tissue	Orlando Property	Ingestion	Arsenic	NA	NA	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Chromium VI	NA	NA	7.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.07
	Exposure Medium Total										6.E-06					0.1
Soil Total											1.E-05					0.5
										Total of Receptor Risks Across All Media	1.E-05				Total of Receptor Hazards Across All Media	0.5

Note: NA = not available/not applicable

Table 7.5 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Orlando Property	Ingestion	Benz(a)anthracene	1.57	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	1.29	mg/kg	6.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-06	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	1.49	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	0.074	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Indeno(1,2,3-cd)pyrene	0.326	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Arsenic	3.31	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
				Chromium VI	16.4	mg/kg	8.E-06	mg/kg/day	NA	NA	---	9.E-05	mg/kg/day	3.E-03	mg/kg-day	0.03
				Manganese	404	mg/kg	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.03
				Vanadium	32.4	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								8.E-06					0.2
			Dermal	Benz(a)anthracene	1.57	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(a)pyrene	1.29	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Benzo(b)fluoranthene	1.49	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	0.074	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Indeno(1,2,3-cd)pyrene	0.326	mg/kg	6.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	3.31	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
			Exp. Route Total								2.E-06					0.005
	Exposure Medium Total										1.E-05					0.2
	Indoor Air	Orlando Property	Inhalation	Naphthalene	0.00106	mg/m3	9.E-05	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.3
	Exposure Medium Total										---					0.3
	Plant tissue	Orlando Property	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Chromium VI	NA	NA	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
	Exposure Medium Total										3.E-06					0.2
Soil Total											1.E-05					0.7
							Total of Receptor Risks Across All Media				1.E-05	Total of Receptor Hazards Across All Media				0.7

Note: NA = not available/not applicable

Table 7.6 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 208	Ingestion	Benzo(a)pyrene	0.064	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-08	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	3.4	mg/kg	7.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.007
				Manganese	286	mg/kg	6.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	21.5	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
				Cyanide (free)	3.2	mg/kg	6.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	2.E-02	mg/kg-day	0.00009
			Exp. Route Total								1.E-06					0.01
			Dermal	Benzo(a)pyrene	0.064	mg/kg	7.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000006
			Dermal	Arsenic	3.4	mg/kg	8.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0008
			Exp. Route Total								2.E-07					0.0008
	Exposure Medium Total										1.E-06					0.01
	Plant tissue	Lot 208	Ingestion	Arsenic	NA	NA	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
	Exposure Medium Total										6.E-06					0.04
Soil Total											8.E-06					0.05
											Total of Receptor Risks Across All Media 8.E-06					Total of Receptor Hazards Across All Media 0.05

Note: NA = not available/not applicable

Table 7.6 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 208	Ingestion	Benzo(a)pyrene	0.064	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Arsenic	3.4	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
				Manganese	286	mg/kg	1.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	21.5	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.02
				Cyanide (free)	3.2	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	2.E-02	mg/kg-day	0.0009
			Exp. Route Total								3.E-06					0.1
			Dermal	Benzo(a)pyrene	0.064	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
			Dermal	Arsenic	3.4	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
			Exp. Route Total								3.E-07					0.005
	Exposure Medium Total										3.E-06					0.1
	Plant tissue	Lot 208	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
	Exposure Medium Total										3.E-06					0.07
Soil Total											6.E-06					0.2
											Total of Receptor Risks Across All Media 6.E-06					Total of Receptor Hazards Across All Media 0.2

Note: NA = not available/not applicable

Table 7.7 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 210	Ingestion	Benzo(a)pyrene	0.61	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	0.8	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	3.6	mg/kg	7.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.007
				Manganese	347	mg/kg	7.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.003
				Nickel	165	mg/kg	3.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	2.E-02	mg/kg-day	0.005
				Vanadium	33.6	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								2.E-06					0.02
			Dermal	Benzo(a)pyrene	0.61	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Benzo(b)fluoranthene	0.8	mg/kg	8.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Arsenic	3.6	mg/kg	9.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0008
			Exp. Route Total								7.E-07					0.0009
	Exposure Medium Total										3.E-06					0.02
	Plant tissue	Lot 210	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Nickel	NA	NA	2.E-04	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	2.E-02	mg/kg-day	0.03
	Exposure Medium Total										7.E-06					0.07
Soil Total											1.E-05					0.09
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		0.09

Note: NA = not available/not applicable

Table 7.7 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 210	Ingestion	Benzo(a)pyrene	0.61	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(b)fluoranthene	0.8	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Arsenic	3.6	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Manganese	347	mg/kg	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.03
				Nickel	165	mg/kg	8.E-05	mg/kg/day	NA	NA	---	9.E-04	mg/kg/day	2.E-02	mg/kg-day	0.05
				Vanadium	33.6	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								5.E-06					0.2
			Dermal	Benzo(a)pyrene	0.61	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	0.8	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Arsenic	3.6	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								1.E-06					0.006
	Exposure Medium Total										6.E-06					0.2
	Plant tissue	Lot 210	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Nickel	NA	NA	8.E-05	mg/kg/day	NA	NA	---	9.E-04	mg/kg/day	2.E-02	mg/kg-day	0.04
	Exposure Medium Total										3.E-06					0.1
Soil Total											9.E-06					0.3
										Total of Receptor Risks Across All Media	9.E-06			Total of Receptor Hazards Across All Media		0.3

Note: NA = not available/not applicable

Table 7.8 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 230	Ingestion	Benzo(a)pyrene	0.42	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Arsenic	6.8	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Vanadium	28.3	mg/kg	6.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								3.E-06					0.02
			Dermal	Benzo(a)pyrene	0.42	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
			Dermal	Arsenic	6.8	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	5.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								6.E-07					0.002
	Exposure Medium Total										3.E-06					0.02
	Plant tissue	Lot 230	Ingestion	Arsenic	NA	NA	9.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
	Exposure Medium Total										1.E-05					0.08
Soil Total											2.E-05					0.1
										Total of Receptor Risks Across All Media	2.E-05				Total of Receptor Hazards Across All Media	0.1

Note: NA = not available/not applicable

Table 7.8 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 230	Ingestion	Benzo(a)pyrene	0.42	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Arsenic	6.8	mg/kg	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-06	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Vanadium	28.3	mg/kg	1.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								6.E-06					0.2
			Dermal	Benzo(a)pyrene	0.42	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
			Dermal	Arsenic	6.8	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								9.E-07					0.01
	Exposure Medium Total										7.E-06					0.2
	Plant tissue	Lot 230	Ingestion	Arsenic	NA	NA	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-06	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
	Exposure Medium Total										5.E-06					0.1
Soil Total											1.E-05					0.3
							Total of Receptor Risks Across All Media				1.E-05	Total of Receptor Hazards Across All Media				0.3

Note: NA = not available/not applicable

Table 7.9 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 257	Ingestion	Benz(a)anthracene	0.79	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	0.765	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	1.04	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.145	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	9.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	0.715	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Arsenic	10.5	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Chromium VI	26	mg/kg	5.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-03	mg/kg-day	0.005
				Manganese	415	mg/kg	8.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.003
				Vanadium	35.9	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								5.E-06					0.03
			Dermal	Benz(a)anthracene	0.79	mg/kg	8.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Benzo(a)pyrene	0.765	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Benzo(b)fluoranthene	1.04	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.145	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Indeno(1,2,3-cd)pyrene	0.715	mg/kg	7.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Arsenic	10.5	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	7.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								1.E-06					0.002
	Exposure Medium Total										6.E-06					0.04
	Plant tissue	Lot 257	Ingestion	Arsenic	NA	NA	1.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-05	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Chromium VI	NA	NA	1.E-04	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
	Exposure Medium Total										2.E-05					0.2
Soil Total											3.E-05					0.3
									Total of Receptor Risks Across All Media		3.E-05			Total of Receptor Hazards Across All Media		0.3

Note: NA = not available/not applicable

Table 7.9 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 257	Ingestion	Benz(a)anthracene	0.79	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(a)pyrene	0.765	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(b)fluoranthene	1.04	mg/kg	5.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-07	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenz(ah)anthracene	0.145	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	0.715	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Arsenic	10.5	mg/kg	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	26	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-03	mg/kg-day	0.05
				Manganese	415	mg/kg	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.03
				Vanadium	35.9	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								1.E-05					0.3
			Dermal	Benz(a)anthracene	0.79	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(a)pyrene	0.765	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(b)fluoranthene	1.04	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Dibenz(ah)anthracene	0.145	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Indeno(1,2,3-cd)pyrene	0.715	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Arsenic	10.5	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								2.E-06					0.02
	Exposure Medium Total										1.E-05					0.3
	Plant tissue	Lot 257	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-06	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	NA	NA	4.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-03	mg/kg-day	0.2
	Exposure Medium Total										8.E-06					0.4
Soil Total											2.E-05					0.7
							Total of Receptor Risks Across All Media				2.E-05	Total of Receptor Hazards Across All Media				0.7

Note: NA = not available/not applicable

Table 7.10 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 282	Ingestion	Benzo(a)pyrene	0.17	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Arsenic	8.9	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Manganese	391	mg/kg	8.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.003
				Vanadium	36.5	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								3.E-06					0.02
			Dermal	Benzo(a)pyrene	0.17	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	5.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	8.9	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								5.E-07					0.002
	Exposure Medium Total										5.E-07					0.002
	Plant tissue	Lot 282	Ingestion	Arsenic	NA	NA	1.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-05	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
	Exposure Medium Total										2.E-05					0.1
Soil Total											2.E-05					0.1
											Total of Receptor Risks Across All Media 2.E-05					Total of Receptor Hazards Across All Media 0.1

Note: NA = not available/not applicable

Table 7.10 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 282	Ingestion	Benzo(a)pyrene	0.17	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	8.9	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Manganese	391	mg/kg	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.03
				Vanadium	36.5	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								7.E-06					0.2
			Dermal	Benzo(a)pyrene	0.17	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Arsenic	8.9	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-07	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								7.E-07					0.01
	Exposure Medium Total										7.E-07					0.01
	Plant tissue	Lot 282	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
	Exposure Medium Total										7.E-06					0.2
Soil Total											8.E-06					0.2
											Total of Receptor Risks Across All Media 1.E-05					Total of Receptor Hazards Across All Media 0.4

Note: NA = not available/not applicable

Table 7.11 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 283	Ingestion	Benz(a)anthracene	0.78	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	0.72	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	0.62	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.059	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	4.9	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Manganese	811	mg/kg	2.E-04	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	7.E-02	mg/kg-day	0.007
				Vanadium	34.4	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								3.E-06					0.02
			Dermal	Benz(a)anthracene	0.78	mg/kg	8.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Benzo(a)pyrene	0.72	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Benzo(b)fluoranthene	0.62	mg/kg	6.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Dibenz(ah)anthracene	0.059	mg/kg	6.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000006
				Arsenic	4.9	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.001
			Exp. Route Total								9.E-07					0.001
	Exposure Medium Total										4.E-06					0.02
	Indoor Air	Lot 283	Inhalation	Chloroform	4.21E-06	mg/m3	1.E-06	mg/m3	2.E-05	1/(ug/m3)	3.E-08	4.E-06	mg/m3	5.E-02	mg/m3	0.00008
				Naphthalene	0.000272	mg/m3	9.E-05	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.09
	Exposure Medium Total										3.E-08					0.09
	Plant tissue	Lot 283	Ingestion	Arsenic	NA	NA	6.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	9.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
	Exposure Medium Total										9.E-06					0.06
Soil Total											1.E-05					0.2
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		0.2

Note: NA = not available/not applicable

Table 7.11 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 283	Ingestion	Benz(a)anthracene	0.78	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(a)pyrene	0.72	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(b)fluoranthene	0.62	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	0.059	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Arsenic	4.9	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.09
				Manganese	811	mg/kg	4.E-04	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	7.E-02	mg/kg-day	0.06
				Vanadium	34.4	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								7.E-06					0.2
			Dermal	Benz(a)anthracene	0.78	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(a)pyrene	0.72	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(b)fluoranthene	0.62	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Dibenz(ah)anthracene	0.059	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Arsenic	4.9	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.008
			Exp. Route Total								1.E-06					0.008
	Exposure Medium Total										8.E-06					0.2
	Indoor Air	Lot 283	Inhalation	Chloroform	4.21E-06	mg/m3	3.E-07	mg/m3	2.E-05	1/(ug/m3)	8.E-09	4.E-06	mg/m3	5.E-02	mg/m3	0.00008
				Naphthalene	0.000272	mg/m3	2.E-05	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.09
	Exposure Medium Total										8.E-09					0.09
	Plant tissue	Lot 283	Ingestion	Arsenic	NA	NA	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
	Exposure Medium Total										4.E-06					0.1
Soil Total											1.E-05					0.4
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		0.4

Note: NA = not available/not applicable

Table 7.12 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 342	Ingestion	Benzo(a)pyrene	0.1	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	6.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	5.7	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Chromium VI	25.3	mg/kg	5.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-03	mg/kg-day	0.005
				Vanadium	39.2	mg/kg	8.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.005
			Exp. Route Total								2.E-06					0.02
			Dermal	Benzo(a)pyrene	0.1	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	5.7	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	4.E-07	mg/kg/day	3.E-04	mg/kg-day	0.001
			Exp. Route Total								3.E-07					0.001
	Exposure Medium Total										3.E-07					0.001
	Plant tissue	Lot 342	Ingestion	Arsenic	NA	NA	7.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Chromium VI	NA	NA	1.E-04	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
	Exposure Medium Total										1.E-05					0.2
Soil Total											1.E-05					0.2
										Total of Receptor Risks Across All Media	1.E-05				Total of Receptor Hazards Across All Media	0.2

Note: NA = not available/not applicable

Table 7.12 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 342	Ingestion	Benzo(a)pyrene	0.1	mg/kg	5.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	5.7	mg/kg	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Chromium VI	25.3	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-03	mg/kg-day	0.05
				Vanadium	39.2	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								4.E-06					0.2
			Dermal	Benzo(a)pyrene	0.1	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Arsenic	5.7	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.009
			Exp. Route Total								5.E-07					0.009
	Exposure Medium Total										5.E-07					0.009
	Plant tissue	Lot 342	Ingestion	Arsenic	NA	NA	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Chromium VI	NA	NA	4.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-03	mg/kg-day	0.2
	Exposure Medium Total										4.E-06					0.3
Soil Total											5.E-06					0.3
											Total of Receptor Risks Across All Media 9.E-06					Total of Receptor Hazards Across All Media 0.5

Note: NA = not available/not applicable

Table 7.13 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 360	Ingestion	Benz(a)anthracene	0.514	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(a)pyrene	0.455	mg/kg	9.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Benzo(b)fluoranthene	0.656	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.0899	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	5.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Antimony	6.7	mg/kg	1.E-06	mg/kg/day	NA	NA	---	4.E-06	mg/kg/day	4.E-04	mg/kg-day	0.01
				Arsenic	18	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Chromium VI	96.8	mg/kg	2.E-05	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	3.E-03	mg/kg-day	0.02
				Vanadium	48.6	mg/kg	1.E-05	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	5.E-03	mg/kg-day	0.006
			Exp. Route Total								6.E-06					0.07
			Dermal	Benz(a)anthracene	0.514	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Benzo(a)pyrene	0.455	mg/kg	5.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Benzo(b)fluoranthene	0.656	mg/kg	7.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Dibenz(ah)anthracene	0.0899	mg/kg	9.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000009
				Arsenic	18	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.004
			Exp. Route Total								1.E-06					0.004
	Exposure Medium Total										8.E-06					0.07
	Plant tissue	Lot 360	Ingestion	Arsenic	NA	NA	2.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-05	7.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	NA	NA	4.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	3.E-03	mg/kg-day	0.4
	Exposure Medium Total										3.E-05					0.6
Soil Total											4.E-05					0.7
											Total of Receptor Risks Across All Media 4.E-05					Total of Receptor Hazards Across All Media 0.7

Note: NA = not available/not applicable

Table 7.13 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 360	Ingestion	Benz(a)anthracene	0.514	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Benzo(a)pyrene	0.455	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Benzo(b)fluoranthene	0.656	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	0.0899	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Antimony	6.7	mg/kg	3.E-06	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	4.E-04	mg/kg-day	0.09
				Arsenic	18	mg/kg	8.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.3
				Chromium VI	96.8	mg/kg	5.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-03	mg/kg-day	0.2
				Vanadium	48.6	mg/kg	2.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	5.E-03	mg/kg-day	0.05
			Exp. Route Total								1.E-05					0.7
			Dermal	Benz(a)anthracene	0.514	mg/kg	9.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(a)pyrene	0.455	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(b)fluoranthene	0.656	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Dibenz(ah)anthracene	0.0899	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Arsenic	18	mg/kg	7.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	8.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
			Exp. Route Total								2.E-06					0.03
	Exposure Medium Total										2.E-05					0.7
	Plant tissue	Lot 360	Ingestion	Arsenic	NA	NA	9.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.4
				Chromium VI	NA	NA	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	3.E-03	mg/kg-day	0.6
	Exposure Medium Total										1.E-05					1
Soil Total											3.E-05					2
										Total of Receptor Risks Across All Media	3.E-05			Total of Receptor Hazards Across All Media		2

Note: NA = not available/not applicable

Table 7.13 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 360	Ingestion	Benz(a)anthracene	0.514	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Benzo(a)pyrene	0.455	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Benzo(b)fluoranthene	0.656	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Dibenz(ah)anthracene	0.0899	mg/kg	3.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000009
				Antimony	4.55	mg/kg	1.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-04	mg/kg-day	0.003
				Arsenic	18	mg/kg	5.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Chromium VI	67.4	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-03	mg/kg-day	0.007
				Vanadium	47.3	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								9.E-07					0.03
			Dermal	Benz(a)anthracene	0.514	mg/kg	2.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-09	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000007
				Benzo(a)pyrene	0.455	mg/kg	2.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000007
				Benzo(b)fluoranthene	0.656	mg/kg	3.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-09	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Dibenz(ah)anthracene	0.0899	mg/kg	4.E-10	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-09	4.E-09	mg/kg/day	3.E-02	mg/kg-day	0.0000001
				Arsenic	18	mg/kg	2.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-08	2.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0006
			Exp. Route Total								5.E-08					0.0006
Soil Total											1.E-06					0.03
										Total of Receptor Risks Across All Media	1.E-06				Total of Receptor Hazards Across All Media	0.03

Note: NA = not available/not applicable

Table 7.13 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 360	Ingestion	Benz(a)anthracene	0.514	mg/kg	4.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(a)pyrene	0.455	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	0.656	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Dibenz(ah)anthracene	0.0899	mg/kg	7.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Antimony	4.55	mg/kg	4.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	4.E-04	mg/kg-day	0.03
				Arsenic	18	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	67.4	mg/kg	5.E-06	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.06
				Vanadium	47.3	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								2.E-06					0.3
			Dermal	Benz(a)anthracene	0.514	mg/kg	6.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-09	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Benzo(a)pyrene	0.455	mg/kg	5.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Benzo(b)fluoranthene	0.656	mg/kg	7.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-09	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Dibenz(ah)anthracene	0.0899	mg/kg	1.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-09	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	18	mg/kg	5.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-08	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								1.E-07					0.006
Soil Total											3.E-06					0.3
										Total of Receptor Risks Across All Media	3.E-06				Total of Receptor Hazards Across All Media	0.3

Note: NA = not available/not applicable

Table 7.14 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Indoor Air	Off-Site Residential Building 1	Inhalation	Naphthalene	0.0000481	mg/m3	2.E-05	mg/m3	NA	NA	---	5.E-05	mg/m3	3.E-03	mg/m3	0.02
Soil Total											---					0.02
										Total of Receptor Risks Across All Media	---				Total of Receptor Hazards Across All Media	0.02

Note: NA = not available/not applicable

Table 7.14 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Indoor Air	Off-Site Residential Building 1	Inhalation	Naphthalene	0.0000481	mg/m3	4.E-06	mg/m3	NA	NA	---	5.E-05	mg/m3	3.E-03	mg/m3	0.02
Soil Total											---					0.02
										Total of Receptor Risks Across All Media	---				Total of Receptor Hazards Across All Media	0.02

Note: NA = not available/not applicable

Table 7.15 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Indoor Air	Off-Site Residential Building 2	Inhalation	Naphthalene	0.000624	mg/m3	2.E-04	mg/m3	NA	NA	---	6.E-04	mg/m3	3.E-03	mg/m3	0.2
Soil Total											---					0.2
											Total of Receptor Risks Across All Media					---
																Total of Receptor Hazards Across All Media
																0.2

Note: NA = not available/not applicable

Table 7.15 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Indoor Air	Off-Site Residential Building 2	Inhalation	Naphthalene	0.000624	mg/m3	5.E-05	mg/m3	NA	NA	---	6.E-04	mg/m3	3.E-03	mg/m3	0.2
Soil Total											---					0.2
											Total of Receptor Risks Across All Media	---				Total of Receptor Hazards Across All Media	0.2

Note: NA = not available/not applicable

Table 7.15 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Indoor Air	Off-Site Residential Building 2	Inhalation	Naphthalene	0.00014	mg/m3	8.E-06	mg/m3	NA	NA	---	8.E-05	mg/m3	3.E-03	mg/m3	0.03
Soil Total											---					0.03
									Total of Receptor Risks Across All Media		---			Total of Receptor Hazards Across All Media		0.03

Note: NA = not available/not applicable

Table 7.15 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Indoor Air	Off-Site Residential Building 2	Inhalation	Naphthalene	0.00014	mg/m3	3.E-06	mg/m3	NA	NA	---	1.E-04	mg/m3	3.E-03	mg/m3	0.04
Soil Total											---					0.04
											---					0.04
									Total of Receptor Risks Across All Media					Total of Receptor Hazards Across All Media		

Note: NA = not available/not applicable

Table 7.16 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Indoor Air	Off-Site Residential Building 3	Inhalation	Naphthalene	0.000338	mg/m3	1.E-04	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.1
				Heptachlor	0.00000118	mg/m3	4.E-07	mg/m3	1.E-03	1/(ug/m3)	5.E-07	1.E-06	mg/m3	NA	NA	---
Soil Total											5.E-07					0.1
									Total of Receptor Risks Across All Media		5.E-07			Total of Receptor Hazards Across All Media		0.1

Note: NA = not available/not applicable

Table 7.16 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Indoor Air	Off-Site Residential Building 3	Inhalation	Naphthalene	0.000338	mg/m3	3.E-05	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.1
				Heptachlor	0.00000118	mg/m3	1.E-07	mg/m3	1.E-03	1/(ug/m3)	1.E-07	1.E-06	mg/m3	NA	NA	---
Soil Total											1.E-07					0.1
										Total of Receptor Risks Across All Media	1.E-07				Total of Receptor Hazards Across All Media	0.1

Note: NA = not available/not applicable

Table 7.17 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	West of South Street On-Facility and Vacant Lot 209	Ingestion	Benz(a)anthracene	3.32	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Benzo(a)pyrene	3.82	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Benzo(b)fluoranthene	3.84	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Chrysene	3.89	mg/kg	3.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-09	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Dibenz(ah)anthracene	0.4	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Indeno(1,2,3-cd)pyrene	1.62	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	18.1	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Manganese	197	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	26.9	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								4.E-06					0.04
			Dermal	Benz(a)anthracene	3.32	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Benzo(a)pyrene	3.82	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Benzo(b)fluoranthene	3.84	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Chrysene	3.89	mg/kg	2.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	1.E-09	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Dibenz(ah)anthracene	0.4	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Indeno(1,2,3-cd)pyrene	1.62	mg/kg	9.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	18.1	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.007
			Exp. Route Total								2.E-06					0.008
Soil Total											6.E-06					0.05
											Total of Receptor Risks Across All Media 6.E-06					Total of Receptor Hazards Across All Media 0.05

Note: NA = not available/not applicable

Table 7.18 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Ingestion	Benz(a)anthracene	22	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(a)pyrene	18	mg/kg	1.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(b)fluoranthene	30	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(k)fluoranthene	14	mg/kg	9.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	7.E-08	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Chrysene	24	mg/kg	2.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	1.E-08	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Dibenz(ah)anthracene	3.4	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Indeno(1,2,3-cd)pyrene	13	mg/kg	8.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-07	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Antimony	2.86	mg/kg	2.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	4.E-04	mg/kg-day	0.005
				Arsenic	86.5	mg/kg	6.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-06	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	32.9	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-03	mg/kg-day	0.007
				Manganese	310	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.003
				Vanadium	29.3	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								2.E-05					0.2
			Dermal	Benz(a)anthracene	22	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(a)pyrene	18	mg/kg	9.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	30	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(k)fluoranthene	14	mg/kg	7.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	5.E-08	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	24	mg/kg	1.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	9.E-09	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Dibenz(ah)anthracene	3.4	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Indeno(1,2,3-cd)pyrene	13	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	86.5	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.03
			Exp. Route Total								1.E-05					0.04
Soil Total											3.E-05					0.2
										Total of Receptor Risks Across All Media	3.E-05				Total of Receptor Hazards Across All Media	0.2

Note: NA = not available/not applicable

Table 7.19 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 350	Ingestion	Benzo(a)pyrene	0.15	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Antimony	4	mg/kg	3.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	4.E-04	mg/kg-day	0.006
				Arsenic	7.6	mg/kg	5.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Vanadium	45.4	mg/kg	3.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	5.E-03	mg/kg-day	0.006
			Exp. Route Total								8.E-07					0.03
			Dermal	Benzo(a)pyrene	0.15	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	8.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Arsenic	7.6	mg/kg	9.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	9.E-07	mg/kg/day	3.E-04	mg/kg-day	0.003
			Exp. Route Total								2.E-07					0.003
Soil Total											2.E-07					0.003
											Total of Receptor Risks Across All Media 1.E-06					Total of Receptor Hazards Across All Media 0.03

Note: NA = not available/not applicable

Table 7.20 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	0.17	mg/kg	4.E-08	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-08	1.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0003
				Benz(a)anthracene	18.3	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(a)pyrene	14.7	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	16.8	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	8.43	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	17.5	mg/kg	4.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	3.E-08	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	1.78	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	8.94	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	4.94	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								3.E-05					0.01
			Dermal	Benz(a)anthracene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	14.7	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	16.8	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	8.43	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Chrysene	17.5	mg/kg	3.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	1.78	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	8.94	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	4.94	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								3.E-05					0.003
Soil Total											6.E-05					0.02
Soil Gas	Indoor Air	East of South Street On-Facility Building 1	Inhalation	Benzene	4.73E-06	mg/m3	6.E-07	mg/m3	8.E-06	1/(ug/m3)	5.E-09	2.E-06	mg/m3	3.E-02	mg/m3	0.00005
				Carbon tetrachloride	0.000927	mg/m3	1.E-04	mg/m3	2.E-05	1/(ug/m3)	2.E-06	3.E-04	mg/m3	2.E-03	mg/m3	0.2
				Methylene chloride (Dichloromethane)	3.56E-05	mg/m3	4.E-06	mg/m3	5.E-07	1/(ug/m3)	2.E-09	1.E-05	mg/m3	1.E+00	mg/m3	0.00001
				Trichloroethylene (TCE)	1.82E-05	mg/m3	2.E-06	mg/m3	1.E-04	1/(ug/m3)	2.E-07	6.E-06	mg/m3	4.E-02	mg/m3	0.0002
Soil Gas Total											2.E-06					0.2
									Total of Receptor Risks Across All Media		6.E-05			Total of Receptor Hazards Across All Media		0.2

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.21 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	0.17	mg/kg	4.E-08	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-08	1.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0003
				Benz(a)anthracene	18.3	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(a)pyrene	14.7	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	16.8	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	8.43	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	17.5	mg/kg	4.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	3.E-08	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	1.78	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	8.94	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	4.94	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								3.E-05					0.01
			Dermal	Benz(a)anthracene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	14.7	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	16.8	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	8.43	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Chrysene	17.5	mg/kg	3.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	1.78	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	8.94	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	4.94	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								3.E-05					0.003
Soil Total											6.E-05					0.02
Soil Gas	Indoor Air	East of South Street On-Facility Building 2	Inhalation	Benzene	6.99E-06	mg/m3	9.E-07	mg/m3	8.E-06	1/(ug/m3)	7.E-09	2.E-06	mg/m3	3.E-02	mg/m3	0.00008
				Tetrachloroethylene (PCE)	1.74E-05	mg/m3	2.E-06	mg/m3	6.E-06	1/(ug/m3)	1.E-08	6.E-06	mg/m3	3.E-01	mg/m3	0.00002
				Trichloroethylene (TCE)	2.98E-06	mg/m3	4.E-07	mg/m3	1.E-04	1/(ug/m3)	4.E-08	1.E-06	mg/m3	4.E-02	mg/m3	0.00003
				1,2,4-Trimethylbenzene	0.000012	mg/m3	1.E-06	mg/m3	NA	NA	---	4.E-06	mg/m3	6.E-03	mg/m3	0.0007
				Naphthalene	4.61E-06	mg/m3	6.E-07	mg/m3	NA	NA	---	2.E-06	mg/m3	3.E-03	mg/m3	0.0005
Soil Gas Total											6.E-08					0.001
										Total of Receptor Risks Across All Media	6.E-05				Total of Receptor Hazards Across All Media	0.02

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.

See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.22 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	0.17	mg/kg	4.E-08	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-08	1.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0003
				Benz(a)anthracene	18.3	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(a)pyrene	14.7	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	16.8	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	8.43	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	17.5	mg/kg	4.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	3.E-08	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	1.78	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	8.94	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	4.94	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								3.E-05					0.01
			Dermal	Benz(a)anthracene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	14.7	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	16.8	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	8.43	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Chrysene	17.5	mg/kg	3.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	1.78	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	8.94	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	4.94	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								3.E-05					0.003
	Exposure Medium Total										6.E-05					0.02
	Indoor Air	East of South Street On-Facility Building 3	Inhalation	Trichlorofluoromethane	0.00455	mg/m3	6.E-04	mg/m3	NA	NA	---	2.E-03	mg/m3	7.E-01	mg/m3	0.002
				2-Methylnaphthalene	5.96E-05	mg/m3	7.E-06	mg/m3	NA	NA	---	2.E-05	mg/m3	3.E-03	mg/m3	0.007
				Naphthalene	0.0002	mg/m3	2.E-05	mg/m3	NA	NA	---	7.E-05	mg/m3	3.E-03	mg/m3	0.02
				Heptachlor	1.36E-07	mg/m3	2.E-08	mg/m3	1.E-03	1/(ug/m3)	2.E-08	5.E-08	mg/m3	NA	NA	---
	Exposure Medium Total										2.E-08					0.03
Soil Total											6.E-05					0.05
										Total of Receptor Risks Across All Media	6.E-05			Total of Receptor Hazards Across All Media		0.05

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.23 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	0.17	mg/kg	4.E-08	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-08	1.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0003
				Benz(a)anthracene	18.3	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(a)pyrene	14.7	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	16.8	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	8.43	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	17.5	mg/kg	4.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	3.E-08	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	1.78	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	8.94	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	4.94	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								3.E-05					0.01
			Dermal	Benz(a)anthracene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	14.7	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	16.8	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	8.43	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Chrysene	17.5	mg/kg	3.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	1.78	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	8.94	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	4.94	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								3.E-05					0.003
	Exposure Medium Total										6.E-05					0.02
	Indoor Air	East of South Street On-Facility Building 4	Inhalation	Benzene	0.00104	mg/m3	1.E-04	mg/m3	8.E-06	1/(ug/m3)	1.E-06	4.E-04	mg/m3	3.E-02	mg/m3	0.01
				Ethylbenzene	9.74E-05	mg/m3	1.E-05	mg/m3	1.E-06	1/(ug/m3)	1.E-08	3.E-05	mg/m3	1.E+00	mg/m3	0.00003
				2-Methylnaphthalene	0.000309	mg/m3	4.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	3.E-03	mg/m3	0.04
				Naphthalene	0.000688	mg/m3	8.E-05	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.08
	Exposure Medium Total										1.E-06					0.1
Soil Total											6.E-05					0.1
										Total of Receptor Risks Across All Media	6.E-05			Total of Receptor Hazards Across All Media		0.1

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.24 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	0.17	mg/kg	4.E-08	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-08	1.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0003
				Benz(a)anthracene	18.3	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(a)pyrene	14.7	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	16.8	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	8.43	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	17.5	mg/kg	4.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	3.E-08	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	1.78	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	8.94	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	4.94	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								3.E-05					0.01
			Dermal	Benz(a)anthracene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	14.7	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	16.8	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	8.43	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Chrysene	17.5	mg/kg	3.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	1.78	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	8.94	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	4.94	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								3.E-05					0.003
	Exposure Medium Total										6.E-05					0.02
	Indoor Air	East of South Street On-Facility Building 5	Inhalation	Benzene	0.000103	mg/m3	1.E-05	mg/m3	8.E-06	1/(ug/m3)	1.E-07	4.E-05	mg/m3	3.E-02	mg/m3	0.001
				2-Methylnaphthalene	0.000177	mg/m3	2.E-05	mg/m3	NA	NA	---	6.E-05	mg/m3	3.E-03	mg/m3	0.02
				Naphthalene	0.000605	mg/m3	7.E-05	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.07
	Exposure Medium Total										1.E-07					0.09
Soil Total											6.E-05					0.1
									Total of Receptor Risks Across All Media		6.E-05			Total of Receptor Hazards Across All Media		0.1

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.25 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Wader
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Lewis Pond	Ingestion	Benz(a)anthracene	2.13	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(a)pyrene	2.18	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(b)fluoranthene	2.77	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Dibenz(ah)anthracene	0.169	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	8.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	0.533	mg/kg	3.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Antimony	6.17	mg/kg	3.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	4.E-04	mg/kg-day	0.007
				Arsenic	17.5	mg/kg	8.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	8.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
				Beryllium	0.592	mg/kg	3.E-08	mg/kg/day	NA	NA	---	3.E-07	mg/kg/day	2.E-03	mg/kg-day	0.0001
				Cadmium	4.76	mg/kg	2.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	1.E-03	mg/kg-day	0.002
				Chromium VI	225	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-03	mg/kg-day	0.04
				Manganese	675	mg/kg	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	7.E-02	mg/kg-day	0.005
				Nickel	229	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	2.E-02	mg/kg-day	0.006
				Vanadium	47	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.005
			Exp. Route Total								2.E-06					0.09
			Dermal	Benz(a)anthracene	2.13	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(a)pyrene	2.18	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	2.77	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Dibenz(ah)anthracene	0.169	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	8.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	0.533	mg/kg	3.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Arsenic	17.5	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.007
				Cadmium	4.76	mg/kg	2.E-09	mg/kg/day	NA	NA	---	2.E-08	mg/kg/day	3.E-05	mg/kg-day	0.0007
			Exp. Route Total								1.E-06					0.008
Sediment Total											4.E-06					0.1
										Total of Receptor Risks Across All Media	4.E-06			Total of Receptor Hazards Across All Media		0.1

Note: NA = not available/not applicable

Table 7.26 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Wader
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Neponset River East of South Street	Dermal	Manganese	0.107	mg/L	2.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	3.E-03	mg/kg-day	0.0007
Surface Water Total											---					0.0007
Sediment	Sediment	Neponset River East of South Street	Ingestion	Benzo(a)pyrene	0.23	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Arsenic	1.22	mg/kg	6.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	9.E-08	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
				Manganese	586	mg/kg	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	7.E-02	mg/kg-day	0.004
				Vanadium	18.3	mg/kg	9.E-07	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	5.E-03	mg/kg-day	0.002
			Exp. Route Total								2.E-07					0.008
			Dermal	Benzo(a)pyrene	0.23	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
			Dermal	Arsenic	1.22	mg/kg	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	1.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0005
			Exp. Route Total								1.E-07					0.0005
Sediment Total											3.E-07					0.008
										Total of Receptor Risks Across All Media	3.E-07			Total of Receptor Hazards Across All Media		0.009

Note: NA = not available/not applicable

Table 7.27 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Wader
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Neponset River West of South Street	Dermal	Manganese	0.175	mg/L	3.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	3.E-03	mg/kg-day	0.001
Surface Water Total											---					0.001
Sediment	Sediment	Neponset River West of South Street	Ingestion	Benz(a)anthracene	1.09	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	1.17	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(b)fluoranthene	1.3	mg/kg	6.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.159	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	8.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	0.517	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Arsenic	3.46	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
				Manganese	629	mg/kg	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	7.E-02	mg/kg-day	0.004
				Vanadium	14.3	mg/kg	7.E-07	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	5.E-03	mg/kg-day	0.001
			Exp. Route Total								8.E-07					0.01
			Dermal	Benz(a)anthracene	1.09	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	1.17	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(b)fluoranthene	1.3	mg/kg	7.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.159	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	8.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	0.517	mg/kg	3.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Arsenic	3.46	mg/kg	4.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-08	4.E-07	mg/kg/day	3.E-04	mg/kg-day	0.001
			Exp. Route Total								7.E-07					0.001
Sediment Total											1.E-06					0.01
									Total of Receptor Risks Across All Media		1.E-06			Total of Receptor Hazards Across All Media		0.01

Note: NA = not available/not applicable

Table 7.28 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Wader
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Former Mill Tailrace	Dermal	Naphthalene	0.0012	mg/L	2.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0001
				Arsenic	0.0243	mg/L	5.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-08	5.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
				Chromium VI	0.0277	mg/L	1.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	8.E-05	mg/kg-day	0.01
				Manganese	0.786	mg/L	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-03	mg/kg-day	0.005
				Vanadium	0.0858	mg/L	2.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	1.E-04	mg/kg-day	0.01
Surface Water Total											7.E-08					0.03
Sediment	Sediment	Former Mill Tailrace	Ingestion	Benz(a)anthracene	2.73	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(a)pyrene	2.32	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	3.68	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Dibenz(ah)anthracene	0.176	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	8.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	1.8	mg/kg	9.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	8.58	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-07	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Chromium VI	33.1	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-03	mg/kg-day	0.005
				Manganese	2500	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	42.7	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								2.E-06					0.04
			Dermal	Benz(a)anthracene	2.73	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(a)pyrene	2.32	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	3.68	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Dibenz(ah)anthracene	0.176	mg/kg	9.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	9.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	1.8	mg/kg	9.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-08	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	8.58	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.003
			Exp. Route Total								1.E-06					0.003
Sediment Total											3.E-06					0.04
										Total of Receptor Risks Across All Media	3.E-06			Total of Receptor Hazards Across All Media		0.08

Note: NA = not available/not applicable

Table 7.29 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fisher
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Lewis Pond	Ingestion	Benz(a)anthracene	2.13	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	2.18	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(b)fluoranthene	2.77	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.169	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Indeno(1,2,3-cd)pyrene	0.533	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Antimony	6.17	mg/kg	5.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	4.E-04	mg/kg-day	0.004
				Arsenic	17.5	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Beryllium	0.592	mg/kg	5.E-08	mg/kg/day	NA	NA	---	2.E-07	mg/kg/day	2.E-03	mg/kg-day	0.00008
				Cadmium	4.76	mg/kg	4.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	1.E-03	mg/kg-day	0.001
				Chromium VI	225	mg/kg	2.E-05	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	3.E-03	mg/kg-day	0.02
				Manganese	675	mg/kg	6.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Nickel	229	mg/kg	2.E-05	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	2.E-02	mg/kg-day	0.003
				Vanadium	47	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.002
			Exp. Route Total								4.E-06					0.05
			Dermal	Benz(a)anthracene	2.13	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(a)pyrene	2.18	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	2.77	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.169	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000008
				Indeno(1,2,3-cd)pyrene	0.533	mg/kg	3.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	7.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	17.5	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
				Cadmium	4.76	mg/kg	2.E-09	mg/kg/day	NA	NA	---	5.E-09	mg/kg/day	3.E-05	mg/kg-day	0.0002
			Exp. Route Total								1.E-06					0.002
Sediment Total											5.E-06					0.05
Fish	Fish tissue	Lewis Pond	Ingestion	Benzo(a)pyrene	0.0063	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	0.011	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Bis(2-ethylhexyl)phthalate (DEHP)	11.2	mg/kg	7.E-04	mg/kg/day	1.E-02	1/(mg/kg-day)	1.E-05	2.E-03	mg/kg/day	2.E-02	mg/kg-day	0.1
				Arsenic	0.0815	mg/kg	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Mercury	0.127	mg/kg	8.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
Fish Total											2.E-05					0.2
										Total of Receptor Risks Across All Media	3.E-05				Total of Receptor Hazards Across All Media	0.3

Note: NA = not available/not applicable

Table 7.29 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fish Consumer
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish tissue	Lewis Pond	Ingestion	Benzo(a)pyrene	0.0063	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Benzo(b)fluoranthene	0.011	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Bis(2-ethylhexyl)phthalate (DEHP)	11.2	mg/kg	4.E-04	mg/kg/day	1.E-02	1/(mg/kg-day)	6.E-06	5.E-03	mg/kg/day	2.E-02	mg/kg-day	0.2
				Arsenic	0.0815	mg/kg	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-06	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Mercury	0.127	mg/kg	5.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
Fish Total											1.E-05					0.5
										Total of Receptor Risks Across All Media	1.E-05				Total of Receptor Hazards Across All Media	0.5

Note: NA = not available/not applicable

Table 7.30 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fisher
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Neponset River East of South Street	Dermal	Manganese	0.107	mg/L	6.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	3.E-03	mg/kg-day	0.0006
Surface Water Total											---					0.0006
Sediment	Sediment	Neponset River East of South Street	Ingestion	Benzo(a)pyrene	0.23	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	6.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	1.22	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.001
				Manganese	586	mg/kg	5.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	18.3	mg/kg	2.E-06	mg/kg/day	NA	NA	---	5.E-06	mg/kg/day	5.E-03	mg/kg-day	0.0009
			Exp. Route Total								3.E-07					0.004
			Dermal	Benzo(a)pyrene	0.23	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	1.22	mg/kg	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	4.E-08	mg/kg/day	3.E-04	mg/kg-day	0.0001
			Exp. Route Total								1.E-07					0.0001
Sediment Total											1.E-07					0.0001
Fish	Fish tissue	Neponset River	Ingestion	Benzo(a)pyrene	0.0032	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.0022	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Bis(2-ethylhexyl)phthalate (DEHP)	51	mg/kg	3.E-03	mg/kg/day	1.E-02	1/(mg/kg-day)	5.E-05	9.E-03	mg/kg/day	2.E-02	mg/kg-day	0.5
				Arsenic	0.0374	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Mercury	0.295	mg/kg	2.E-05	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Zinc	39.4	mg/kg	3.E-03	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	3.E-01	mg/kg-day	0.02
Fish Total											5.E-05					0.7
										Total of Receptor Risks Across All Media	5.E-05				Total of Receptor Hazards Across All Media	0.7

Note: NA = not available/not applicable

Table 7.30 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fish Consumer
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish tissue	Neponset River	Ingestion	Benzo(a)pyrene	0.0032	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Dibenz(ah)anthracene	0.0022	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Bis(2-ethylhexyl)phthalate (DEHP)	51	mg/kg	2.E-03	mg/kg/day	1.E-02	1/(mg/kg-day)	3.E-05	2.E-02	mg/kg/day	2.E-02	mg/kg-day	1
				Arsenic	0.0374	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Mercury	0.295	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.4
				Zinc	39.4	mg/kg	1.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	3.E-01	mg/kg-day	0.06
Fish Total											3.E-05					2
										Total of Receptor Risks Across All Media	3.E-05				Total of Receptor Hazards Across All Media	2

Note: NA = not available/not applicable

Table 7.30 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fisher
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Neponset River East of South Street	Dermal	Manganese	0.107	mg/L	4.E-08	mg/kg/day	NA	NA	---	4.E-07	mg/kg/day	3.E-03	mg/kg-day	0.0001
Surface Water Total											---					0.0001
Sediment	Sediment	Neponset River East of South Street	Ingestion	Benzo(a)pyrene	0.13	mg/kg	4.E-10	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-09	4.E-09	mg/kg/day	3.E-02	mg/kg-day	0.0000001
				Arsenic	0.902	mg/kg	3.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-09	3.E-08	mg/kg/day	3.E-04	mg/kg-day	0.00009
				Manganese	349	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	7.E-02	mg/kg-day	0.0001
				Vanadium	12.8	mg/kg	4.E-08	mg/kg/day	NA	NA	---	4.E-07	mg/kg/day	5.E-03	mg/kg-day	0.00008
			Exp. Route Total								7.E-09					0.0003
			Dermal	Benzo(a)pyrene	0.13	mg/kg	6.E-11	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-10	6.E-10	mg/kg/day	3.E-02	mg/kg-day	0.00000002
				Arsenic	0.902	mg/kg	1.E-10	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-10	1.E-09	mg/kg/day	3.E-04	mg/kg-day	0.000003
			Exp. Route Total								6.E-10					0.000003
Sediment Total											6.E-10					0.000003
Fish	Fish tissue	Neponset River	Ingestion	Benzo(a)pyrene	0.0032	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Dibenz(ah)anthracene	0.0022	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Bis(2-ethylhexyl)phthalate (DEHP)	12	mg/kg	9.E-05	mg/kg/day	1.E-02	1/(mg/kg-day)	1.E-06	9.E-04	mg/kg/day	2.E-02	mg/kg-day	0.04
				Arsenic	0.0374	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.009
				Mercury	0.295	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Zinc	39.4	mg/kg	3.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	3.E-01	mg/kg-day	0.009
Fish Total											2.E-06					0.1
										Total of Receptor Risks Across All Media	2.E-06				Total of Receptor Hazards Across All Media	0.1

Note: NA = not available/not applicable

Table 7.30 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fish Consumer
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish tissue	Neponset River	Ingestion	Benzo(a)pyrene	0.0032	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.0022	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Bis(2-ethylhexyl)phthalate (DEHP)	12	mg/kg	6.E-05	mg/kg/day	1.E-02	1/(mg/kg-day)	8.E-07	2.E-03	mg/kg/day	2.E-02	mg/kg-day	0.1
				Arsenic	0.0374	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Mercury	0.295	mg/kg	1.E-06	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Zinc	39.4	mg/kg	2.E-04	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	3.E-01	mg/kg-day	0.02
Fish Total											1.E-06					0.3
										Total of Receptor Risks Across All Media	1.E-06				Total of Receptor Hazards Across All Media	0.3

Note: NA = not available/not applicable

Table 7.31 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fisher
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Neponset River West of South Street	Dermal	Manganese	0.175	mg/L	9.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	3.E-03	mg/kg-day	0.001
Surface Water Total											---					0.001
Sediment	Sediment	Neponset River West of South Street	Ingestion	Benz(a)anthracene	1.09	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Benzo(a)pyrene	1.17	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	1.3	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.159	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Indeno(1,2,3-cd)pyrene	0.517	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Arsenic	3.46	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-07	9.E-07	mg/kg/day	3.E-04	mg/kg-day	0.003
				Manganese	629	mg/kg	5.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	14.3	mg/kg	1.E-06	mg/kg/day	NA	NA	---	4.E-06	mg/kg/day	5.E-03	mg/kg-day	0.0007
			Exp. Route Total								1.E-06					0.006
			Dermal	Benz(a)anthracene	1.09	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Benzo(a)pyrene	1.17	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Benzo(b)fluoranthene	1.3	mg/kg	6.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Dibenz(ah)anthracene	0.159	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000007
				Indeno(1,2,3-cd)pyrene	0.517	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	7.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	3.46	mg/kg	4.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-08	1.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0004
			Exp. Route Total								6.E-07					0.0004
Sediment Total											2.E-06					0.006
Fish	Fish tissue	Neponset River	Ingestion	Benzo(a)pyrene	0.0032	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.0022	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Bis(2-ethylhexyl)phthalate (DEHP)	51	mg/kg	3.E-03	mg/kg/day	1.E-02	1/(mg/kg-day)	5.E-05	9.E-03	mg/kg/day	2.E-02	mg/kg-day	0.5
				Arsenic	0.0374	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Mercury	0.295	mg/kg	2.E-05	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Zinc	39.4	mg/kg	3.E-03	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	3.E-01	mg/kg-day	0.02
Fish Total											5.E-05					0.7
										Total of Receptor Risks Across All Media	5.E-05				Total of Receptor Hazards Across All Media	0.7

Note: NA = not available/not applicable

Table 7.31 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fish Consumer
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish tissue	Neponset River	Ingestion	Benzo(a)pyrene	0.0032	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Dibenz(ah)anthracene	0.0022	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Bis(2-ethylhexyl)phthalate (DEHP)	51	mg/kg	2.E-03	mg/kg/day	1.E-02	1/(mg/kg-day)	3.E-05	2.E-02	mg/kg/day	2.E-02	mg/kg-day	1
				Arsenic	0.0374	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Mercury	0.295	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.4
				Zinc	39.4	mg/kg	1.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	3.E-01	mg/kg-day	0.06
Fish Total											3.E-05					2
										Total of Receptor Risks Across All Media	3.E-05				Total of Receptor Hazards Across All Media	2

Note: NA = not available/not applicable

Table 7.31 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fisher
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Water	Surface Water	Neponset River West of South Street	Dermal	Manganese	0.175	mg/L	6.E-08	mg/kg/day	NA	NA	---	6.E-07	mg/kg/day	3.E-03	mg/kg-day	0.0002
Surface Water Total											---					0.0002
Sediment	Sediment	Neponset River West of South Street	Ingestion	Benz(a)anthracene	1.09	mg/kg	3.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-09	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Benzo(a)pyrene	1.17	mg/kg	3.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Benzo(b)fluoranthene	1.3	mg/kg	4.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-09	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Dibenz(ah)anthracene	0.159	mg/kg	5.E-10	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-09	5.E-09	mg/kg/day	3.E-02	mg/kg-day	0.0000002
				Indeno(1,2,3-cd)pyrene	0.517	mg/kg	2.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-09	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000005
				Arsenic	3.46	mg/kg	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	1.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0003
				Manganese	629	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	7.E-02	mg/kg-day	0.0003
				Vanadium	14.3	mg/kg	4.E-08	mg/kg/day	NA	NA	---	4.E-07	mg/kg/day	5.E-03	mg/kg-day	0.00008
			Exp. Route Total								5.E-08					0.0007
			Dermal	Benz(a)anthracene	1.09	mg/kg	5.E-10	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-10	5.E-09	mg/kg/day	3.E-02	mg/kg-day	0.0000002
				Benzo(a)pyrene	1.17	mg/kg	5.E-10	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-09	5.E-09	mg/kg/day	3.E-02	mg/kg-day	0.0000002
				Benzo(b)fluoranthene	1.3	mg/kg	6.E-10	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-10	6.E-09	mg/kg/day	3.E-02	mg/kg-day	0.0000002
				Dibenz(ah)anthracene	0.159	mg/kg	7.E-11	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-10	7.E-10	mg/kg/day	3.E-02	mg/kg-day	0.00000002
				Indeno(1,2,3-cd)pyrene	0.517	mg/kg	2.E-10	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-10	2.E-09	mg/kg/day	3.E-02	mg/kg-day	0.00000008
				Arsenic	3.46	mg/kg	4.E-10	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-10	4.E-09	mg/kg/day	3.E-04	mg/kg-day	0.00001
			Exp. Route Total								6.E-09					0.00001
Sediment Total											6.E-08					0.0007
Fish	Fish tissue	Neponset River	Ingestion	Benzo(a)pyrene	0.0032	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Dibenz(ah)anthracene	0.0022	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Bis(2-ethylhexyl)phthalate (DEHP)	12	mg/kg	9.E-05	mg/kg/day	1.E-02	1/(mg/kg-day)	1.E-06	9.E-04	mg/kg/day	2.E-02	mg/kg-day	0.04
				Arsenic	0.0374	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.009
				Mercury	0.295	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Zinc	39.4	mg/kg	3.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	3.E-01	mg/kg-day	0.009
Fish Total											2.E-06					0.1
										Total of Receptor Risks Across All Media	2.E-06			Total of Receptor Hazards Across All Media		0.1

Note: NA = not available/not applicable

Table 7.31 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fish Consumer
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Fish	Fish tissue	Neponset River	Ingestion	Benzo(a)pyrene	0.0032	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.0022	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Bis(2-ethylhexyl)phthalate (DEHP)	12	mg/kg	6.E-05	mg/kg/day	1.E-02	1/(mg/kg-day)	8.E-07	2.E-03	mg/kg/day	2.E-02	mg/kg-day	0.1
				Arsenic	0.0374	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Mercury	0.295	mg/kg	1.E-06	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Zinc	39.4	mg/kg	2.E-04	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	3.E-01	mg/kg-day	0.02
Fish Total											1.E-06					0.3
										Total of Receptor Risks Across All Media	1.E-06				Total of Receptor Hazards Across All Media	0.3

Note: NA = not available/not applicable

Table 7.32 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	2.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	7.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	4.E-03	mg/kg-day	0.001
				Naphthalene	21.8	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	2.E-02	mg/kg-day	0.0006
				Benz(a)anthracene	29.5	mg/kg	6.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(a)pyrene	27.6	mg/kg	6.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(b)fluoranthene	32.4	mg/kg	7.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(k)fluoranthene	18.3	mg/kg	4.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	3.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Chrysene	27.4	mg/kg	6.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-08	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Dibenz(ah)anthracene	2.45	mg/kg	5.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenzofuran	10.9	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	2.E-03	mg/kg-day	0.003
				Antimony	2.55	mg/kg	5.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-04	mg/kg-day	0.004
				Arsenic	3.92	mg/kg	8.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.008
				Chromium VI	15.7	mg/kg	3.E-06	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	3.E-03	mg/kg-day	0.003
				Manganese	219	mg/kg	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Mercury	5.36	mg/kg	1.E-06	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Vanadium	34.5	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
				Zinc	1750	mg/kg	4.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	3.E-01	mg/kg-day	0.003
			Exp. Route Total								6.E-05					0.06
			Dermal	2-Methylnaphthalene	9.52	mg/kg	1.E-06	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	4.E-03	mg/kg-day	0.0007
				Naphthalene	21.8	mg/kg	2.E-06	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0003
				Benz(a)anthracene	29.5	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	27.6	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	32.4	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	18.3	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	27.4	mg/kg	3.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	2.45	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Dibenzofuran	10.9	mg/kg	9.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	2.E-03	mg/kg-day	0.001
				Arsenic	3.92	mg/kg	9.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0009
			Exp. Route Total								3.E-05					0.005
	Exposure Medium Total										9.E-05					0.06
	Plant tissue	East of South Street On-Facility	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Chromium VI	NA	NA	6.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.06
				Mercury	NA	NA	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Zinc	NA	NA	2.E-02	mg/kg/day	NA	NA	---	4.E-02	mg/kg/day	3.E-01	mg/kg-day	0.1
	Exposure Medium Total										7.E-06					0.3
Soil Total											9.E-05					0.3

Table 7.32 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Inhalation	Benzene	0.000024	mg/m3	8.E-06	mg/m3	8.E-06	1/(ug/m3)	6.E-08	2.E-05	mg/m3	3.E-02	mg/m3	0.0008
				Carbon tetrachloride	1.14E-05	mg/m3	4.E-06	mg/m3	2.E-05	1/(ug/m3)	6.E-08	1.E-05	mg/m3	2.E-03	mg/m3	0.005
				Chloroform	2.37E-05	mg/m3	8.E-06	mg/m3	2.E-05	1/(ug/m3)	2.E-07	2.E-05	mg/m3	5.E-02	mg/m3	0.0005
				1,2-Dichloroethylene (cis)	9.44E-05	mg/m3	3.E-05	mg/m3	NA	NA	---	9.E-05	mg/m3	2.E-01	mg/m3	0.0005
				Ethylbenzene	3.92E-05	mg/m3	1.E-05	mg/m3	1.E-06	1/(ug/m3)	1.E-08	4.E-05	mg/m3	1.E+00	mg/m3	0.00004
				Methylene chloride (Dichloromethane)	0.00014	mg/m3	5.E-05	mg/m3	5.E-07	1/(ug/m3)	2.E-08	1.E-04	mg/m3	1.E+00	mg/m3	0.0001
				Tetrachloroethylene (PCE)	7.15E-05	mg/m3	2.E-05	mg/m3	6.E-06	1/(ug/m3)	1.E-07	7.E-05	mg/m3	3.E-01	mg/m3	0.0002
				Trichloroethylene (TCE)	0.0126	mg/m3	4.E-03	mg/m3	1.E-04	1/(ug/m3)	5.E-04	1.E-02	mg/m3	4.E-02	mg/m3	0.3
				1,2,4-Trimethylbenzene	9.76E-05	mg/m3	3.E-05	mg/m3	NA	NA	---	9.E-05	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	4.27E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	4.E-05	mg/m3	6.E-03	mg/m3	0.007
				Naphthalene	3.07E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											5.E-04					0.3
										Total of Receptor Risks Across All Media	5.E-04				Total of Receptor Hazards Across All Media	0.7

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.32 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	4.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				2-Methylnaphthalene	9.52	mg/kg	4.E-06	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	4.E-03	mg/kg-day	0.01
				Naphthalene	21.8	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	2.E-02	mg/kg-day	0.006
				Benz(a)anthracene	29.5	mg/kg	1.E-05	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Benzo(a)pyrene	27.6	mg/kg	1.E-05	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-05	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Benzo(b)fluoranthene	32.4	mg/kg	2.E-05	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.006
				Benzo(k)fluoranthene	18.3	mg/kg	9.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	6.E-07	1.E-04	mg/kg/day	3.E-02	mg/kg-day	0.003
				Chrysene	27.4	mg/kg	1.E-05	mg/kg/day	7.E-03	1/(mg/kg-day)	9.E-08	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Dibenz(ah)anthracene	2.45	mg/kg	1.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Dibenzofuran	10.9	mg/kg	5.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	2.E-03	mg/kg-day	0.03
				Antimony	2.55	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	4.E-04	mg/kg-day	0.03
				Arsenic	3.92	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Chromium VI	15.7	mg/kg	7.E-06	mg/kg/day	NA	NA	---	9.E-05	mg/kg/day	3.E-03	mg/kg-day	0.03
				Manganese	219	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Mercury	5.36	mg/kg	3.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Vanadium	34.5	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
				Zinc	1750	mg/kg	8.E-04	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	3.E-01	mg/kg-day	0.03
			Exp. Route Total								1.E-04					0.6
			Dermal	2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	4.E-03	mg/kg-day	0.005
				Naphthalene	21.8	mg/kg	4.E-06	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	2.E-02	mg/kg-day	0.002
				Benz(a)anthracene	29.5	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(a)pyrene	27.6	mg/kg	5.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-05	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(b)fluoranthene	32.4	mg/kg	6.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(k)fluoranthene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	2.E-07	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Chrysene	27.4	mg/kg	5.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	3.E-08	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Dibenz(ah)anthracene	2.45	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Dibenzofuran	10.9	mg/kg	1.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	2.E-03	mg/kg-day	0.008
				Arsenic	3.92	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								5.E-05					0.03
	Exposure Medium Total										2.E-04					0.6
	Plant tissue	East of South Street On-Facility	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
				Chromium VI	NA	NA	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
				Mercury	NA	NA	9.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.03
				Zinc	NA	NA	6.E-03	mg/kg/day	NA	NA	---	7.E-02	mg/kg/day	3.E-01	mg/kg-day	0.2
	Exposure Medium Total										3.E-06					0.5
Soil Total											2.E-04					1

Table 7.32 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Inhalation	Benzene	0.000024	mg/m3	2.E-06	mg/m3	8.E-06	1/(ug/m3)	2.E-08	2.E-05	mg/m3	3.E-02	mg/m3	0.0008
				Carbon tetrachloride	1.14E-05	mg/m3	9.E-07	mg/m3	2.E-05	1/(ug/m3)	1.E-08	1.E-05	mg/m3	2.E-03	mg/m3	0.005
				Chloroform	2.37E-05	mg/m3	2.E-06	mg/m3	2.E-05	1/(ug/m3)	4.E-08	2.E-05	mg/m3	5.E-02	mg/m3	0.0005
				1,2-Dichloroethylene (cis)	9.44E-05	mg/m3	8.E-06	mg/m3	NA	NA	---	9.E-05	mg/m3	2.E-01	mg/m3	0.0005
				Ethylbenzene	3.92E-05	mg/m3	3.E-06	mg/m3	1.E-06	1/(ug/m3)	4.E-09	4.E-05	mg/m3	1.E+00	mg/m3	0.00004
				Methylene chloride (Dichloromethane)	0.00014	mg/m3	1.E-05	mg/m3	5.E-07	1/(ug/m3)	5.E-09	1.E-04	mg/m3	1.E+00	mg/m3	0.0001
				Tetrachloroethylene (PCE)	7.15E-05	mg/m3	6.E-06	mg/m3	6.E-06	1/(ug/m3)	3.E-08	7.E-05	mg/m3	3.E-01	mg/m3	0.0002
				Trichloroethylene (TCE)	0.0126	mg/m3	1.E-03	mg/m3	1.E-04	1/(ug/m3)	1.E-04	1.E-02	mg/m3	4.E-02	mg/m3	0.3
				1,2,4-Trimethylbenzene	9.76E-05	mg/m3	8.E-06	mg/m3	NA	NA	---	9.E-05	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	4.27E-05	mg/m3	4.E-06	mg/m3	NA	NA	---	4.E-05	mg/m3	6.E-03	mg/m3	0.007
				Naphthalene	3.07E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											1.E-04					0.3
										Total of Receptor Risks Across All Media	3.E-04			Total of Receptor Hazards Across All Media		1

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.32 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	3.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-07	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.009
				2-Methylnaphthalene	9.52	mg/kg	3.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	4.E-03	mg/kg-day	0.0007
				Naphthalene	21.8	mg/kg	6.E-07	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0003
				Benz(a)anthracene	29.5	mg/kg	9.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-07	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	27.6	mg/kg	8.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	32.4	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	18.3	mg/kg	5.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	4.E-08	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	27.4	mg/kg	8.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	6.E-09	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	2.45	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Dibenzofuran	10.9	mg/kg	3.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	2.E-03	mg/kg-day	0.002
				Antimony	2.55	mg/kg	7.E-08	mg/kg/day	NA	NA	---	7.E-07	mg/kg/day	4.E-04	mg/kg-day	0.002
				Arsenic	3.92	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.004
				Chromium VI	15.7	mg/kg	5.E-07	mg/kg/day	NA	NA	---	5.E-06	mg/kg/day	3.E-03	mg/kg-day	0.002
				Manganese	219	mg/kg	6.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	7.E-02	mg/kg-day	0.0009
				Mercury	5.36	mg/kg	2.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
				Vanadium	34.5	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.002
				Zinc	1750	mg/kg	5.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-01	mg/kg-day	0.002
			Exp. Route Total								8.E-06					0.03
			Dermal	2-Methylnaphthalene	9.52	mg/kg	4.E-08	mg/kg/day	NA	NA	---	4.E-07	mg/kg/day	4.E-03	mg/kg-day	0.0001
				Naphthalene	21.8	mg/kg	9.E-08	mg/kg/day	NA	NA	---	9.E-07	mg/kg/day	2.E-02	mg/kg-day	0.00005
				Benz(a)anthracene	29.5	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(a)pyrene	27.6	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	32.4	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(k)fluoranthene	18.3	mg/kg	8.E-08	mg/kg/day	7.E-02	1/(mg/kg-day)	6.E-09	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Chrysene	27.4	mg/kg	1.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	9.E-10	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Dibenz(ah)anthracene	2.45	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	4.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenzofuran	10.9	mg/kg	4.E-08	mg/kg/day	NA	NA	---	4.E-07	mg/kg/day	2.E-03	mg/kg-day	0.0002
				Arsenic	3.92	mg/kg	4.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-09	4.E-08	mg/kg/day	3.E-04	mg/kg-day	0.0001
			Exp. Route Total								1.E-06					0.0007
Soil Total											9.E-06					0.03
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Inhalation	Benzene	0.000024	mg/m3	1.E-06	mg/m3	8.E-06	1/(ug/m3)	1.E-08	1.E-05	mg/m3	3.E-02	mg/m3	0.0005
				Carbon tetrachloride	1.09E-05	mg/m3	7.E-07	mg/m3	2.E-05	1/(ug/m3)	1.E-08	7.E-06	mg/m3	2.E-03	mg/m3	0.003
				Chloroform	2.37E-05	mg/m3	1.E-06	mg/m3	2.E-05	1/(ug/m3)	3.E-08	1.E-05	mg/m3	5.E-02	mg/m3	0.0003
				1,2-Dichloroethylene (cis)	9.44E-05	mg/m3	6.E-06	mg/m3	NA	NA	---	6.E-05	mg/m3	2.E-01	mg/m3	0.0003
				Ethylbenzene	3.92E-05	mg/m3	2.E-06	mg/m3	1.E-06	1/(ug/m3)	3.E-09	2.E-05	mg/m3	1.E+00	mg/m3	0.00002
				Methylene chloride (Dichloromethane)	0.00014	mg/m3	8.E-06	mg/m3	5.E-07	1/(ug/m3)	4.E-09	8.E-05	mg/m3	1.E+00	mg/m3	0.00008
				Tetrachloroethylene (PCE)	7.15E-05	mg/m3	4.E-06	mg/m3	6.E-06	1/(ug/m3)	3.E-08	4.E-05	mg/m3	3.E-01	mg/m3	0.0001
				Trichloroethylene (TCE)	0.0013	mg/m3	8.E-05	mg/m3	1.E-04	1/(ug/m3)	9.E-06	8.E-04	mg/m3	4.E-02	mg/m3	0.02
				1,2,4-Trimethylbenzene	9.76E-05	mg/m3	6.E-06	mg/m3	NA	NA	---	6.E-05	mg/m3	6.E-03	mg/m3	0.01
				1,3,5-Trimethylbenzene	4.27E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	6.E-03	mg/m3	0.004
				Naphthalene	3.07E-05	mg/m3	2.E-06	mg/m3	NA	NA	---	2.E-05	mg/m3	3.E-03	mg/m3	0.006
Soil Gas Total											9.E-06					0.04
										Total of Receptor Risks Across All Media	2.E-05			Total of Receptor Hazards Across All Media		0.07

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.32 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	7.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	3.E-07	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
				2-Methylnaphthalene	9.52	mg/kg	7.E-07	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	4.E-03	mg/kg-day	0.007
				Naphthalene	21.8	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	2.E-02	mg/kg-day	0.003
				Benz(a)anthracene	29.5	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	8.E-05	mg/kg/day	3.E-02	mg/kg-day	0.003
				Benzo(a)pyrene	27.6	mg/kg	2.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	8.E-05	mg/kg/day	3.E-02	mg/kg-day	0.003
				Benzo(b)fluoranthene	32.4	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-05	mg/kg/day	3.E-02	mg/kg-day	0.003
				Benzo(k)fluoranthene	18.3	mg/kg	1.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Chrysene	27.4	mg/kg	2.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	8.E-05	mg/kg/day	3.E-02	mg/kg-day	0.003
				Dibenz(ah)anthracene	2.45	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	3.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0008
				Dibenzofuran	10.9	mg/kg	9.E-07	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	2.E-03	mg/kg-day	0.01
				Antimony	2.55	mg/kg	2.E-07	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	4.E-04	mg/kg-day	0.02
				Arsenic	3.92	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-07	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Chromium VI	15.7	mg/kg	1.E-06	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	3.E-03	mg/kg-day	0.01
				Manganese	219	mg/kg	2.E-05	mg/kg/day	NA	NA	---	6.E-04	mg/kg/day	7.E-02	mg/kg-day	0.009
				Mercury	5.36	mg/kg	4.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Vanadium	34.5	mg/kg	3.E-06	mg/kg/day	NA	NA	---	9.E-05	mg/kg/day	5.E-03	mg/kg-day	0.02
				Zinc	1750	mg/kg	1.E-04	mg/kg/day	NA	NA	---	5.E-03	mg/kg/day	3.E-01	mg/kg-day	0.02
			Exp. Route Total								2.E-05					0.3
			Dermal	2-Methylnaphthalene	9.52	mg/kg	1.E-07	mg/kg/day	NA	NA	---	4.E-06	mg/kg/day	4.E-03	mg/kg-day	0.0009
				Naphthalene	21.8	mg/kg	2.E-07	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0004
				Benz(a)anthracene	29.5	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(a)pyrene	27.6	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(b)fluoranthene	32.4	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(k)fluoranthene	18.3	mg/kg	2.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	2.E-08	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	27.4	mg/kg	3.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-09	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Dibenz(ah)anthracene	2.45	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenzofuran	10.9	mg/kg	1.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	2.E-03	mg/kg-day	0.002
				Arsenic	3.92	mg/kg	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	4.E-07	mg/kg/day	3.E-04	mg/kg-day	0.001
			Exp. Route Total								3.E-06					0.006
Soil Total											3.E-05					0.3
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Inhalation	Benzene	0.000024	mg/m3	6.E-07	mg/m3	8.E-06	1/(ug/m3)	4.E-09	2.E-05	mg/m3	3.E-02	mg/m3	0.0007
				Carbon tetrachloride	1.09E-05	mg/m3	3.E-07	mg/m3	2.E-05	1/(ug/m3)	4.E-09	9.E-06	mg/m3	2.E-03	mg/m3	0.005
				Chloroform	2.37E-05	mg/m3	6.E-07	mg/m3	2.E-05	1/(ug/m3)	1.E-08	2.E-05	mg/m3	5.E-02	mg/m3	0.0004
				1,2-Dichloroethylene (cis)	9.44E-05	mg/m3	2.E-06	mg/m3	NA	NA	---	8.E-05	mg/m3	2.E-01	mg/m3	0.0004
				Ethylbenzene	3.92E-05	mg/m3	9.E-07	mg/m3	1.E-06	1/(ug/m3)	1.E-09	3.E-05	mg/m3	1.E+00	mg/m3	0.00003
				Methylene chloride (Dichloromethane)	0.00014	mg/m3	3.E-06	mg/m3	5.E-07	1/(ug/m3)	2.E-09	1.E-04	mg/m3	1.E+00	mg/m3	0.0001
				Tetrachloroethylene (PCE)	7.15E-05	mg/m3	2.E-06	mg/m3	6.E-06	1/(ug/m3)	1.E-08	6.E-05	mg/m3	3.E-01	mg/m3	0.0002
				Trichloroethylene (TCE)	0.0013	mg/m3	3.E-05	mg/m3	1.E-04	1/(ug/m3)	3.E-06	1.E-03	mg/m3	4.E-02	mg/m3	0.03
				1,2,4-Trimethylbenzene	9.76E-05	mg/m3	2.E-06	mg/m3	NA	NA	---	8.E-05	mg/m3	6.E-03	mg/m3	0.01
				1,3,5-Trimethylbenzene	4.27E-05	mg/m3	1.E-06	mg/m3	NA	NA	---	4.E-05	mg/m3	6.E-03	mg/m3	0.006
				Naphthalene	3.07E-05	mg/m3	7.E-07	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.009
Soil Gas Total											3.E-06					0.06
										Total of Receptor Risks Across All Media	3.E-05			Total of Receptor Hazards Across All Media		0.3

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.33 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	2.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	7.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	4.E-03	mg/kg-day	0.001
				Naphthalene	21.8	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	2.E-02	mg/kg-day	0.0006
				Benz(a)anthracene	29.5	mg/kg	6.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(a)pyrene	27.6	mg/kg	6.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(b)fluoranthene	32.4	mg/kg	7.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(k)fluoranthene	18.3	mg/kg	4.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	3.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Chrysene	27.4	mg/kg	6.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-08	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Dibenz(ah)anthracene	2.45	mg/kg	5.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenzofuran	10.9	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	2.E-03	mg/kg-day	0.003
				Antimony	2.55	mg/kg	5.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-04	mg/kg-day	0.004
				Arsenic	3.92	mg/kg	8.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.008
				Chromium VI	15.7	mg/kg	3.E-06	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	3.E-03	mg/kg-day	0.003
				Manganese	219	mg/kg	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Mercury	5.36	mg/kg	1.E-06	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Vanadium	34.5	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
				Zinc	1750	mg/kg	4.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	3.E-01	mg/kg-day	0.003
			Exp. Route Total								6.E-05					0.06
			Dermal	2-Methylnaphthalene	9.52	mg/kg	1.E-06	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	4.E-03	mg/kg-day	0.0007
				Naphthalene	21.8	mg/kg	2.E-06	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0003
				Benz(a)anthracene	29.5	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	27.6	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	32.4	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	18.3	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	27.4	mg/kg	3.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	2.45	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Dibenzofuran	10.9	mg/kg	9.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	2.E-03	mg/kg-day	0.001
				Arsenic	3.92	mg/kg	9.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0009
			Exp. Route Total								3.E-05					0.005
	Exposure Medium Total										9.E-05					0.06
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Inhalation	Benzene	0.00019	mg/m3	6.E-05	mg/m3	8.E-06	1/(ug/m3)	5.E-07	2.E-04	mg/m3	3.E-02	mg/m3	0.006
				Ethylbenzene	4.41E-05	mg/m3	1.E-05	mg/m3	1.E-06	1/(ug/m3)	2.E-08	4.E-05	mg/m3	1.E+00	mg/m3	0.00004
				Trichloroethylene (TCE)	1.09E-05	mg/m3	4.E-06	mg/m3	1.E-04	1/(ug/m3)	4.E-07	1.E-05	mg/m3	4.E-02	mg/m3	0.0003
				2-Methylnaphthalene	0.00193	mg/m3	6.E-04	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.6
				Naphthalene	0.00355	mg/m3	1.E-03	mg/m3	NA	NA	---	3.E-03	mg/m3	3.E-03	mg/m3	1
				Heptachlor	1.03E-06	mg/m3	3.E-07	mg/m3	1.E-03	1/(ug/m3)	4.E-07	1.E-06	mg/m3	NA	NA	---
	Exposure Medium Total										1.E-06					2
	Plant tissue	East of South Street On-Facility	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Chromium VI	NA	NA	6.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.06
				Mercury	NA	NA	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Zinc	NA	NA	2.E-02	mg/kg/day	NA	NA	---	4.E-02	mg/kg/day	3.E-01	mg/kg-day	0.1
	Exposure Medium Total										7.E-06					0.3
Soil Total											9.E-05					2
										Total of Receptor Risks Across All Media	9.E-05			Total of Receptor Hazards Across All Media		2

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.33 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	4.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				2-Methylnaphthalene	9.52	mg/kg	4.E-06	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	4.E-03	mg/kg-day	0.01
				Naphthalene	21.8	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	2.E-02	mg/kg-day	0.006
				Benz(a)anthracene	29.5	mg/kg	1.E-05	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Benzo(a)pyrene	27.6	mg/kg	1.E-05	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-05	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Benzo(b)fluoranthene	32.4	mg/kg	2.E-05	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.006
				Benzo(k)fluoranthene	18.3	mg/kg	9.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	6.E-07	1.E-04	mg/kg/day	3.E-02	mg/kg-day	0.003
				Chrysene	27.4	mg/kg	1.E-05	mg/kg/day	7.E-03	1/(mg/kg-day)	9.E-08	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Dibenz(ah)anthracene	2.45	mg/kg	1.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Dibenzofuran	10.9	mg/kg	5.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	2.E-03	mg/kg-day	0.03
				Antimony	2.55	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	4.E-04	mg/kg-day	0.03
				Arsenic	3.92	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Chromium VI	15.7	mg/kg	7.E-06	mg/kg/day	NA	NA	---	9.E-05	mg/kg/day	3.E-03	mg/kg-day	0.03
				Manganese	219	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Mercury	5.36	mg/kg	3.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Vanadium	34.5	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
				Zinc	1750	mg/kg	8.E-04	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	3.E-01	mg/kg-day	0.03
			Exp. Route Total								1.E-04					0.6
			Dermal	2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	4.E-03	mg/kg-day	0.005
				Naphthalene	21.8	mg/kg	4.E-06	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	2.E-02	mg/kg-day	0.002
				Benz(a)anthracene	29.5	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(a)pyrene	27.6	mg/kg	5.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-05	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(b)fluoranthene	32.4	mg/kg	6.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(k)fluoranthene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	2.E-07	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Chrysene	27.4	mg/kg	5.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	3.E-08	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Dibenz(ah)anthracene	2.45	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Dibenzofuran	10.9	mg/kg	1.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	2.E-03	mg/kg-day	0.008
				Arsenic	3.92	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								5.E-05					0.03
	Exposure Medium Total										2.E-04					0.6
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Inhalation	Benzene	0.00019	mg/m3	2.E-05	mg/m3	8.E-06	1/(ug/m3)	1.E-07	2.E-04	mg/m3	3.E-02	mg/m3	0.006
				Ethylbenzene	4.41E-05	mg/m3	4.E-06	mg/m3	1.E-06	1/(ug/m3)	4.E-09	4.E-05	mg/m3	1.E+00	mg/m3	0.00004
				Trichloroethylene (TCE)	1.09E-05	mg/m3	9.E-07	mg/m3	1.E-04	1/(ug/m3)	1.E-07	1.E-05	mg/m3	4.E-02	mg/m3	0.0003
				2-Methylnaphthalene	0.00193	mg/m3	2.E-04	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.6
				Naphthalene	0.00355	mg/m3	3.E-04	mg/m3	NA	NA	---	3.E-03	mg/m3	3.E-03	mg/m3	1
				Heptachlor	1.03E-06	mg/m3	8.E-08	mg/m3	1.E-03	1/(ug/m3)	1.E-07	1.E-06	mg/m3	NA	NA	---
	Exposure Medium Total										3.E-07					2
	Plant tissue	East of South Street On-Facility	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
				Chromium VI	NA	NA	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
				Mercury	NA	NA	9.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.03
				Zinc	NA	NA	6.E-03	mg/kg/day	NA	NA	---	7.E-02	mg/kg/day	3.E-01	mg/kg-day	0.2
	Exposure Medium Total										3.E-06					0.5
Soil Total											2.E-04					3
										Total of Receptor Risks Across All Media	2.E-04			Total of Receptor Hazards Across All Media		3

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.33 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	3.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-07	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.009
				2-Methylnaphthalene	9.52	mg/kg	3.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	4.E-03	mg/kg-day	0.0007
				Naphthalene	21.8	mg/kg	6.E-07	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0003
				Benz(a)anthracene	29.5	mg/kg	9.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-07	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	27.6	mg/kg	8.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	32.4	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	18.3	mg/kg	5.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	4.E-08	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	27.4	mg/kg	8.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	6.E-09	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	2.45	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Dibenzofuran	10.9	mg/kg	3.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	2.E-03	mg/kg-day	0.002
				Antimony	2.55	mg/kg	7.E-08	mg/kg/day	NA	NA	---	7.E-07	mg/kg/day	4.E-04	mg/kg-day	0.002
				Arsenic	3.92	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.004
				Chromium VI	15.7	mg/kg	5.E-07	mg/kg/day	NA	NA	---	5.E-06	mg/kg/day	3.E-03	mg/kg-day	0.002
				Manganese	219	mg/kg	6.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	7.E-02	mg/kg-day	0.0009
				Mercury	5.36	mg/kg	2.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
				Vanadium	34.5	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.002
				Zinc	1750	mg/kg	5.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-01	mg/kg-day	0.002
			Exp. Route Total								8.E-06					0.03
			Dermal	2-Methylnaphthalene	9.52	mg/kg	4.E-08	mg/kg/day	NA	NA	---	4.E-07	mg/kg/day	4.E-03	mg/kg-day	0.0001
				Naphthalene	21.8	mg/kg	9.E-08	mg/kg/day	NA	NA	---	9.E-07	mg/kg/day	2.E-02	mg/kg-day	0.00005
				Benz(a)anthracene	29.5	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(a)pyrene	27.6	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	32.4	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(k)fluoranthene	18.3	mg/kg	8.E-08	mg/kg/day	7.E-02	1/(mg/kg-day)	6.E-09	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Chrysene	27.4	mg/kg	1.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	9.E-10	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Dibenz(ah)anthracene	2.45	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	4.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenzofuran	10.9	mg/kg	4.E-08	mg/kg/day	NA	NA	---	4.E-07	mg/kg/day	2.E-03	mg/kg-day	0.0002
				Arsenic	3.92	mg/kg	4.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-09	4.E-08	mg/kg/day	3.E-04	mg/kg-day	0.0001
			Exp. Route Total								1.E-06					0.0007
	Exposure Medium Total										9.E-06					0.03
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Inhalation	Benzene	0.000635	mg/m3	4.E-05	mg/m3	8.E-06	1/(ug/m3)	3.E-07	4.E-04	mg/m3	3.E-02	mg/m3	0.01
				Ethylbenzene	0.000147	mg/m3	9.E-06	mg/m3	1.E-06	1/(ug/m3)	1.E-08	9.E-05	mg/m3	1.E+00	mg/m3	0.00009
				Trichloroethylene (TCE)	3.64E-05	mg/m3	2.E-06	mg/m3	1.E-04	1/(ug/m3)	2.E-07	2.E-05	mg/m3	4.E-02	mg/m3	0.0005
				2-Methylnaphthalene	0.00194	mg/m3	1.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.4
				Naphthalene	0.00358	mg/m3	2.E-04	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.7
				Heptachlor	1.12E-06	mg/m3	7.E-08	mg/m3	1.E-03	1/(ug/m3)	9.E-08	7.E-07	mg/m3	NA	NA	---
	Exposure Medium Total										6.E-07					1
Soil Total											1.E-05					1
									Total of Receptor Risks Across All Media		1.E-05	Total of Receptor Hazards Across All Media				1

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.33 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	7.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	3.E-07	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
				2-Methylnaphthalene	9.52	mg/kg	7.E-07	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	4.E-03	mg/kg-day	0.007
				Naphthalene	21.8	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	2.E-02	mg/kg-day	0.003
				Benz(a)anthracene	29.5	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	8.E-05	mg/kg/day	3.E-02	mg/kg-day	0.003
				Benzo(a)pyrene	27.6	mg/kg	2.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	8.E-05	mg/kg/day	3.E-02	mg/kg-day	0.003
				Benzo(b)fluoranthene	32.4	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-05	mg/kg/day	3.E-02	mg/kg-day	0.003
				Benzo(k)fluoranthene	18.3	mg/kg	1.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Chrysene	27.4	mg/kg	2.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	8.E-05	mg/kg/day	3.E-02	mg/kg-day	0.003
				Dibenz(ah)anthracene	2.45	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	3.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0008
				Dibenzofuran	10.9	mg/kg	9.E-07	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	2.E-03	mg/kg-day	0.01
				Antimony	2.55	mg/kg	2.E-07	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	4.E-04	mg/kg-day	0.02
				Arsenic	3.92	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-07	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Chromium VI	15.7	mg/kg	1.E-06	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	3.E-03	mg/kg-day	0.01
				Manganese	219	mg/kg	2.E-05	mg/kg/day	NA	NA	---	6.E-04	mg/kg/day	7.E-02	mg/kg-day	0.009
				Mercury	5.36	mg/kg	4.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Vanadium	34.5	mg/kg	3.E-06	mg/kg/day	NA	NA	---	9.E-05	mg/kg/day	5.E-03	mg/kg-day	0.02
				Zinc	1750	mg/kg	1.E-04	mg/kg/day	NA	NA	---	5.E-03	mg/kg/day	3.E-01	mg/kg-day	0.02
			Exp. Route Total								2.E-05					0.3
			Dermal	2-Methylnaphthalene	9.52	mg/kg	1.E-07	mg/kg/day	NA	NA	---	4.E-06	mg/kg/day	4.E-03	mg/kg-day	0.0009
				Naphthalene	21.8	mg/kg	2.E-07	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0004
				Benz(a)anthracene	29.5	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(a)pyrene	27.6	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(b)fluoranthene	32.4	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(k)fluoranthene	18.3	mg/kg	2.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	2.E-08	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	27.4	mg/kg	3.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-09	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Dibenz(ah)anthracene	2.45	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenzofuran	10.9	mg/kg	1.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	2.E-03	mg/kg-day	0.002
				Arsenic	3.92	mg/kg	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	4.E-07	mg/kg/day	3.E-04	mg/kg-day	0.001
			Exp. Route Total								3.E-06					0.006
	Exposure Medium Total										3.E-05					0.3
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Inhalation	Benzene	0.000635	mg/m3	2.E-05	mg/m3	8.E-06	1/(ug/m3)	1.E-07	5.E-04	mg/m3	3.E-02	mg/m3	0.02
				Ethylbenzene	0.000147	mg/m3	4.E-06	mg/m3	1.E-06	1/(ug/m3)	4.E-09	1.E-04	mg/m3	1.E+00	mg/m3	0.0001
				Trichloroethylene (TCE)	3.64E-05	mg/m3	9.E-07	mg/m3	1.E-04	1/(ug/m3)	1.E-07	3.E-05	mg/m3	4.E-02	mg/m3	0.0008
				2-Methylnaphthalene	0.00194	mg/m3	5.E-05	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.5
				Naphthalene	0.00358	mg/m3	9.E-05	mg/m3	NA	NA	---	3.E-03	mg/m3	3.E-03	mg/m3	1
				Heptachlor	1.12E-06	mg/m3	3.E-08	mg/m3	1.E-03	1/(ug/m3)	3.E-08	9.E-07	mg/m3	NA	NA	---
	Exposure Medium Total										3.E-07					2
Soil Total											3.E-05					2
										Total of Receptor Risks Across All Media	3.E-05			Total of Receptor Hazards Across All Media		2

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.34 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	West of South Street On-Facility	Ingestion	Benz(a)anthracene	3.24	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Benzo(a)pyrene	3.65	mg/kg	7.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Benzo(b)fluoranthene	3.57	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Chrysene	3.98	mg/kg	8.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	6.E-09	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Dibenz(ah)anthracene	0.421	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	9.48	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Chromium VI	11.4	mg/kg	2.E-06	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	3.E-03	mg/kg-day	0.002
				Manganese	178	mg/kg	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.001
				Mercury	2.41	mg/kg	5.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
				Vanadium	21	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.002
			Exp. Route Total								1.E-05					0.03
			Dermal	Benz(a)anthracene	3.24	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(a)pyrene	3.65	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	3.57	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Chrysene	3.98	mg/kg	4.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	3.E-09	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Dibenz(ah)anthracene	0.421	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	9.48	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	7.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								4.E-06					0.002
	Exposure Medium Total										1.E-05					0.03
	Plant tissue	West of South Street On-Facility	Ingestion	Arsenic	NA	NA	1.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-05	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Chromium VI	NA	NA	5.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-03	mg/kg-day	0.05
				Mercury	NA	NA	1.E-06	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.009
	Exposure Medium Total										2.E-05					0.2
Soil Total											3.E-05					0.2
Soil/Groundwater (1)	Indoor Air	West of South Street On-Facility	Inhalation	Benzene	0.00303	mg/m3	1.E-03	mg/m3	8.E-06	1/(ug/m3)	8.E-06	3.E-03	mg/m3	3.E-02	mg/m3	0.1
				Carbon disulfide	0.000071	mg/m3	2.E-05	mg/m3	NA	NA	---	7.E-05	mg/m3	7.E-01	mg/m3	0.0001
				Chloroform	1.18E-05	mg/m3	4.E-06	mg/m3	2.E-05	1/(ug/m3)	9.E-08	1.E-05	mg/m3	5.E-02	mg/m3	0.0002
				2-Hexanone	1.96E-05	mg/m3	6.E-06	mg/m3	NA	NA	---	2.E-05	mg/m3	5.E-03	mg/m3	0.004
				Trichlorofluoromethane	0.00099	mg/m3	3.E-04	mg/m3	NA	NA	---	9.E-04	mg/m3	7.E-01	mg/m3	0.001
				2-Methylnaphthalene	0.000699	mg/m3	2.E-04	mg/m3	NA	NA	---	7.E-04	mg/m3	3.E-03	mg/m3	0.2
				Naphthalene	0.00108	mg/m3	4.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.3
Soil/Groundwater Total											8.E-06					0.7
										Total of Receptor Risks Across All Media	4.E-05			Total of Receptor Hazards Across All Media		0.9

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.

See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

(1) Indoor air concentrations of benzene and naphthalene are modeled from both soil and groundwater. Modeling from groundwater yielded the highest indoor air concentration and this concentration is used to calculate risk and hazard for these COPCs.

Indoor air concentrations of 2-hexanone are modeled from groundwater because this chemical was a COPC in groundwater only. Indoor air concentrations of all other COPCs are modeled from soil.

Table 7.34 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	West of South Street On-Facility	Ingestion	Benz(a)anthracene	3.24	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(a)pyrene	3.65	mg/kg	2.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0007
				Benzo(b)fluoranthene	3.57	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0007
				Chrysene	3.98	mg/kg	2.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	1.E-08	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0007
				Dibenz(ah)anthracene	0.421	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Arsenic	9.48	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	11.4	mg/kg	5.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	3.E-03	mg/kg-day	0.02
				Manganese	178	mg/kg	8.E-05	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.01
				Mercury	2.41	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Vanadium	21	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.02
			Exp. Route Total								2.E-05					0.3
			Dermal	Benz(a)anthracene	3.24	mg/kg	6.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-07	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(a)pyrene	3.65	mg/kg	6.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-06	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	3.57	mg/kg	6.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-07	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	3.98	mg/kg	7.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	5.E-09	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	0.421	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Arsenic	9.48	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-07	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								7.E-06					0.02
	Exposure Medium Total										3.E-05					0.3
	Plant tissue	West of South Street On-Facility	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	NA	NA	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.07
				Mercury	NA	NA	4.E-07	mg/kg/day	NA	NA	---	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
	Exposure Medium Total										7.E-06					0.3
Soil Total											4.E-05					0.6
Soil/Groundwater (1)	Indoor Air	West of South Street On-Facility	Inhalation	Benzene	0.00303	mg/m3	2.E-04	mg/m3	8.E-06	1/(ug/m3)	2.E-06	3.E-03	mg/m3	3.E-02	mg/m3	0.1
				Carbon disulfide	0.000071	mg/m3	6.E-06	mg/m3	NA	NA	---	7.E-05	mg/m3	7.E-01	mg/m3	0.0001
				Chloroform	1.18E-05	mg/m3	1.E-06	mg/m3	2.E-05	1/(ug/m3)	2.E-08	1.E-05	mg/m3	5.E-02	mg/m3	0.0002
				2-Hexanone	1.96E-05	mg/m3	2.E-06	mg/m3	NA	NA	---	2.E-05	mg/m3	5.E-03	mg/m3	0.004
				Trichlorofluoromethane	0.00099	mg/m3	8.E-05	mg/m3	NA	NA	---	9.E-04	mg/m3	7.E-01	mg/m3	0.001
				2-Methylnaphthalene	0.000699	mg/m3	6.E-05	mg/m3	NA	NA	---	7.E-04	mg/m3	3.E-03	mg/m3	0.2
				Naphthalene	0.00108	mg/m3	9.E-05	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.3
Soil/Groundwater Total											2.E-06					0.7
										Total of Receptor Risks Across All Media	4.E-05				Total of Receptor Hazards Across All Media	1

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.

See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

(1) Indoor air concentrations of benzene and naphthalene are modeled from both soil and groundwater. Modeling from groundwater yielded the highest indoor air concentration and this concentration is used to calculate risk and hazard for these COPCs.

Indoor air concentrations of 2-hexanone are modeled from groundwater because this chemical was a COPC in groundwater only. Indoor air concentrations of all other COPCs are modeled from soil.

Table 7.35 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 122	Ingestion	Benzo(a)pyrene	0.376	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Arsenic	13	mg/kg	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	8.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
				Manganese	210	mg/kg	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	36	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								4.E-06					0.03
			Dermal	Benzo(a)pyrene	0.376	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Arsenic	13	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-07	9.E-07	mg/kg/day	3.E-04	mg/kg-day	0.003
			Exp. Route Total								8.E-07					0.003
	Exposure Medium Total										8.E-07					0.003
	Plant tissue	Gleason Court Lot 122	Ingestion	Arsenic	NA	NA	2.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-05	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
	Exposure Medium Total										2.E-05					0.2
Soil Total											3.E-05					0.2
											Total of Receptor Risks Across All Media 3.E-05					Total of Receptor Hazards Across All Media 0.2

Note: NA = not available/not applicable

Table 7.35 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 122	Ingestion	Benzo(a)pyrene	0.376	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Arsenic	13	mg/kg	6.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	9.E-06	7.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Manganese	210	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	36	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								1.E-05					0.3
			Dermal	Benzo(a)pyrene	0.376	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	13	mg/kg	5.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-07	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								1.E-06					0.02
	Exposure Medium Total										1.E-06					0.02
	Plant tissue	Gleason Court Lot 122	Ingestion	Arsenic	NA	NA	7.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	8.E-05	mg/kg/day	3.E-04	mg/kg-day	0.3
	Exposure Medium Total										1.E-05					0.3
Soil Total											1.E-05					0.3
											Total of Receptor Risks Across All Media					Total of Receptor Hazards Across All Media
											2.E-05					0.6

Note: NA = not available/not applicable

Table 7.36 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 124	Ingestion	Benzo(a)pyrene	0.556	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	0.748	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.0649	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	3.6	mg/kg	7.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.007
				Manganese	213	mg/kg	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	30.6	mg/kg	6.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								2.E-06					0.01
			Dermal	Benzo(a)pyrene	0.556	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Benzo(b)fluoranthene	0.748	mg/kg	8.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Dibenz(ah)anthracene	0.0649	mg/kg	7.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000007
				Arsenic	3.6	mg/kg	9.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0008
			Exp. Route Total								7.E-07					0.0009
	Exposure Medium Total										3.E-06					0.01
	Plant tissue	Gleason Court Lot 124	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
	Exposure Medium Total										7.E-06					0.04
Soil Total											1.E-05					0.06
Soil Gas	Indoor Air	Gleason Court Lot 124	Inhalation	Trichloroethylene (TCE)	1.31E-05	mg/m3	4.E-06	mg/m3	1.E-04	1/(ug/m3)	5.E-07	1.E-05	mg/m3	4.E-02	mg/m3	0.0003
				1,2,4-Trimethylbenzene	0.000117	mg/m3	4.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	3.33E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	6.E-03	mg/m3	0.005
				Naphthalene	3.56E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											5.E-07					0.04
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		0.09

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.36 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 124	Ingestion	Benzo(a)pyrene	0.556	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(b)fluoranthene	0.748	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	0.0649	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Arsenic	3.6	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Manganese	213	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	30.6	mg/kg	1.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								5.E-06					0.1
			Dermal	Benzo(a)pyrene	0.556	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	0.748	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Dibenz(ah)anthracene	0.0649	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Arsenic	3.6	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								1.E-06					0.006
	Exposure Medium Total										6.E-06					0.1
	Plant tissue	Gleason Court Lot 124	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
	Exposure Medium Total										3.E-06					0.07
Soil Total											9.E-06					0.2
Soil Gas	Indoor Air	Gleason Court Lot 124	Inhalation	Trichloroethylene (TCE)	1.31E-05	mg/m3	1.E-06	mg/m3	1.E-04	1/(ug/m3)	1.E-07	1.E-05	mg/m3	4.E-02	mg/m3	0.0003
				1,2,4-Trimethylbenzene	0.000117	mg/m3	1.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	3.33E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	6.E-03	mg/m3	0.005
				Naphthalene	3.56E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											1.E-07					0.04
										Total of Receptor Risks Across All Media	9.E-06			Total of Receptor Hazards Across All Media		0.2

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.37 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 125	Ingestion	Benz(a)anthracene	1.04	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	1.4	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(b)fluoranthene	1.7	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Dibenz(ah)anthracene	0.12	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	7.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	8.11	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Barium	618	mg/kg	1.E-04	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	2.E-01	mg/kg-day	0.002
				Manganese	352	mg/kg	7.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.003
				Vanadium	26.9	mg/kg	5.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								5.E-06					0.02
			Dermal	Benz(a)anthracene	1.04	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(a)pyrene	1.4	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	1.7	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.12	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-08	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	8.11	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								2.E-06					0.002
	Exposure Medium Total										7.E-06					0.03
	Plant tissue	Gleason Court Lot 125	Ingestion	Arsenic	NA	NA	1.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-05	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
	Exposure Medium Total										2.E-05					0.1
Soil Total											2.E-05					0.1
Soil Gas	Indoor Air	Gleason Court Lot 125	Inhalation	Trichloroethylene (TCE)	8.82E-06	mg/m3	3.E-06	mg/m3	1.E-04	1/(ug/m3)	3.E-07	8.E-06	mg/m3	4.E-02	mg/m3	0.0002
				1,2,4-Trimethylbenzene	0.000117	mg/m3	4.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	3.33E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	6.E-03	mg/m3	0.005
				Naphthalene	3.56E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											3.E-07					0.04
									Total of Receptor Risks Across All Media		2.E-05			Total of Receptor Hazards Across All Media		0.2

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.37 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 125	Ingestion	Benz(a)anthracene	1.04	mg/kg	5.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-07	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(a)pyrene	1.4	mg/kg	7.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	1.7	mg/kg	8.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-07	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	0.12	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	8.11	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Barium	618	mg/kg	3.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	2.E-01	mg/kg-day	0.02
				Manganese	352	mg/kg	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.03
				Vanadium	26.9	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								1.E-05					0.2
			Dermal	Benz(a)anthracene	1.04	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Benzo(a)pyrene	1.4	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Benzo(b)fluoranthene	1.7	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	0.12	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Arsenic	8.11	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-07	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								3.E-06					0.01
	Exposure Medium Total										1.E-05					0.2
	Plant tissue	Gleason Court Lot 125	Ingestion	Arsenic	NA	NA	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
	Exposure Medium Total										6.E-06					0.2
Soil Total											2.E-05					0.4
Soil Gas	Indoor Air	Gleason Court Lot 125	Inhalation	Trichloroethylene (TCE)	8.82E-06	mg/m3	7.E-07	mg/m3	1.E-04	1/(ug/m3)	8.E-08	8.E-06	mg/m3	4.E-02	mg/m3	0.0002
				1,2,4-Trimethylbenzene	0.000117	mg/m3	1.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	3.33E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	6.E-03	mg/m3	0.005
				Naphthalene	3.56E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											8.E-08					0.04
									Total of Receptor Risks Across All Media		2.E-05			Total of Receptor Hazards Across All Media		0.4

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.38 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Vacant Lot	Ingestion	Benzo(a)pyrene	0.29	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Arsenic	16.7	mg/kg	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.03
				Manganese	235	mg/kg	5.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	29	mg/kg	6.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								5.E-06					0.04
			Dermal	Benzo(a)pyrene	0.29	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	9.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Arsenic	16.7	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.004
			Exp. Route Total								8.E-07					0.004
	Exposure Medium Total										8.E-07					0.004
	Plant tissue	Gleason Court Vacant Lot	Ingestion	Arsenic	NA	NA	2.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-05	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
	Exposure Medium Total										3.E-05					0.2
Soil Total											3.E-05					0.2
											Total of Receptor Risks Across All Media 4.E-05					Total of Receptor Hazards Across All Media 0.2

Note: NA = not available/not applicable

Table 7.38 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Vacant Lot	Ingestion	Benzo(a)pyrene	0.29	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Arsenic	16.7	mg/kg	8.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	9.E-05	mg/kg/day	3.E-04	mg/kg-day	0.3
				Manganese	235	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	29	mg/kg	1.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								1.E-05					0.4
			Dermal	Benzo(a)pyrene	0.29	mg/kg	5.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	16.7	mg/kg	7.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	8.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
			Exp. Route Total								1.E-06					0.03
	Exposure Medium Total										1.E-06					0.03
	Plant tissue	Gleason Court Vacant Lot	Ingestion	Arsenic	NA	NA	9.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.3
	Exposure Medium Total										1.E-05					0.3
Soil Total											1.E-05					0.4
										Total of Receptor Risks Across All Media	3.E-05				Total of Receptor Hazards Across All Media	0.7

Note: NA = not available/not applicable

Table 7.39 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Ingestion	Benz(a)anthracene	19.4	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(a)pyrene	8.75	mg/kg	2.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-05	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	15.4	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	6.65	mg/kg	1.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Chrysene	11.3	mg/kg	2.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenz(ah)anthracene	2.14	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Antimony	3.85	mg/kg	8.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	4.E-04	mg/kg-day	0.006
				Arsenic	96.1	mg/kg	2.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-05	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	22.5	mg/kg	5.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-03	mg/kg-day	0.004
				Manganese	254	mg/kg	5.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	23.5	mg/kg	5.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								5.E-05					0.2
			Dermal	Benz(a)anthracene	19.4	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(a)pyrene	8.75	mg/kg	9.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Benzo(b)fluoranthene	15.4	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(k)fluoranthene	6.65	mg/kg	7.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	5.E-08	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Chrysene	11.3	mg/kg	1.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	9.E-09	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	2.14	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Arsenic	96.1	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								2.E-05					0.02
	Exposure Medium Total										7.E-05					0.2
	Indoor Air	Old Railroad and Former Lower Mill Pond Area	Inhalation	Methylene chloride (Dichloromethane)	0.000191	mg/m3	6.E-05	mg/m3	5.E-07	1/(ug/m3)	3.E-08	2.E-04	mg/m3	1.E+00	mg/m3	0.0002
				Naphthalene	0.00153	mg/m3	5.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.5
	Exposure Medium Total										3.E-08					0.5
	Plant tissue	Old Railroad and Former Lower Mill Pond Area	Ingestion	Arsenic	NA	NA	1.E-04	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-04	4.E-04	mg/kg/day	3.E-04	mg/kg-day	1
				Chromium VI	NA	NA	9.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.09
	Exposure Medium Total										2.E-04					1
Soil Total											3.E-04					2
										Total of Receptor Risks Across All Media	3.E-04			Total of Receptor Hazards Across All Media		2

Note: NA = not available/not applicable

Table 7.39 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Ingestion	Benz(a)anthracene	19.4	mg/kg	9.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-06	1.E-04	mg/kg/day	3.E-02	mg/kg-day	0.004
				Benzo(a)pyrene	8.75	mg/kg	4.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-05	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(b)fluoranthene	15.4	mg/kg	7.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	8.E-05	mg/kg/day	3.E-02	mg/kg-day	0.003
				Benzo(k)fluoranthene	6.65	mg/kg	3.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	2.E-07	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Chrysene	11.3	mg/kg	5.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-08	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Dibenz(ah)anthracene	2.14	mg/kg	1.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Antimony	3.85	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	4.E-04	mg/kg-day	0.05
				Arsenic	96.1	mg/kg	5.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-05	5.E-04	mg/kg/day	3.E-04	mg/kg-day	2
				Chromium VI	22.5	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-03	mg/kg-day	0.04
				Manganese	254	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	23.5	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								1.E-04					2
			Dermal	Benz(a)anthracene	19.4	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Benzo(a)pyrene	8.75	mg/kg	1.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(b)fluoranthene	15.4	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	3.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Benzo(k)fluoranthene	6.65	mg/kg	1.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	8.E-08	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Chrysene	11.3	mg/kg	2.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	1.E-08	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0008
				Dibenz(ah)anthracene	2.14	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0007
				Arsenic	96.1	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
			Exp. Route Total								3.E-05					0.2
	Exposure Medium Total										1.E-04					2
	Indoor Air	Old Railroad and Former Lower Mill Pond Area	Inhalation	Methylene chloride (Dichloromethane)	0.000191	mg/m3	2.E-05	mg/m3	5.E-07	1/(ug/m3)	7.E-09	2.E-04	mg/m3	1.E+00	mg/m3	0.0002
				Naphthalene	0.00153	mg/m3	1.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.5
	Exposure Medium Total										7.E-09					0.5
	Plant tissue	Old Railroad and Former Lower Mill Pond Area	Ingestion	Arsenic	NA	NA	5.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-05	6.E-04	mg/kg/day	3.E-04	mg/kg-day	2
				Chromium VI	NA	NA	4.E-05	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
	Exposure Medium Total										7.E-05					2
Soil Total											2.E-04					5
										Total of Receptor Risks Across All Media	2.E-04			Total of Receptor Hazards Across All Media		5

Note: NA = not available/not applicable

Table 7.39 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Ingestion	Benz(a)anthracene	19.4	mg/kg	6.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-07	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(a)pyrene	8.75	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Benzo(b)fluoranthene	15.4	mg/kg	5.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(k)fluoranthene	6.65	mg/kg	2.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-08	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Chrysene	11.3	mg/kg	3.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-09	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	2.14	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Antimony	3.85	mg/kg	1.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-04	mg/kg-day	0.003
				Arsenic	96.1	mg/kg	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.09
				Chromium VI	22.5	mg/kg	7.E-07	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	3.E-03	mg/kg-day	0.002
				Manganese	254	mg/kg	7.E-06	mg/kg/day	NA	NA	---	7.E-05	mg/kg/day	7.E-02	mg/kg-day	0.001
				Vanadium	23.5	mg/kg	7.E-07	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	5.E-03	mg/kg-day	0.001
			Exp. Route Total								8.E-06					0.1
			Dermal	Benz(a)anthracene	19.4	mg/kg	8.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(a)pyrene	8.75	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	15.4	mg/kg	7.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(k)fluoranthene	6.65	mg/kg	3.E-08	mg/kg/day	7.E-02	1/(mg/kg-day)	2.E-09	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Chrysene	11.3	mg/kg	5.E-08	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-10	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	2.14	mg/kg	9.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-08	9.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	96.1	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.003
			Exp. Route Total								6.E-07					0.003
	Exposure Medium Total										8.E-06					0.1
	Indoor Air	Old Railroad and Former Lower Mill Pond Area	Inhalation	Methylene chloride (Dichloromethane)	0.000272	mg/m3	2.E-05	mg/m3	5.E-07	1/(ug/m3)	8.E-09	2.E-04	mg/m3	1.E+00	mg/m3	0.0002
				Naphthalene	0.00157	mg/m3	9.E-05	mg/m3	NA	NA	---	9.E-04	mg/m3	3.E-03	mg/m3	0.3
	Exposure Medium Total										8.E-09					0.3
Soil Total											8.E-06					0.4
										Total of Receptor Risks Across All Media	8.E-06			Total of Receptor Hazards Across All Media		0.4

Note: NA = not available/not applicable

Table 7.39 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Ingestion	Benz(a)anthracene	19.4	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(a)pyrene	8.75	mg/kg	7.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0008
				Benzo(b)fluoranthene	15.4	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-07	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Benzo(k)fluoranthene	6.65	mg/kg	5.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	4.E-08	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Chrysene	11.3	mg/kg	9.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	6.E-09	3.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Dibenz(ah)anthracene	2.14	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	8.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-07	3.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Antimony	3.85	mg/kg	3.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	4.E-04	mg/kg-day	0.03
				Arsenic	96.1	mg/kg	8.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	3.E-04	mg/kg/day	3.E-04	mg/kg-day	0.9
				Chromium VI	22.5	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	3.E-03	mg/kg-day	0.02
				Manganese	254	mg/kg	2.E-05	mg/kg/day	NA	NA	---	7.E-04	mg/kg/day	7.E-02	mg/kg-day	0.01
				Vanadium	23.5	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	5.E-03	mg/kg-day	0.01
			Exp. Route Total								2.E-05					1
			Dermal	Benz(a)anthracene	19.4	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	8.75	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(b)fluoranthene	15.4	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(k)fluoranthene	6.65	mg/kg	8.E-08	mg/kg/day	7.E-02	1/(mg/kg-day)	6.E-09	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Chrysene	11.3	mg/kg	1.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	9.E-10	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenz(ah)anthracene	2.14	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Arsenic	96.1	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	9.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
			Exp. Route Total								2.E-06					0.03
	Exposure Medium Total										2.E-05					1
	Indoor Air	Old Railroad and Former Lower Mill Pond Area	Inhalation	Methylene chloride (Dichloromethane)	0.000272	mg/m3	7.E-06	mg/m3	5.E-07	1/(ug/m3)	3.E-09	2.E-04	mg/m3	1.E+00	mg/m3	0.0002
				Naphthalene	0.00157	mg/m3	4.E-05	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.4
	Exposure Medium Total										3.E-09					0.4
Soil Total											2.E-05					1
											Total of Receptor Risks Across All Media	2.E-05		Total of Receptor Hazards Across All Media		1

Note: NA = not available/not applicable

Table 7.40 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Orlando Property	Ingestion	Benz(a)anthracene	1.57	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(a)pyrene	1.27	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(b)fluoranthene	1.44	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Dibenz(ah)anthracene	0.0496	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Indeno(1,2,3-cd)pyrene	0.236	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Arsenic	2.82	mg/kg	6.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	9.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
				Chromium VI	16.2	mg/kg	3.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-03	mg/kg-day	0.003
				Manganese	387	mg/kg	8.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.003
				Vanadium	28.3	mg/kg	6.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								3.E-06					0.02
			Dermal	Benz(a)anthracene	1.57	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	1.27	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	1.44	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.0496	mg/kg	5.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000005
				Indeno(1,2,3-cd)pyrene	0.236	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	7.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	2.82	mg/kg	7.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0007
			Exp. Route Total								1.E-06					0.0007
	Exposure Medium Total										5.E-06					0.02
	Indoor Air	Orlando Property	Inhalation	Naphthalene	0.000904	mg/m3	3.E-04	mg/m3	NA	NA	---	9.E-04	mg/m3	3.E-03	mg/m3	0.3
	Exposure Medium Total										---					0.3
	Plant tissue	Orlando Property	Ingestion	Arsenic	NA	NA	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Chromium VI	NA	NA	7.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.06
	Exposure Medium Total										5.E-06					0.1
Soil Total											1.E-05					0.4
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		0.4

Note: NA = not available/not applicable

Table 7.40 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Orlando Property	Ingestion	Benz(a)anthracene	1.57	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	1.27	mg/kg	6.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-06	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	1.44	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	0.0496	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Indeno(1,2,3-cd)pyrene	0.236	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Arsenic	2.82	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Chromium VI	16.2	mg/kg	8.E-06	mg/kg/day	NA	NA	---	9.E-05	mg/kg/day	3.E-03	mg/kg-day	0.03
				Manganese	387	mg/kg	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.03
				Vanadium	28.3	mg/kg	1.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								8.E-06					0.1
			Dermal	Benz(a)anthracene	1.57	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(a)pyrene	1.27	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Benzo(b)fluoranthene	1.44	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	0.0496	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	0.236	mg/kg	4.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	2.82	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.004
			Exp. Route Total								2.E-06					0.005
	Exposure Medium Total										1.E-05					0.1
	Indoor Air	Orlando Property	Inhalation	Naphthalene	0.000904	mg/m3	7.E-05	mg/m3	NA	NA	---	9.E-04	mg/m3	3.E-03	mg/m3	0.3
	Exposure Medium Total										---					0.3
	Plant tissue	Orlando Property	Ingestion	Arsenic	NA	NA	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
				Chromium VI	NA	NA	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
	Exposure Medium Total										2.E-06					0.2
Soil Total											1.E-05					0.6
							Total of Receptor Risks Across All Media				1.E-05	Total of Receptor Hazards Across All Media				0.6

Note: NA = not available/not applicable

Table 7.41 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 208	Ingestion	Benzo(a)pyrene	0.064	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-08	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	3.4	mg/kg	7.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.007
				Manganese	286	mg/kg	6.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	21.5	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
				Cyanide (free)	3.2	mg/kg	6.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	2.E-02	mg/kg-day	0.00009
			Exp. Route Total								1.E-06					0.01
			Dermal	Benzo(a)pyrene	0.064	mg/kg	7.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000006
				Arsenic	3.4	mg/kg	8.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0008
			Exp. Route Total								2.E-07					0.0008
	Exposure Medium Total										1.E-06					0.01
	Indoor Air	Lot 208	Inhalation	Naphthalene	0.000174	mg/m3	6.E-05	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.06
	Exposure Medium Total										---					0.06
	Plant tissue	Lot 208	Ingestion	Arsenic	NA	NA	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
	Exposure Medium Total										6.E-06					0.04
Soil Total											8.E-06					0.1
									Total of Receptor Risks Across All Media		8.E-06			Total of Receptor Hazards Across All Media		0.1

Note: NA = not available/not applicable

Table 7.41 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 208	Ingestion	Benzo(a)pyrene	0.064	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Arsenic	3.4	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
				Manganese	286	mg/kg	1.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	21.5	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.02
				Cyanide (free)	3.2	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	2.E-02	mg/kg-day	0.0009
			Exp. Route Total								3.E-06					0.1
			Dermal	Benzo(a)pyrene	0.064	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Arsenic	3.4	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
			Exp. Route Total								3.E-07					0.005
	Exposure Medium Total										3.E-06					0.1
	Indoor Air	Lot 208	Inhalation	Naphthalene	0.000174	mg/m3	1.E-05	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.06
	Exposure Medium Total										---					0.06
	Plant tissue	Lot 208	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
	Exposure Medium Total										3.E-06					0.07
Soil Total											6.E-06					0.2
							Total of Receptor Risks Across All Media				6.E-06	Total of Receptor Hazards Across All Media				0.2

Note: NA = not available/not applicable

Table 7.42 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Vacant Lot 209	Ingestion	Arsenic	3.4	mg/kg	7.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.007
				Manganese	284	mg/kg	6.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	37.8	mg/kg	8.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								1.E-06					0.01
			Dermal	Arsenic	3.4	mg/kg	8.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0008
			Exp. Route Total								1.E-07					0.0008
	Exposure Medium Total										1.E-06					0.01
	Plant tissue	Vacant Lot 209	Ingestion	Arsenic	NA	NA	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
	Exposure Medium Total										6.E-06					0.04
Soil Total											8.E-06					0.06
									Total of Receptor Risks Across All Media		8.E-06	Total of Receptor Hazards Across All Media				0.06

Note: NA = not available/not applicable

Table 7.42 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Vacant Lot 209	Ingestion	Arsenic	3.4	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
				Manganese	284	mg/kg	1.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	37.8	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								2.E-06					0.1
			Dermal	Arsenic	3.4	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
			Exp. Route Total								2.E-07					0.005
	Exposure Medium Total										3.E-06					0.1
	Plant tissue	Vacant Lot 209	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
	Exposure Medium Total										3.E-06					0.07
Soil Total											5.E-06					0.2
									Total of Receptor Risks Across All Media		5.E-06			Total of Receptor Hazards Across All Media		0.2

Note: NA = not available/not applicable

Table 7.43 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 210	Ingestion	Benzo(a)pyrene	0.61	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	0.8	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	3.6	mg/kg	7.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.007
				Manganese	347	mg/kg	7.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.003
				Nickel	165	mg/kg	3.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	2.E-02	mg/kg-day	0.005
				Vanadium	33.6	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								2.E-06					0.02
			Dermal	Benzo(a)pyrene	0.61	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Benzo(b)fluoranthene	0.8	mg/kg	8.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Arsenic	3.6	mg/kg	9.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0008
			Exp. Route Total								7.E-07					0.0009
	Exposure Medium Total										3.E-06					0.02
	Plant tissue	Lot 210	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Nickel	NA	NA	2.E-04	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	2.E-02	mg/kg-day	0.03
	Exposure Medium Total										7.E-06					0.07
Soil Total											1.E-05					0.09
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		0.09

Note: NA = not available/not applicable

Table 7.43 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 210	Ingestion	Benzo(a)pyrene	0.61	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(b)fluoranthene	0.8	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Arsenic	3.6	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Manganese	347	mg/kg	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.03
				Nickel	165	mg/kg	8.E-05	mg/kg/day	NA	NA	---	9.E-04	mg/kg/day	2.E-02	mg/kg-day	0.05
				Vanadium	33.6	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								5.E-06					0.2
			Dermal	Benzo(a)pyrene	0.61	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	0.8	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Arsenic	3.6	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								1.E-06					0.006
	Exposure Medium Total										6.E-06					0.2
	Plant tissue	Lot 210	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Nickel	NA	NA	8.E-05	mg/kg/day	NA	NA	---	9.E-04	mg/kg/day	2.E-02	mg/kg-day	0.04
	Exposure Medium Total										3.E-06					0.1
Soil Total											9.E-06					0.3
										Total of Receptor Risks Across All Media	9.E-06			Total of Receptor Hazards Across All Media		0.3

Note: NA = not available/not applicable

Table 7.44 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 230	Ingestion	Benzo(a)pyrene	0.42	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Arsenic	6.8	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Vanadium	28.3	mg/kg	6.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								3.E-06					0.02
			Dermal	Benzo(a)pyrene	0.42	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Arsenic	6.8	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	5.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								6.E-07					0.002
	Exposure Medium Total										6.E-07					0.002
	Plant tissue	Lot 230	Ingestion	Arsenic	NA	NA	9.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
	Exposure Medium Total										1.E-05					0.08
Soil Total											1.E-05					0.09
											Total of Receptor Risks Across All Media					Total of Receptor Hazards Across All Media
											2.E-05					0.1

Note: NA = not available/not applicable

Table 7.44 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 230	Ingestion	Benzo(a)pyrene	0.42	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Arsenic	6.8	mg/kg	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-06	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Vanadium	28.3	mg/kg	1.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								6.E-06					0.2
			Dermal	Benzo(a)pyrene	0.42	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	6.8	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								9.E-07					0.01
	Exposure Medium Total										9.E-07					0.01
	Plant tissue	Lot 230	Ingestion	Arsenic	NA	NA	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-06	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
	Exposure Medium Total										5.E-06					0.1
Soil Total											6.E-06					0.1
											Total of Receptor Risks Across All Media					
											1.E-05					0.3
												Total of Receptor Hazards Across All Media				

Note: NA = not available/not applicable

Table 7.45 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 257	Ingestion	Benz(a)anthracene	0.79	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	0.765	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	1.04	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.145	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	9.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	0.715	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Arsenic	10.5	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Chromium VI	26	mg/kg	5.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-03	mg/kg-day	0.005
				Manganese	415	mg/kg	8.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.003
				Vanadium	35.9	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								5.E-06					0.03
			Dermal	Benz(a)anthracene	0.79	mg/kg	8.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Benzo(a)pyrene	0.765	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Benzo(b)fluoranthene	1.04	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.145	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Indeno(1,2,3-cd)pyrene	0.715	mg/kg	7.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Arsenic	10.5	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	7.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								1.E-06					0.002
	Exposure Medium Total										6.E-06					0.04
	Indoor Air	Lot 257	Inhalation	Naphthalene	0.0000507	mg/m3	2.E-05	mg/m3	NA	NA	---	5.E-05	mg/m3	3.E-03	mg/m3	0.02
	Exposure Medium Total										---					0.02
	Plant tissue	Lot 257	Ingestion	Arsenic	NA	NA	1.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-05	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Chromium VI	NA	NA	1.E-04	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
	Exposure Medium Total										2.E-05					0.2
Soil Total											3.E-05					0.3
											Total of Receptor Risks Across All Media 3.E-05					Total of Receptor Hazards Across All Media 0.3

Note: NA = not available/not applicable

Table 7.45 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 257	Ingestion	Benz(a)anthracene	0.79	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(a)pyrene	0.765	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(b)fluoranthene	1.04	mg/kg	5.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-07	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenz(ah)anthracene	0.145	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	0.715	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Arsenic	10.5	mg/kg	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	26	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-03	mg/kg-day	0.05
				Manganese	415	mg/kg	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.03
				Vanadium	35.9	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								1.E-05					0.3
			Dermal	Benz(a)anthracene	0.79	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(a)pyrene	0.765	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(b)fluoranthene	1.04	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Dibenz(ah)anthracene	0.145	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Indeno(1,2,3-cd)pyrene	0.715	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Arsenic	10.5	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								2.E-06					0.02
	Exposure Medium Total										1.E-05					0.3
	Indoor Air	Lot 257	Inhalation	Naphthalene	0.0000507	mg/m3	4.E-06	mg/m3	NA	NA	---	5.E-05	mg/m3	3.E-03	mg/m3	0.02
	Exposure Medium Total										---					0.02
	Plant tissue	Lot 257	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-06	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	NA	NA	4.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-03	mg/kg-day	0.2
	Exposure Medium Total										8.E-06					0.4
Soil Total											2.E-05					0.7
											Total of Receptor Risks Across All Media 2.E-05					Total of Receptor Hazards Across All Media 0.7

Note: NA = not available/not applicable

Table 7.46 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 282	Ingestion	Benzo(a)pyrene	0.17	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Arsenic	8.9	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Manganese	391	mg/kg	8.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	7.E-02	mg/kg-day	0.003
				Vanadium	36.5	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								3.E-06					0.02
			Dermal	Benzo(a)pyrene	0.17	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	5.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	8.9	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								5.E-07					0.002
	Exposure Medium Total										5.E-07					0.002
	Plant tissue	Lot 282	Ingestion	Arsenic	NA	NA	1.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-05	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
	Exposure Medium Total										2.E-05					0.1
Soil Total											2.E-05					0.1
											Total of Receptor Risks Across All Media 2.E-05					Total of Receptor Hazards Across All Media 0.1

Note: NA = not available/not applicable

Table 7.46 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 282	Ingestion	Benzo(a)pyrene	0.17	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	8.9	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Manganese	391	mg/kg	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	7.E-02	mg/kg-day	0.03
				Vanadium	36.5	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								7.E-06					0.2
			Dermal	Benzo(a)pyrene	0.17	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Arsenic	8.9	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-07	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								7.E-07					0.01
	Exposure Medium Total										7.E-07					0.01
	Plant tissue	Lot 282	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
	Exposure Medium Total										7.E-06					0.2
Soil Total											8.E-06					0.2
											Total of Receptor Risks Across All Media 1.E-05					Total of Receptor Hazards Across All Media 0.4

Note: NA = not available/not applicable

Table 7.47 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 283	Ingestion	Benz(a)anthracene	0.78	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Benzo(a)pyrene	0.72	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(b)fluoranthene	0.62	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.059	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	4.9	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Manganese	811	mg/kg	2.E-04	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	7.E-02	mg/kg-day	0.007
				Vanadium	34.4	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
			Exp. Route Total								3.E-06					0.02
			Dermal	Benz(a)anthracene	0.78	mg/kg	8.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Benzo(a)pyrene	0.72	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Benzo(b)fluoranthene	0.62	mg/kg	6.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Dibenz(ah)anthracene	0.059	mg/kg	6.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000006
				Arsenic	4.9	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.001
			Exp. Route Total								9.E-07					0.001
	Exposure Medium Total										4.E-06					0.02
	Indoor Air	Lot 283	Inhalation	Chloroform	4.21E-06	mg/m3	1.E-06	mg/m3	2.E-05	1/(ug/m3)	3.E-08	4.E-06	mg/m3	5.E-02	mg/m3	0.00008
				Naphthalene	0.000274	mg/m3	9.E-05	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.09
	Exposure Medium Total										3.E-08					0.09
	Plant tissue	Lot 283	Ingestion	Arsenic	NA	NA	6.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	9.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
	Exposure Medium Total										9.E-06					0.06
Soil Total											1.E-05					0.2
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		0.2

Note: NA = not available/not applicable

Table 7.47 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 283	Ingestion	Benz(a)anthracene	0.78	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(a)pyrene	0.72	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Benzo(b)fluoranthene	0.62	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	0.059	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Arsenic	4.9	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.09
				Manganese	811	mg/kg	4.E-04	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	7.E-02	mg/kg-day	0.06
				Vanadium	34.4	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								7.E-06					0.2
			Dermal	Benz(a)anthracene	0.78	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(a)pyrene	0.72	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(b)fluoranthene	0.62	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Dibenz(ah)anthracene	0.059	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-08	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Arsenic	4.9	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.008
			Exp. Route Total								1.E-06					0.008
	Exposure Medium Total										8.E-06					0.2
	Indoor Air	Lot 283	Inhalation	Chloroform	4.21E-06	mg/m3	3.E-07	mg/m3	2.E-05	1/(ug/m3)	8.E-09	4.E-06	mg/m3	5.E-02	mg/m3	0.00008
				Naphthalene	0.000274	mg/m3	2.E-05	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.09
	Exposure Medium Total										8.E-09					0.09
	Plant tissue	Lot 283	Ingestion	Arsenic	NA	NA	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
	Exposure Medium Total										4.E-06					0.1
Soil Total											1.E-05					0.4
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		0.4

Note: NA = not available/not applicable

Table 7.48 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 342	Ingestion	Benzo(a)pyrene	0.1	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	6.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	5.7	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Chromium VI	25.3	mg/kg	5.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-03	mg/kg-day	0.005
				Vanadium	39.2	mg/kg	8.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.005
			Exp. Route Total								2.E-06					0.02
			Dermal	Benzo(a)pyrene	0.1	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	5.7	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	4.E-07	mg/kg/day	3.E-04	mg/kg-day	0.001
			Exp. Route Total								3.E-07					0.001
	Exposure Medium Total										3.E-07					0.001
	Plant tissue	Lot 342	Ingestion	Arsenic	NA	NA	7.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Chromium VI	NA	NA	1.E-04	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
	Exposure Medium Total										1.E-05					0.2
Soil Total											1.E-05					0.2
										Total of Receptor Risks Across All Media	1.E-05				Total of Receptor Hazards Across All Media	0.2

Note: NA = not available/not applicable

Table 7.48 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 342	Ingestion	Benzo(a)pyrene	0.1	mg/kg	5.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	5.7	mg/kg	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Chromium VI	25.3	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-03	mg/kg-day	0.05
				Vanadium	39.2	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
			Exp. Route Total								4.E-06					0.2
			Dermal	Benzo(a)pyrene	0.1	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Arsenic	5.7	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.009
			Exp. Route Total								5.E-07					0.009
	Exposure Medium Total										5.E-07					0.009
	Plant tissue	Lot 342	Ingestion	Arsenic	NA	NA	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Chromium VI	NA	NA	4.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-03	mg/kg-day	0.2
	Exposure Medium Total										4.E-06					0.3
Soil Total											5.E-06					0.3
											Total of Receptor Risks Across All Media 9.E-06					Total of Receptor Hazards Across All Media 0.5

Note: NA = not available/not applicable

Table 7.49 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 350	Ingestion	Benzo(a)pyrene	0.15	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	9.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000003
				Antimony	4	mg/kg	8.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	4.E-04	mg/kg-day	0.006
				Arsenic	7.6	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Vanadium	45.4	mg/kg	9.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	5.E-03	mg/kg-day	0.005
			Exp. Route Total								3.E-06					0.03
			Dermal	Benzo(a)pyrene	0.15	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	5.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Arsenic	7.6	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	5.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								4.E-07					0.002
	Exposure Medium Total										4.E-07					0.002
	Indoor Air	Lot 350	Inhalation	Naphthalene	0.000344	mg/m3	1.E-04	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.1
	Exposure Medium Total										---					0.1
	Plant tissue	Lot 350	Ingestion	Arsenic	NA	NA	1.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.09
	Exposure Medium Total										1.E-05					0.09
Soil Total											1.E-05					0.2
											Total of Receptor Risks Across All Media					Total of Receptor Hazards Across All Media
											2.E-05					0.2

Note: NA = not available/not applicable

Table 7.49 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 350	Ingestion	Benzo(a)pyrene	0.15	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Antimony	4	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	4.E-04	mg/kg-day	0.05
				Arsenic	7.6	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-06	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Vanadium	45.4	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.05
			Exp. Route Total								6.E-06					0.2
			Dermal	Benzo(a)pyrene	0.15	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Arsenic	7.6	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								6.E-07					0.01
	Exposure Medium Total										6.E-07					0.01
	Indoor Air	Lot 350	Inhalation	Naphthalene	0.000344	mg/m3	3.E-05	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.1
	Exposure Medium Total										---					0.1
	Plant tissue	Lot 350	Ingestion	Arsenic	NA	NA	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
	Exposure Medium Total										6.E-06					0.2
Soil Total											7.E-06					0.3
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		0.5

Note: NA = not available/not applicable

Table 7.50 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 360	Ingestion	Benz(a)anthracene	0.514	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Benzo(a)pyrene	0.455	mg/kg	9.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-07	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Benzo(b)fluoranthene	0.656	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.0899	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	5.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000002
				Antimony	6.7	mg/kg	1.E-06	mg/kg/day	NA	NA	---	4.E-06	mg/kg/day	4.E-04	mg/kg-day	0.01
				Arsenic	18	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Chromium VI	96.8	mg/kg	2.E-05	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	3.E-03	mg/kg-day	0.02
				Vanadium	48.6	mg/kg	1.E-05	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	5.E-03	mg/kg-day	0.006
			Exp. Route Total								6.E-06					0.07
			Dermal	Benz(a)anthracene	0.514	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Benzo(a)pyrene	0.455	mg/kg	5.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Benzo(b)fluoranthene	0.656	mg/kg	7.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Dibenz(ah)anthracene	0.0899	mg/kg	9.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000009
				Arsenic	18	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.004
			Exp. Route Total								1.E-06					0.004
	Exposure Medium Total										8.E-06					0.07
	Indoor Air	Lot 360	Inhalation	Naphthalene	0.000211	mg/m3	7.E-05	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.07
	Exposure Medium Total										---					0.07
	Plant tissue	Lot 360	Ingestion	Arsenic	NA	NA	2.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-05	7.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	NA	NA	4.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	3.E-03	mg/kg-day	0.4
	Exposure Medium Total										3.E-05					0.6
Soil Total											4.E-05					0.7
										Total of Receptor Risks Across All Media	4.E-05			Total of Receptor Hazards Across All Media		0.7

Note: NA = not available/not applicable

Table 7.50 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 360	Ingestion	Benz(a)anthracene	0.514	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Benzo(a)pyrene	0.455	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Benzo(b)fluoranthene	0.656	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	0.0899	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Antimony	6.7	mg/kg	3.E-06	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	4.E-04	mg/kg-day	0.09
				Arsenic	18	mg/kg	8.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.3
				Chromium VI	96.8	mg/kg	5.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-03	mg/kg-day	0.2
				Vanadium	48.6	mg/kg	2.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	5.E-03	mg/kg-day	0.05
			Exp. Route Total								1.E-05					0.7
			Dermal	Benz(a)anthracene	0.514	mg/kg	9.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(a)pyrene	0.455	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(b)fluoranthene	0.656	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Dibenz(ah)anthracene	0.0899	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Arsenic	18	mg/kg	7.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	8.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
			Exp. Route Total								2.E-06					0.03
	Exposure Medium Total										2.E-05					0.7
	Indoor Air	Lot 360	Inhalation	Naphthalene	0.000211	mg/m3	2.E-05	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.07
	Exposure Medium Total										---					0.07
	Plant tissue	Lot 360	Ingestion	Arsenic	NA	NA	9.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.4
				Chromium VI	NA	NA	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	3.E-03	mg/kg-day	0.6
	Exposure Medium Total										1.E-05					1
Soil Total											3.E-05					2
										Total of Receptor Risks Across All Media	3.E-05			Total of Receptor Hazards Across All Media		2

Note: NA = not available/not applicable

Table 7.50 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 360	Ingestion	Benz(a)anthracene	0.514	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Benzo(a)pyrene	0.455	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Benzo(b)fluoranthene	0.656	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Dibenz(ah)anthracene	0.0899	mg/kg	3.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-08	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000009
				Antimony	4.55	mg/kg	1.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-04	mg/kg-day	0.003
				Arsenic	18	mg/kg	5.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Chromium VI	67.4	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-03	mg/kg-day	0.007
				Vanadium	47.3	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								9.E-07					0.03
			Dermal	Benz(a)anthracene	0.514	mg/kg	2.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-09	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000007
				Benzo(a)pyrene	0.455	mg/kg	2.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-08	2.E-08	mg/kg/day	3.E-02	mg/kg-day	0.0000007
				Benzo(b)fluoranthene	0.656	mg/kg	3.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-09	3.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Dibenz(ah)anthracene	0.0899	mg/kg	4.E-10	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-09	4.E-09	mg/kg/day	3.E-02	mg/kg-day	0.0000001
				Arsenic	18	mg/kg	2.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-08	2.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0006
			Exp. Route Total								5.E-08					0.0006
	Exposure Medium Total										1.E-06					0.03
	Indoor Air	Lot 360	Inhalation	Naphthalene	0.000211	mg/m3	1.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	3.E-03	mg/m3	0.04
	Exposure Medium Total										---					0.04
Soil Total											1.E-06					0.07
										Total of Receptor Risks Across All Media	1.E-06				Total of Receptor Hazards Across All Media	0.07

Note: NA = not available/not applicable

Table 7.50 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 360	Ingestion	Benz(a)anthracene	0.514	mg/kg	4.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(a)pyrene	0.455	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	0.656	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Dibenz(ah)anthracene	0.0899	mg/kg	7.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Antimony	4.55	mg/kg	4.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	4.E-04	mg/kg-day	0.03
				Arsenic	18	mg/kg	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	67.4	mg/kg	5.E-06	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.06
				Vanadium	47.3	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								2.E-06					0.3
			Dermal	Benz(a)anthracene	0.514	mg/kg	6.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-09	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Benzo(a)pyrene	0.455	mg/kg	5.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-08	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000006
				Benzo(b)fluoranthene	0.656	mg/kg	7.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-09	3.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000009
				Dibenz(ah)anthracene	0.0899	mg/kg	1.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-09	4.E-08	mg/kg/day	3.E-02	mg/kg-day	0.000001
				Arsenic	18	mg/kg	5.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-08	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								1.E-07					0.006
	Exposure Medium Total										3.E-06					0.3
	Indoor Air	Lot 360	Inhalation	Naphthalene	0.000211	mg/m3	5.E-06	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.06
	Exposure Medium Total										---					0.06
Soil Total											3.E-06					0.3
										Total of Receptor Risks Across All Media	3.E-06				Total of Receptor Hazards Across All Media	0.3

Note: NA = not available/not applicable

Table 7.51 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Indoor Air	Lots South of AOC	Inhalation	Benzene	6.97E-05	mg/m3	2.E-05	mg/m3	8.E-06	1/(ug/m3)	2.E-07	7.E-05	mg/m3	3.E-02	mg/m3	0.002
				Carbon disulfide	0.00105	mg/m3	3.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	7.E-01	mg/m3	0.001
				Chloroform	3.49E-05	mg/m3	1.E-05	mg/m3	2.E-05	1/(ug/m3)	3.E-07	3.E-05	mg/m3	5.E-02	mg/m3	0.0007
				Trichlorofluoromethane	0.00475	mg/m3	2.E-03	mg/m3	NA	NA	---	5.E-03	mg/m3	7.E-01	mg/m3	0.007
				Naphthalene	0.000143	mg/m3	5.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	3.E-03	mg/m3	0.05
Soil Total											4.E-07					0.06
										Total of Receptor Risks Across All Media	4.E-07				Total of Receptor Hazards Across All Media	0.06

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.51 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Indoor Air	Lots South of AOC	Inhalation	Benzene	6.97E-05	mg/m3	6.E-06	mg/m3	8.E-06	1/(ug/m3)	4.E-08	7.E-05	mg/m3	3.E-02	mg/m3	0.002
				Carbon disulfide	0.00105	mg/m3	9.E-05	mg/m3	NA	NA	---	1.E-03	mg/m3	7.E-01	mg/m3	0.001
				Chloroform	3.49E-05	mg/m3	3.E-06	mg/m3	2.E-05	1/(ug/m3)	7.E-08	3.E-05	mg/m3	5.E-02	mg/m3	0.0007
				Trichlorofluoromethane	0.00475	mg/m3	4.E-04	mg/m3	NA	NA	---	5.E-03	mg/m3	7.E-01	mg/m3	0.007
				Naphthalene	0.000143	mg/m3	1.E-05	mg/m3	NA	NA	---	1.E-04	mg/m3	3.E-03	mg/m3	0.05
Soil Total											1.E-07					0.06
										Total of Receptor Risks Across All Media	1.E-07				Total of Receptor Hazards Across All Media	0.06

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.52 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Indoor Air	West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Inhalation	Benzene	0.000724	mg/m3	2.E-04	mg/m3	8.E-06	1/(ug/m3)	2.E-06	7.E-04	mg/m3	3.E-02	mg/m3	0.02
				Naphthalene	0.000327	mg/m3	1.E-04	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.1
Groundwater Total											2.E-06					0.1
									Total of Receptor Risks Across All Media		2.E-06			Total of Receptor Hazards Across All Media		0.1

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.52 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Indoor Air	West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Inhalation	Benzene	0.000724	mg/m3	6.E-05	mg/m3	8.E-06	1/(ug/m3)	5.E-07	7.E-04	mg/m3	3.E-02	mg/m3	0.02
			Inhalation	Naphthalene	0.000327	mg/m3	3.E-05	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.1
Groundwater Total											5.E-07					0.1
									Total of Receptor Risks Across All Media		5.E-07			Total of Receptor Hazards Across All Media		0.1

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.53 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-site groundwater west of Neponset River	Ingestion	Arsenic	0.00063	mg/L	6.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	9.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
				Manganese	0.13	mg/L	1.E-03	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	2.E-02	mg/kg-day	0.1
Groundwater Total											9.E-06					0.2
										Total of Receptor Risks Across All Media	9.E-06				Total of Receptor Hazards Across All Media	0.2

Note: NA = not available/not applicable

Table 7.53 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-site groundwater west of Neponset River	Ingestion	Arsenic	0.00063	mg/L	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-06	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Manganese	0.13	mg/L	1.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	2.E-02	mg/kg-day	0.5
Groundwater Total											8.E-06					0.7
										Total of Receptor Risks Across All Media	8.E-06				Total of Receptor Hazards Across All Media	0.7

Note: NA = not available/not applicable

Table 7.54 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-27)	Ingestion	Trichloroethylene (TCE)	0.0051	mg/L	5.E-05	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-05	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.5
				Benzo(a)pyrene	0.000014	mg/L	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	4.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00001
				4-Nitrophenol	0.0001	mg/L	9.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	8.E-03	mg/kg-day	0.0003
				Antimony	0.0022	mg/L	2.E-05	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	4.E-04	mg/kg-day	0.2
				Arsenic	0.0016	mg/L	2.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-05	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Manganese	0.42	mg/L	4.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	2.E-02	mg/kg-day	0.5
				Vanadium	0.0047	mg/L	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								4.E-05					1
			Dermal	Trichloroethylene (TCE)	0.0051	mg/L	8.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
				Vanadium	0.0047	mg/L	2.E-07	mg/kg/day	NA	NA	---	7.E-07	mg/kg/day	1.E-04	mg/kg-day	0.005
			Exp. Route Total								3.E-06					0.09
	Exposure Medium Total										5.E-05					1
	Shower Vapor (1)	Off-site groundwater east of Neponset River (SH-27)	Inhalation	Trichloroethylene (TCE)	NA	NA	2.E-04	mg/m3	1.E-04	1/(ug/m3)	2.E-05	5.E-04	mg/m3	4.E-02	mg/m3	0.01
	Exposure Medium Total										2.E-05					0.01
Groundwater Total											6.E-05					1
										Total of Receptor Risks Across All Media	6.E-05			Total of Receptor Hazards Across All Media		1

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.54 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-27)	Ingestion	Trichloroethylene (TCE)	0.0051	mg/L	4.E-05	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-05	5.E-04	mg/kg/day	3.E-04	mg/kg-day	2
				Benzo(a)pyrene	0.000014	mg/L	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				4-Nitrophenol	0.0001	mg/L	8.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	8.E-03	mg/kg-day	0.001
				Antimony	0.0022	mg/L	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	4.E-04	mg/kg-day	0.5
				Arsenic	0.0016	mg/L	1.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-05	2.E-04	mg/kg/day	3.E-04	mg/kg-day	0.5
				Manganese	0.42	mg/L	3.E-03	mg/kg/day	NA	NA	---	4.E-02	mg/kg/day	2.E-02	mg/kg-day	2
				Vanadium	0.0047	mg/L	4.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	5.E-03	mg/kg-day	0.09
			Exp. Route Total								4.E-05					4
			Dermal	Trichloroethylene (TCE)	0.0051	mg/L	5.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Vanadium	0.0047	mg/L	2.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	1.E-04	mg/kg-day	0.02
			Exp. Route Total								2.E-06					0.2
	Exposure Medium Total										4.E-05					5
	Shower Vapor (1)	Off-site groundwater east of Neponset River (SH-27)	Inhalation	Trichloroethylene (TCE)	NA	NA	8.E-05	mg/m3	1.E-04	1/(ug/m3)	9.E-06	9.E-04	mg/m3	4.E-02	mg/m3	0.02
	Exposure Medium Total										9.E-06					0.02
Groundwater Total											5.E-05					5
										Total of Receptor Risks Across All Media	5.E-05			Total of Receptor Hazards Across All Media		5

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.

See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,

where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.55 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-28)	Ingestion	Trichloroethylene (TCE)	0.00043	mg/L	4.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Arsenic	0.00092	mg/L	9.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
				Manganese	0.76	mg/L	7.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	2.E-02	mg/kg-day	0.9
			Exp. Route Total								1.E-05					1
			Dermal	Trichloroethylene (TCE)	0.00043	mg/L	7.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	3.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.007
			Exp. Route Total								3.E-07					0.007
	Exposure Medium Total										1.E-05					1
	Shower Vapor (1)	Off-site groundwater east of Neponset River (SH-28)	Inhalation	Trichloroethylene (TCE)	NA	NA	1.E-05	mg/m3	1.E-04	1/(ug/m3)	2.E-06	4.E-05	mg/m3	4.E-02	mg/m3	0.001
	Exposure Medium Total										2.E-06					0.001
Groundwater Total											2.E-05					1
							Total of Receptor Risks Across All Media				2.E-05	Total of Receptor Hazards Across All Media				1

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.55 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-28)	Ingestion	Trichloroethylene (TCE)	0.00043	mg/L	4.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-06	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Arsenic	0.00092	mg/L	8.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-05	9.E-05	mg/kg/day	3.E-04	mg/kg-day	0.3
				Manganese	0.76	mg/L	6.E-03	mg/kg/day	NA	NA	---	7.E-02	mg/kg/day	2.E-02	mg/kg-day	3
			Exp. Route Total								1.E-05					3
			Dermal	Trichloroethylene (TCE)	0.00043	mg/L	4.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								2.E-07					0.02
	Exposure Medium Total										1.E-05					3
	Shower Vapor (1)	Off-site groundwater east of Neponset River (SH-28)	Inhalation	Trichloroethylene (TCE)	NA	NA	7.E-06	mg/m3	1.E-04	1/(ug/m3)	7.E-07	8.E-05	mg/m3	4.E-02	mg/m3	0.002
	Exposure Medium Total										7.E-07					0.002
Groundwater Total											1.E-05					3
										Total of Receptor Risks Across All Media	1.E-05			Total of Receptor Hazards Across All Media		3

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.55 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-28)	Ingestion	Trichloroethylene (TCE)	0.000263	mg/L	5.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Arsenic	0.00056	mg/L	1.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Manganese	0.291	mg/L	6.E-04	mg/kg/day	NA	NA	---	6.E-03	mg/kg/day	2.E-02	mg/kg-day	0.2
			Exp. Route Total								2.E-06					0.3
			Dermal	Trichloroethylene (TCE)	0.000263	mg/L	8.E-08	mg/kg/day	4.E-01	1/(mg/kg-day)	3.E-08	8.E-07	mg/kg/day	3.E-04	mg/kg-day	0.003
			Exp. Route Total								3.E-08					0.003
	Exposure Medium Total										2.E-06					0.3
	Shower Vapor (1)	Off-site groundwater east of Neponset River (SH-28)	Inhalation	Trichloroethylene (TCE)	NA	NA	2.E-06	mg/m3	1.E-04	1/(ug/m3)	2.E-07	2.E-05	mg/m3	4.E-02	mg/m3	0.0004
	Exposure Medium Total										2.E-07					0.0004
Groundwater Total											2.E-06					0.3
									Total of Receptor Risks Across All Media		2.E-06			Total of Receptor Hazards Across All Media		0.3

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.55 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-28)	Ingestion	Trichloroethylene (TCE)	0.000263	mg/L	4.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-07	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Arsenic	0.00056	mg/L	9.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Manganese	0.291	mg/L	5.E-04	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	2.E-02	mg/kg-day	0.7
			Exp. Route Total								2.E-06					0.8
			Dermal	Trichloroethylene (TCE)	0.000263	mg/L	5.E-08	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-08	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
			Exp. Route Total								2.E-08					0.005
	Exposure Medium Total										2.E-06					0.8
	Shower Vapor (1)	Off-site groundwater east of Neponset River (SH-28)	Inhalation	Trichloroethylene (TCE)	NA	NA	9.E-07	mg/m3	1.E-04	1/(ug/m3)	1.E-07	3.E-05	mg/m3	4.E-02	mg/m3	0.0008
	Exposure Medium Total										1.E-07					0.0008
Groundwater Total											2.E-06					0.8
							Total of Receptor Risks Across All Media				2.E-06	Total of Receptor Hazards Across All Media				0.8

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.56 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Ingestion	Benzene	0.00457	mg/L	4.E-05	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-06	1.E-04	mg/kg/day	4.E-03	mg/kg-day	0.03
				2-Methylnaphthalene	0.0138	mg/L	1.E-04	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	4.E-03	mg/kg-day	0.09
				Naphthalene	0.0413	mg/L	4.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	2.E-02	mg/kg-day	0.06
				Benzo(a)pyrene	0.000077	mg/L	7.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Dibenz(ah)anthracene	0.000025	mg/L	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	0.059	mg/L	6.E-04	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-04	2.E-03	mg/kg/day	3.E-04	mg/kg-day	5
				Chromium VI	0.03	mg/L	3.E-04	mg/kg/day	NA	NA	---	8.E-04	mg/kg/day	3.E-03	mg/kg-day	0.3
				Manganese	0.62	mg/L	6.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	2.E-02	mg/kg-day	0.7
				Vanadium	0.22	mg/L	2.E-03	mg/kg/day	NA	NA	---	6.E-03	mg/kg/day	5.E-03	mg/kg-day	1
			Exp. Route Total								8.E-04					8
			Dermal	Benzene	0.00457	mg/L	7.E-06	mg/kg/day	6.E-02	1/(mg/kg-day)	4.E-07	2.E-05	mg/kg/day	4.E-03	mg/kg-day	0.005
				2-Methylnaphthalene	0.0138	mg/L	2.E-04	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	4.E-03	mg/kg-day	0.1
				Naphthalene	0.0413	mg/L	3.E-04	mg/kg/day	NA	NA	---	8.E-04	mg/kg/day	2.E-02	mg/kg-day	0.04
				Chromium VI	0.03	mg/L	3.E-06	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	8.E-05	mg/kg-day	0.1
				Vanadium	0.22	mg/L	1.E-05	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	1.E-04	mg/kg-day	0.2
			Exp. Route Total								4.E-07					0.5
	Exposure Medium Total										8.E-04					8
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Inhalation	Benzene	NA	NA	2.E-04	mg/m3	8.E-06	1/(ug/m3)	1.E-06	4.E-04	mg/m3	3.E-02	mg/m3	0.01
				2-Methylnaphthalene	NA	NA	5.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.4
				Naphthalene	NA	NA	1.E-03	mg/m3	NA	NA	---	4.E-03	mg/m3	3.E-03	mg/m3	1
	Exposure Medium Total										1.E-06					2
Groundwater Total											8.E-04					10
											8.E-04					10

Total of Receptor Risks Across All Media

Total of Receptor Hazards Across All Media

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.

See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,

where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.56 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Ingestion	Benzene	0.00457	mg/L	4.E-05	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-06	4.E-04	mg/kg/day	4.E-03	mg/kg-day	0.1
				2-Methylnaphthalene	0.0138	mg/L	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	4.E-03	mg/kg-day	0.3
				Naphthalene	0.0413	mg/L	3.E-04	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	2.E-02	mg/kg-day	0.2
				Benzo(a)pyrene	0.000077	mg/L	6.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-06	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenz(ah)anthracene	0.000025	mg/L	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Arsenic	0.059	mg/L	5.E-04	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-04	6.E-03	mg/kg/day	3.E-04	mg/kg-day	20
				Chromium VI	0.03	mg/L	2.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	3.E-03	mg/kg-day	1
				Manganese	0.62	mg/L	5.E-03	mg/kg/day	NA	NA	---	6.E-02	mg/kg/day	2.E-02	mg/kg-day	2
				Vanadium	0.22	mg/L	2.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	5.E-03	mg/kg-day	4
			Exp. Route Total								7.E-04					30
			Dermal	Benzene	0.00457	mg/L	4.E-06	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-07	4.E-05	mg/kg/day	4.E-03	mg/kg-day	0.01
				2-Methylnaphthalene	0.0138	mg/L	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	4.E-03	mg/kg-day	0.3
				Naphthalene	0.0413	mg/L	1.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	2.E-02	mg/kg-day	0.08
				Chromium VI	0.03	mg/L	2.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	8.E-05	mg/kg-day	0.3
				Vanadium	0.22	mg/L	8.E-06	mg/kg/day	NA	NA	---	9.E-05	mg/kg/day	1.E-04	mg/kg-day	0.7
			Exp. Route Total								2.E-07					1
	Exposure Medium Total										7.E-04					30
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Inhalation	Benzene	NA	NA	7.E-05	mg/m3	8.E-06	1/(ug/m3)	5.E-07	8.E-04	mg/m3	3.E-02	mg/m3	0.03
				2-Methylnaphthalene	NA	NA	2.E-04	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.8
				Naphthalene	NA	NA	6.E-04	mg/m3	NA	NA	---	7.E-03	mg/m3	3.E-03	mg/m3	2
	Exposure Medium Total										5.E-07					3
Groundwater Total											7.E-04					30
									Total of Receptor Risks Across All Media		7.E-04			Total of Receptor Hazards Across All Media		30

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.

See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,

where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.56 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Ingestion	Benzene	0.00187	mg/L	4.E-06	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-07	4.E-05	mg/kg/day	4.E-03	mg/kg-day	0.009
				2-Methylnaphthalene	0.00562	mg/L	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	4.E-03	mg/kg-day	0.03
				Naphthalene	0.0152	mg/L	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	2.E-02	mg/kg-day	0.01
				Benzo(a)pyrene	0.0000332	mg/L	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Dibenz(ah)anthracene	0.00000859	mg/L	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000005
				Arsenic	0.0229	mg/L	4.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-05	4.E-04	mg/kg/day	3.E-04	mg/kg-day	1
				Chromium VI	0.00854	mg/L	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.05
				Manganese	0.152	mg/L	3.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	2.E-02	mg/kg-day	0.1
				Vanadium	0.0754	mg/L	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	5.E-03	mg/kg-day	0.3
			Exp. Route Total								7.E-05					2
			Dermal	Benzene	0.0035	mg/L	1.E-06	mg/kg/day	6.E-02	1/(mg/kg-day)	5.E-08	1.E-05	mg/kg/day	4.E-03	mg/kg-day	0.002
				2-Methylnaphthalene	0.011	mg/L	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	4.E-03	mg/kg-day	0.07
				Naphthalene	0.029	mg/L	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	2.E-02	mg/kg-day	0.02
				Chromium VI	0.0085	mg/L	1.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	8.E-05	mg/kg-day	0.01
				Vanadium	0.15	mg/L	9.E-07	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	1.E-04	mg/kg-day	0.07
			Exp. Route Total								5.E-08					0.2
	Exposure Medium Total										7.E-05					2
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Inhalation	Benzene	NA	NA	1.E-05	mg/m3	8.E-06	1/(ug/m3)	1.E-07	1.E-04	mg/m3	3.E-02	mg/m3	0.004
				2-Methylnaphthalene	NA	NA	4.E-05	mg/m3	NA	NA	---	4.E-04	mg/m3	3.E-03	mg/m3	0.1
				Naphthalene	NA	NA	1.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.3
	Exposure Medium Total										1.E-07					0.5
Groundwater Total											7.E-05					3
							Total of Receptor Risks Across All Media				7.E-05	Total of Receptor Hazards Across All Media				3

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.56 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Ingestion	Benzene	0.00187	mg/L	3.E-06	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-07	1.E-04	mg/kg/day	4.E-03	mg/kg-day	0.03
				2-Methylnaphthalene	0.00562	mg/L	9.E-06	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	4.E-03	mg/kg-day	0.08
				Naphthalene	0.0152	mg/L	2.E-05	mg/kg/day	NA	NA	---	8.E-04	mg/kg/day	2.E-02	mg/kg-day	0.04
				Benzo(a)pyrene	0.0000332	mg/L	5.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Dibenz(ah)anthracene	0.00000859	mg/L	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	0.0229	mg/L	4.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-05	1.E-03	mg/kg/day	3.E-04	mg/kg-day	4
				Chromium VI	0.00854	mg/L	1.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-03	mg/kg-day	0.2
				Manganese	0.152	mg/L	2.E-04	mg/kg/day	NA	NA	---	8.E-03	mg/kg/day	2.E-02	mg/kg-day	0.4
				Vanadium	0.0754	mg/L	1.E-04	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	5.E-03	mg/kg-day	0.8
			Exp. Route Total								6.E-05					6
			Dermal	Benzene	0.0035	mg/L	5.E-07	mg/kg/day	6.E-02	1/(mg/kg-day)	3.E-08	2.E-05	mg/kg/day	4.E-03	mg/kg-day	0.005
				2-Methylnaphthalene	0.011	mg/L	2.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	4.E-03	mg/kg-day	0.1
				Naphthalene	0.029	mg/L	2.E-05	mg/kg/day	NA	NA	---	7.E-04	mg/kg/day	2.E-02	mg/kg-day	0.03
				Chromium VI	0.0085	mg/L	7.E-08	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	8.E-05	mg/kg-day	0.03
				Vanadium	0.15	mg/L	6.E-07	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	1.E-04	mg/kg-day	0.2
			Exp. Route Total								3.E-08					0.4
	Exposure Medium Total										6.E-05					6
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Inhalation	Benzene	NA	NA	6.E-06	mg/m3	8.E-06	1/(ug/m3)	5.E-08	2.E-04	mg/m3	3.E-02	mg/m3	0.007
				2-Methylnaphthalene	NA	NA	2.E-05	mg/m3	NA	NA	---	7.E-04	mg/m3	3.E-03	mg/m3	0.2
				Naphthalene	NA	NA	5.E-05	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.6
	Exposure Medium Total										5.E-08					0.8
Groundwater Total											6.E-05					7
							Total of Receptor Risks Across All Media				6.E-05	Total of Receptor Hazards Across All Media				7

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.57 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	On-Site Groundwater	Ingestion	Benzene	0.58	mg/L	5.E-03	mg/kg/day	6.E-02	1/(mg/kg-day)	3.E-04	2.E-02	mg/kg/day	4.E-03	mg/kg-day	4
				Chloroform	0.00032	mg/L	3.E-06	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	1.E-02	mg/kg-day	0.0009
				Ethylbenzene	0.353	mg/L	3.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	1.E-01	mg/kg-day	0.1
				Methylene chloride (Dichloromethane)	0.034	mg/L	3.E-04	mg/kg/day	8.E-03	1/(mg/kg-day)	2.E-06	9.E-04	mg/kg/day	6.E-02	mg/kg-day	0.02
				Methyl tert-butyl ether (MTBE)	0.024	mg/L	2.E-04	mg/kg/day	2.E-03	1/(mg/kg-day)	4.E-07	7.E-04	mg/kg/day	3.E-01	mg/kg-day	0.002
				Styrene	0.267	mg/L	3.E-03	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	2.E-01	mg/kg-day	0.04
				Toluene	0.897	mg/L	8.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	8.E-02	mg/kg-day	0.3
				Trichloroethylene (TCE)	0.00253	mg/L	2.E-05	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-05	7.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Xylenes (mixed isomers)	0.677	mg/L	6.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	2.E-01	mg/kg-day	0.09
				Acenaphthene	0.0763	mg/L	7.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	6.E-02	mg/kg-day	0.03
				Acenaphthylene	0.0787	mg/L	7.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	3.E-02	mg/kg-day	0.07
				Fluorene	0.0487	mg/L	5.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	4.E-02	mg/kg-day	0.03
				2-Methylnaphthalene	0.503	mg/L	5.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	4.E-03	mg/kg-day	3
				Naphthalene	3.13	mg/L	3.E-02	mg/kg/day	NA	NA	---	9.E-02	mg/kg/day	2.E-02	mg/kg-day	4
				Pyrene	0.0158	mg/L	1.E-04	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	3.E-02	mg/kg-day	0.01
				Benz(a)anthracene	0.00078	mg/L	7.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0007
				Benzo(a)pyrene	0.0016	mg/L	2.E-05	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-04	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Benzo(b)fluoranthene	0.000405	mg/L	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Dibenz(ah)anthracene	0.000627	mg/L	6.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Indeno(1,2,3-cd)pyrene	0.000285	mg/L	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Bis(2-ethylhexyl)phthalate (DEHP)	0.0372	mg/L	3.E-04	mg/kg/day	1.E-02	1/(mg/kg-day)	5.E-06	1.E-03	mg/kg/day	2.E-02	mg/kg-day	0.05
				4-Methylphenol	0.092	mg/L	9.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	5.E-03	mg/kg-day	0.5
				Carbazole	0.0627	mg/L	6.E-04	mg/kg/day	2.E-02	1/(mg/kg-day)	1.E-05	2.E-03	mg/kg/day	NA	NA	---
				Antimony	0.034	mg/L	3.E-04	mg/kg/day	NA	NA	---	9.E-04	mg/kg/day	4.E-04	mg/kg-day	2
				Arsenic	0.631	mg/L	6.E-03	mg/kg/day	2.E+00	1/(mg/kg-day)	9.E-03	2.E-02	mg/kg/day	3.E-04	mg/kg-day	60
				Barium	0.27	mg/L	3.E-03	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	2.E-01	mg/kg-day	0.04
				Cadmium	0.00182	mg/L	2.E-05	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	5.E-04	mg/kg-day	0.1
				Chromium VI	0.13	mg/L	1.E-03	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	3.E-03	mg/kg-day	1
				Manganese	3.9	mg/L	4.E-02	mg/kg/day	NA	NA	---	1.E-01	mg/kg/day	2.E-02	mg/kg-day	4
				Mercury	0.0014	mg/L	1.E-05	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Nickel	0.629	mg/L	6.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	2.E-02	mg/kg-day	0.9
				Selenium	0.0196	mg/L	2.E-04	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	5.E-03	mg/kg-day	0.1
				Thallium	0.000305	mg/L	3.E-06	mg/kg/day	NA	NA	---	8.E-06	mg/kg/day	7.E-05	mg/kg-day	0.1
				Vanadium	3.35	mg/L	3.E-02	mg/kg/day	NA	NA	---	9.E-02	mg/kg/day	5.E-03	mg/kg-day	20
				Zinc	4.84	mg/L	5.E-02	mg/kg/day	NA	NA	---	1.E-01	mg/kg/day	3.E-01	mg/kg-day	0.4
				Cyanide (free)	0.00465	mg/L	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	2.E-02	mg/kg-day	0.006
			Exp. Route Total								9.E-03					100
			Dermal	Benzene	0.58	mg/L	8.E-04	mg/kg/day	6.E-02	1/(mg/kg-day)	5.E-05	2.E-03	mg/kg/day	4.E-03	mg/kg-day	0.6
				Ethylbenzene	0.353	mg/L	2.E-03	mg/kg/day	NA	NA	---	6.E-03	mg/kg/day	1.E-01	mg/kg-day	0.06
				Methyl tert-butyl ether (MTBE)	0.024	mg/L	8.E-06	mg/kg/day	2.E-03	1/(mg/kg-day)	1.E-08	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00008
				Styrene	0.267	mg/L	1.E-03	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	2.E-01	mg/kg-day	0.02
				Toluene	0.897	mg/L	3.E-03	mg/kg/day	NA	NA	---	9.E-03	mg/kg/day	8.E-02	mg/kg-day	0.1
				Trichloroethylene (TCE)	0.00253	mg/L	4.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Xylenes (mixed isomers)	0.677	mg/L	4.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	2.E-01	mg/kg-day	0.06
				2-Methylnaphthalene	0.503	mg/L	6.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	4.E-03	mg/kg-day	5

Table 7.57 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	On-Site Groundwater		Naphthalene	3.13	mg/L	2.E-02	mg/kg/day	NA	NA	---	6.E-02	mg/kg/day	2.E-02	mg/kg-day	3
				Bis(2-ethylhexyl)phthalate (DEHP)	0.0372	mg/L	6.E-04	mg/kg/day	1.E-02	1/(mg/kg-day)	9.E-06	2.E-03	mg/kg/day	2.E-02	mg/kg-day	0.09
				4-Methylphenol	0.092	mg/L	8.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.05
				Carbazole	0.0627	mg/L	5.E-04	mg/kg/day	2.E-02	1/(mg/kg-day)	9.E-06	1.E-03	mg/kg/day	NA	NA	---
				Cadmium	0.00182	mg/L	9.E-08	mg/kg/day	NA	NA	---	3.E-07	mg/kg/day	3.E-05	mg/kg-day	0.01
				Chromium VI	0.13	mg/L	1.E-05	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	8.E-05	mg/kg-day	0.5
				Vanadium	3.35	mg/L	2.E-04	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	1.E-04	mg/kg-day	4
				Zinc	4.84	mg/L	1.E-04	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	3.E-01	mg/kg-day	0.001
				Cyanide (free)	0.00465	mg/L	2.E-07	mg/kg/day	NA	NA	---	7.E-07	mg/kg/day	2.E-02	mg/kg-day	0.00003
			Exp. Route Total								7.E-05					10
	Exposure Medium Total										9.E-03					100
	Shower Vapor (1)	On-Site Groundwater	Inhalation	Benzene	NA	NA	2.E-02	mg/m3	8.E-06	1/(ug/m3)	1.E-04	6.E-02	mg/m3	3.E-02	mg/m3	2
				Chloroform	NA	NA	1.E-05	mg/m3	2.E-05	1/(ug/m3)	2.E-07	3.E-05	mg/m3	5.E-02	mg/m3	0.0006
				Ethylbenzene	NA	NA	1.E-02	mg/m3	1.E-06	1/(ug/m3)	1.E-05	3.E-02	mg/m3	1.E+00	mg/m3	0.03
				Methylene chloride (Dichloromethane)	NA	NA	1.E-03	mg/m3	5.E-07	1/(ug/m3)	5.E-07	3.E-03	mg/m3	1.E+00	mg/m3	0.003
				Methyl tert-butyl ether (MTBE)	NA	NA	8.E-04	mg/m3	3.E-07	1/(ug/m3)	2.E-07	2.E-03	mg/m3	3.E+00	mg/m3	0.0008
				Styrene	NA	NA	9.E-03	mg/m3	NA	NA	---	3.E-02	mg/m3	1.E+00	mg/m3	0.03
				Toluene	NA	NA	3.E-02	mg/m3	NA	NA	---	9.E-02	mg/m3	5.E+00	mg/m3	0.02
				Trichloroethylene (TCE)	NA	NA	8.E-05	mg/m3	1.E-04	1/(ug/m3)	9.E-06	2.E-04	mg/m3	4.E-02	mg/m3	0.006
				Xylenes (mixed isomers)	NA	NA	2.E-02	mg/m3	NA	NA	---	6.E-02	mg/m3	1.E-01	mg/m3	0.6
				2-Methylnaphthalene	NA	NA	2.E-02	mg/m3	NA	NA	---	5.E-02	mg/m3	3.E-03	mg/m3	20
				Naphthalene	NA	NA	1.E-01	mg/m3	NA	NA	---	3.E-01	mg/m3	3.E-03	mg/m3	100
	Exposure Medium Total										2.E-04					100
Groundwater Total											1.E-02					200
									Total of Receptor Risks Across All Media		1.E-02	Total of Receptor Hazards Across All Media				200

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.57 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	On-Site Groundwater	Ingestion	Benzene	0.58	mg/L	5.E-03	mg/kg/day	6.E-02	1/(mg/kg-day)	3.E-04	6.E-02	mg/kg/day	4.E-03	mg/kg-day	10
				Chloroform	0.00032	mg/L	3.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	1.E-02	mg/kg-day	0.003
				Ethylbenzene	0.353	mg/L	3.E-03	mg/kg/day	NA	NA	---	3.E-02	mg/kg/day	1.E-01	mg/kg-day	0.3
				Methylene chloride (Dichloromethane)	0.034	mg/L	3.E-04	mg/kg/day	8.E-03	1/(mg/kg-day)	2.E-06	3.E-03	mg/kg/day	6.E-02	mg/kg-day	0.05
				Methyl tert-butyl ether (MTBE)	0.024	mg/L	2.E-04	mg/kg/day	2.E-03	1/(mg/kg-day)	4.E-07	2.E-03	mg/kg/day	3.E-01	mg/kg-day	0.008
				Styrene	0.267	mg/L	2.E-03	mg/kg/day	NA	NA	---	3.E-02	mg/kg/day	2.E-01	mg/kg-day	0.1
				Toluene	0.897	mg/L	7.E-03	mg/kg/day	NA	NA	---	9.E-02	mg/kg/day	8.E-02	mg/kg-day	1
				Trichloroethylene (TCE)	0.00253	mg/L	2.E-05	mg/kg/day	4.E-01	1/(mg/kg-day)	8.E-06	2.E-04	mg/kg/day	3.E-04	mg/kg-day	0.8
				Xylenes (mixed isomers)	0.677	mg/L	6.E-03	mg/kg/day	NA	NA	---	6.E-02	mg/kg/day	2.E-01	mg/kg-day	0.3
				Acenaphthene	0.0763	mg/L	6.E-04	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	6.E-02	mg/kg-day	0.1
				Acenaphthylene	0.0787	mg/L	6.E-04	mg/kg/day	NA	NA	---	8.E-03	mg/kg/day	3.E-02	mg/kg-day	0.3
				Fluorene	0.0487	mg/L	4.E-04	mg/kg/day	NA	NA	---	5.E-03	mg/kg/day	4.E-02	mg/kg-day	0.1
				2-Methylnaphthalene	0.503	mg/L	4.E-03	mg/kg/day	NA	NA	---	5.E-02	mg/kg/day	4.E-03	mg/kg-day	10
				Naphthalene	3.13	mg/L	3.E-02	mg/kg/day	NA	NA	---	3.E-01	mg/kg/day	2.E-02	mg/kg-day	20
				Pyrene	0.0158	mg/L	1.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	3.E-02	mg/kg-day	0.05
				Benz(a)anthracene	0.00078	mg/L	6.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	7.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(a)pyrene	0.0016	mg/L	1.E-05	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-04	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Benzo(b)fluoranthene	0.000405	mg/L	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Dibenz(ah)anthracene	0.000627	mg/L	5.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Indeno(1,2,3-cd)pyrene	0.000285	mg/L	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	3.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0009
				Bis(2-ethylhexyl)phthalate (DEHP)	0.0372	mg/L	3.E-04	mg/kg/day	1.E-02	1/(mg/kg-day)	4.E-06	4.E-03	mg/kg/day	2.E-02	mg/kg-day	0.2
				4-Methylphenol	0.092	mg/L	8.E-04	mg/kg/day	NA	NA	---	9.E-03	mg/kg/day	5.E-03	mg/kg-day	2
				Carbazole	0.0627	mg/L	5.E-04	mg/kg/day	2.E-02	1/(mg/kg-day)	1.E-05	6.E-03	mg/kg/day	NA	NA	---
				Antimony	0.034	mg/L	3.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	4.E-04	mg/kg-day	8
				Arsenic	0.631	mg/L	5.E-03	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-03	6.E-02	mg/kg/day	3.E-04	mg/kg-day	200
				Barium	0.27	mg/L	2.E-03	mg/kg/day	NA	NA	---	3.E-02	mg/kg/day	2.E-01	mg/kg-day	0.1
				Cadmium	0.00182	mg/L	1.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-04	mg/kg-day	0.3
				Chromium VI	0.13	mg/L	1.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	3.E-03	mg/kg-day	4
				Manganese	3.9	mg/L	3.E-02	mg/kg/day	NA	NA	---	4.E-01	mg/kg/day	2.E-02	mg/kg-day	20
				Mercury	0.0014	mg/L	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.4
				Nickel	0.629	mg/L	5.E-03	mg/kg/day	NA	NA	---	6.E-02	mg/kg/day	2.E-02	mg/kg-day	3
				Selenium	0.0196	mg/L	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	5.E-03	mg/kg-day	0.4
				Thallium	0.000305	mg/L	3.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	7.E-05	mg/kg-day	0.4
				Vanadium	3.35	mg/L	3.E-02	mg/kg/day	NA	NA	---	3.E-01	mg/kg/day	5.E-03	mg/kg-day	60
				Zinc	4.84	mg/L	4.E-02	mg/kg/day	NA	NA	---	5.E-01	mg/kg/day	3.E-01	mg/kg-day	2
				Cyanide (free)	0.00465	mg/L	4.E-05	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	2.E-02	mg/kg-day	0.02
			Exp. Route Total								8.E-03					300
			Dermal	Benzene	0.58	mg/L	5.E-04	mg/kg/day	6.E-02	1/(mg/kg-day)	3.E-05	6.E-03	mg/kg/day	4.E-03	mg/kg-day	1
				Ethylbenzene	0.353	mg/L	1.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	1.E-01	mg/kg-day	0.1
				Methyl tert-butyl ether (MTBE)	0.024	mg/L	5.E-06	mg/kg/day	2.E-03	1/(mg/kg-day)	9.E-09	6.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0002
				Styrene	0.267	mg/L	6.E-04	mg/kg/day	NA	NA	---	8.E-03	mg/kg/day	2.E-01	mg/kg-day	0.04
				Toluene	0.897	mg/L	2.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	8.E-02	mg/kg-day	0.2
				Trichloroethylene (TCE)	0.00253	mg/L	2.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	9.E-07	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.09
				Xylenes (mixed isomers)	0.677	mg/L	2.E-03	mg/kg/day	NA	NA	---	3.E-02	mg/kg/day	2.E-01	mg/kg-day	0.1
				2-Methylnaphthalene	0.503	mg/L	4.E-03	mg/kg/day	NA	NA	---	4.E-02	mg/kg/day	4.E-03	mg/kg-day	10

Table 7.57 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	On-Site Groundwater		Naphthalene	3.13	mg/L	1.E-02	mg/kg/day	NA	NA	---	1.E-01	mg/kg/day	2.E-02	mg/kg-day	6
				Bis(2-ethylhexyl)phthalate (DEHP)	0.0372	mg/L	3.E-04	mg/kg/day	1.E-02	1/(mg/kg-day)	5.E-06	4.E-03	mg/kg/day	2.E-02	mg/kg-day	0.2
				4-Methylphenol	0.092	mg/L	5.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	5.E-03	mg/kg-day	0.1
				Carbazole	0.0627	mg/L	3.E-04	mg/kg/day	2.E-02	1/(mg/kg-day)	5.E-06	3.E-03	mg/kg/day	NA	NA	---
				Cadmium	0.00182	mg/L	7.E-08	mg/kg/day	NA	NA	---	8.E-07	mg/kg/day	3.E-05	mg/kg-day	0.03
				Chromium VI	0.13	mg/L	9.E-06	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	8.E-05	mg/kg-day	1
				Vanadium	3.35	mg/L	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	1.E-04	mg/kg-day	10
				Zinc	4.84	mg/L	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	3.E-01	mg/kg-day	0.004
				Cyanide (free)	0.00465	mg/L	2.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0001
			Exp. Route Total								4.E-05					30
	Exposure Medium Total										8.E-03					400
	Shower Vapor (1)	On-Site Groundwater	Inhalation	Benzene	NA	NA	9.E-03	mg/m3	8.E-06	1/(ug/m3)	7.E-05	1.E-01	mg/m3	3.E-02	mg/m3	3
				Chloroform	NA	NA	5.E-06	mg/m3	2.E-05	1/(ug/m3)	1.E-07	6.E-05	mg/m3	5.E-02	mg/m3	0.001
				Ethylbenzene	NA	NA	5.E-03	mg/m3	1.E-06	1/(ug/m3)	6.E-06	6.E-02	mg/m3	1.E+00	mg/m3	0.06
				Methylene chloride (Dichloromethane)	NA	NA	5.E-04	mg/m3	5.E-07	1/(ug/m3)	2.E-07	6.E-03	mg/m3	1.E+00	mg/m3	0.006
				Methyl tert-butyl ether (MTBE)	NA	NA	4.E-04	mg/m3	3.E-07	1/(ug/m3)	1.E-07	4.E-03	mg/m3	3.E+00	mg/m3	0.001
				Styrene	NA	NA	4.E-03	mg/m3	NA	NA	---	5.E-02	mg/m3	1.E+00	mg/m3	0.05
				Toluene	NA	NA	1.E-02	mg/m3	NA	NA	---	2.E-01	mg/m3	5.E+00	mg/m3	0.03
				Trichloroethylene (TCE)	NA	NA	4.E-05	mg/m3	1.E-04	1/(ug/m3)	4.E-06	5.E-04	mg/m3	4.E-02	mg/m3	0.01
				Xylenes (mixed isomers)	NA	NA	1.E-02	mg/m3	NA	NA	---	1.E-01	mg/m3	1.E-01	mg/m3	1
				2-Methylnaphthalene	NA	NA	8.E-03	mg/m3	NA	NA	---	9.E-02	mg/m3	3.E-03	mg/m3	30
				Naphthalene	NA	NA	5.E-02	mg/m3	NA	NA	---	6.E-01	mg/m3	3.E-03	mg/m3	200
	Exposure Medium Total										8.E-05					200
Groundwater Total											8.E-03					600
											Total of Receptor Risks Across All Media 8.E-03					Total of Receptor Hazards Across All Media 600

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.57 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	On-Site Groundwater	Ingestion	Benzene	0.0257	mg/L	5.E-05	mg/kg/day	6.E-02	1/(mg/kg-day)	3.E-06	5.E-04	mg/kg/day	4.E-03	mg/kg-day	0.1
				Chloroform	0.00032	mg/L	6.E-07	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	1.E-02	mg/kg-day	0.0006
				Ethylbenzene	0.0176	mg/L	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	1.E-01	mg/kg-day	0.003
				Methylene chloride (Dichloromethane)	0.00219	mg/L	4.E-06	mg/kg/day	8.E-03	1/(mg/kg-day)	3.E-08	4.E-05	mg/kg/day	6.E-02	mg/kg-day	0.0007
				Methyl tert-butyl ether (MTBE)	0.00492	mg/L	9.E-06	mg/kg/day	2.E-03	1/(mg/kg-day)	2.E-08	9.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0003
				Styrene	0.0118	mg/L	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	2.E-01	mg/kg-day	0.001
				Toluene	0.0421	mg/L	8.E-05	mg/kg/day	NA	NA	---	8.E-04	mg/kg/day	8.E-02	mg/kg-day	0.01
				Trichloroethylene (TCE)	0.00118	mg/L	2.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	9.E-07	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
				Xylenes (mixed isomers)	0.0389	mg/L	7.E-05	mg/kg/day	NA	NA	---	7.E-04	mg/kg/day	2.E-01	mg/kg-day	0.004
				Acenaphthene	0.00325	mg/L	6.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	6.E-02	mg/kg-day	0.001
				Acenaphthylene	0.00279	mg/L	5.E-06	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Fluorene	0.00208	mg/L	4.E-06	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	4.E-02	mg/kg-day	0.001
				2-Methylnaphthalene	0.0209	mg/L	4.E-05	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	4.E-03	mg/kg-day	0.1
				Naphthalene	0.134	mg/L	3.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	2.E-02	mg/kg-day	0.1
				Pyrene	0.000784	mg/L	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benz(a)anthracene	0.00027	mg/L	5.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(a)pyrene	0.000089	mg/L	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Benzo(b)fluoranthene	0.000245	mg/L	5.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenz(ah)anthracene	0.0000311	mg/L	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	6.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	0.000238	mg/L	5.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Bis(2-ethylhexyl)phthalate (DEHP)	0.00441	mg/L	8.E-06	mg/kg/day	1.E-02	1/(mg/kg-day)	1.E-07	8.E-05	mg/kg/day	2.E-02	mg/kg-day	0.004
				4-Methylphenol	0.00553	mg/L	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.02
				Carbazole	0.00329	mg/L	6.E-06	mg/kg/day	2.E-02	1/(mg/kg-day)	1.E-07	6.E-05	mg/kg/day	NA	NA	---
				Antimony	0.00441	mg/L	8.E-06	mg/kg/day	NA	NA	---	8.E-05	mg/kg/day	4.E-04	mg/kg-day	0.2
				Arsenic	0.0548	mg/L	1.E-04	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-04	1.E-03	mg/kg/day	3.E-04	mg/kg-day	4
				Barium	0.05	mg/L	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	2.E-01	mg/kg-day	0.005
				Cadmium	0.000595	mg/L	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-04	mg/kg-day	0.02
				Chromium VI	0.00882	mg/L	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.06
				Manganese	0.673	mg/L	1.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	2.E-02	mg/kg-day	0.5
				Mercury	0.000146	mg/L	3.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.009
				Nickel	0.0431	mg/L	8.E-05	mg/kg/day	NA	NA	---	8.E-04	mg/kg/day	2.E-02	mg/kg-day	0.04
				Selenium	0.00251	mg/L	5.E-06	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	5.E-03	mg/kg-day	0.01
				Thallium	0.000225	mg/L	4.E-07	mg/kg/day	NA	NA	---	4.E-06	mg/kg/day	7.E-05	mg/kg-day	0.07
				Vanadium	0.234	mg/L	4.E-04	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	5.E-03	mg/kg-day	0.9
				Zinc	0.181	mg/L	3.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	3.E-01	mg/kg-day	0.01
				Cyanide (free)	0.0028	mg/L	5.E-06	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	2.E-02	mg/kg-day	0.003
			Exp. Route Total								2.E-04					6
			Dermal	Benzene	0.0257	mg/L	7.E-06	mg/kg/day	6.E-02	1/(mg/kg-day)	4.E-07	7.E-05	mg/kg/day	4.E-03	mg/kg-day	0.02
				Ethylbenzene	0.0176	mg/L	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	1.E-01	mg/kg-day	0.002
				Methyl tert-butyl ether (MTBE)	0.00492	mg/L	3.E-07	mg/kg/day	2.E-03	1/(mg/kg-day)	6.E-10	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Styrene	0.0118	mg/L	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	2.E-01	mg/kg-day	0.0005
				Toluene	0.0421	mg/L	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	8.E-02	mg/kg-day	0.003
				Trichloroethylene (TCE)	0.00118	mg/L	4.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-07	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Xylenes (mixed isomers)	0.0389	mg/L	5.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	2.E-01	mg/kg-day	0.002
				2-Methylnaphthalene	0.0209	mg/L	5.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	4.E-03	mg/kg-day	0.1

Table 7.57 Adult CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	On-Site Groundwater		Naphthalene	0.134	mg/L	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	2.E-02	mg/kg-day	0.08
				Bis(2-ethylhexyl)phthalate (DEHP)	0.00441	mg/L	1.E-05	mg/kg/day	1.E-02	1/(mg/kg-day)	2.E-07	1.E-04	mg/kg/day	2.E-02	mg/kg-day	0.007
				4-Methylphenol	0.00553	mg/L	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.002
				Carbazole	0.00329	mg/L	5.E-06	mg/kg/day	2.E-02	1/(mg/kg-day)	9.E-08	5.E-05	mg/kg/day	NA	NA	---
				Cadmium	0.000595	mg/L	4.E-09	mg/kg/day	NA	NA	---	4.E-08	mg/kg/day	3.E-05	mg/kg-day	0.001
				Chromium VI	0.00882	mg/L	1.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	8.E-05	mg/kg-day	0.01
				Vanadium	0.234	mg/L	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	1.E-04	mg/kg-day	0.1
				Zinc	0.181	mg/L	7.E-07	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Cyanide (free)	0.0028	mg/L	2.E-08	mg/kg/day	NA	NA	---	2.E-07	mg/kg/day	2.E-02	mg/kg-day	0.000009
			Exp. Route Total								8.E-07					0.4
	Exposure Medium Total										2.E-04					6
	Shower Vapor (1)	On-Site Groundwater	Inhalation	Benzene	NA	NA	2.E-04	mg/m3	8.E-06	1/(ug/m3)	1.E-06	2.E-03	mg/m3	3.E-02	mg/m3	0.06
				Chloroform	NA	NA	2.E-06	mg/m3	2.E-05	1/(ug/m3)	5.E-08	2.E-05	mg/m3	5.E-02	mg/m3	0.0004
				Ethylbenzene	NA	NA	1.E-04	mg/m3	1.E-06	1/(ug/m3)	1.E-07	1.E-03	mg/m3	1.E+00	mg/m3	0.001
				Methylene chloride (Dichloromethane)	NA	NA	1.E-05	mg/m3	5.E-07	1/(ug/m3)	7.E-09	1.E-04	mg/m3	1.E+00	mg/m3	0.0001
				Methyl tert-butyl ether (MTBE)	NA	NA	3.E-05	mg/m3	3.E-07	1/(ug/m3)	9.E-09	3.E-04	mg/m3	3.E+00	mg/m3	0.0001
				Styrene	NA	NA	8.E-05	mg/m3	NA	NA	---	8.E-04	mg/m3	1.E+00	mg/m3	0.0008
				Toluene	NA	NA	3.E-04	mg/m3	NA	NA	---	3.E-03	mg/m3	5.E+00	mg/m3	0.0006
				Trichloroethylene (TCE)	NA	NA	8.E-06	mg/m3	1.E-04	1/(ug/m3)	9.E-07	8.E-05	mg/m3	4.E-02	mg/m3	0.002
				Xylenes (mixed isomers)	NA	NA	3.E-04	mg/m3	NA	NA	---	3.E-03	mg/m3	1.E-01	mg/m3	0.03
				2-Methylnaphthalene	NA	NA	1.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.5
				Naphthalene	NA	NA	9.E-04	mg/m3	NA	NA	---	9.E-03	mg/m3	3.E-03	mg/m3	3
	Exposure Medium Total										2.E-06					4
Groundwater Total											2.E-04					10
									Total of Receptor Risks Across All Media		2.E-04			Total of Receptor Hazards Across All Media		10

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.57 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	On-Site Groundwater	Ingestion	Benzene	0.0257	mg/L	4.E-05	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-06	1.E-03	mg/kg/day	4.E-03	mg/kg-day	0.4
				Chloroform	0.00032	mg/L	5.E-07	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	1.E-02	mg/kg-day	0.002
				Ethylbenzene	0.0176	mg/L	3.E-05	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	1.E-01	mg/kg-day	0.01
				Methylene chloride (Dichloromethane)	0.00219	mg/L	3.E-06	mg/kg/day	8.E-03	1/(mg/kg-day)	3.E-08	1.E-04	mg/kg/day	6.E-02	mg/kg-day	0.002
				Methyl tert-butyl ether (MTBE)	0.00492	mg/L	8.E-06	mg/kg/day	2.E-03	1/(mg/kg-day)	1.E-08	3.E-04	mg/kg/day	3.E-01	mg/kg-day	0.0009
				Styrene	0.0118	mg/L	2.E-05	mg/kg/day	NA	NA	---	7.E-04	mg/kg/day	2.E-01	mg/kg-day	0.003
				Toluene	0.0421	mg/L	7.E-05	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	8.E-02	mg/kg-day	0.03
				Trichloroethylene (TCE)	0.00118	mg/L	2.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	8.E-07	7.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Xylenes (mixed isomers)	0.0389	mg/L	6.E-05	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	2.E-01	mg/kg-day	0.01
				Acenaphthene	0.00325	mg/L	5.E-06	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	6.E-02	mg/kg-day	0.003
				Acenaphthylene	0.00279	mg/L	4.E-06	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Fluorene	0.00208	mg/L	3.E-06	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	4.E-02	mg/kg-day	0.003
				2-Methylnaphthalene	0.0209	mg/L	3.E-05	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	4.E-03	mg/kg-day	0.3
				Naphthalene	0.134	mg/L	2.E-04	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	2.E-02	mg/kg-day	0.4
				Pyrene	0.000784	mg/L	1.E-06	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Benz(a)anthracene	0.00027	mg/L	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(a)pyrene	0.000089	mg/L	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	0.000245	mg/L	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Dibenz(ah)anthracene	0.0000311	mg/L	5.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Indeno(1,2,3-cd)pyrene	0.000238	mg/L	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Bis(2-ethylhexyl)phthalate (DEHP)	0.00441	mg/L	7.E-06	mg/kg/day	1.E-02	1/(mg/kg-day)	1.E-07	2.E-04	mg/kg/day	2.E-02	mg/kg-day	0.01
				4-Methylphenol	0.00553	mg/L	9.E-06	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	5.E-03	mg/kg-day	0.06
				Carbazole	0.00329	mg/L	5.E-06	mg/kg/day	2.E-02	1/(mg/kg-day)	1.E-07	2.E-04	mg/kg/day	NA	NA	---
				Antimony	0.00441	mg/L	7.E-06	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	4.E-04	mg/kg-day	0.6
				Arsenic	0.0548	mg/L	9.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-04	3.E-03	mg/kg/day	3.E-04	mg/kg-day	10
				Barium	0.05	mg/L	8.E-05	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	2.E-01	mg/kg-day	0.01
				Cadmium	0.000595	mg/L	9.E-07	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	5.E-04	mg/kg-day	0.07
				Chromium VI	0.00882	mg/L	1.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-03	mg/kg-day	0.2
				Manganese	0.673	mg/L	1.E-03	mg/kg/day	NA	NA	---	4.E-02	mg/kg/day	2.E-02	mg/kg-day	2
				Mercury	0.000146	mg/L	2.E-07	mg/kg/day	NA	NA	---	8.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
				Nickel	0.0431	mg/L	7.E-05	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	2.E-02	mg/kg-day	0.1
				Selenium	0.00251	mg/L	4.E-06	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
				Thallium	0.000225	mg/L	4.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	7.E-05	mg/kg-day	0.2
				Vanadium	0.234	mg/L	4.E-04	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	5.E-03	mg/kg-day	3
				Zinc	0.181	mg/L	3.E-04	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	3.E-01	mg/kg-day	0.03
				Cyanide (free)	0.0028	mg/L	4.E-06	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	2.E-02	mg/kg-day	0.008
			Exp. Route Total								1.E-04					20
			Dermal	Benzene	0.0257	mg/L	4.E-06	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-07	1.E-04	mg/kg/day	4.E-03	mg/kg-day	0.03
				Ethylbenzene	0.0176	mg/L	1.E-05	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	1.E-01	mg/kg-day	0.004
				Methyl tert-butyl ether (MTBE)	0.00492	mg/L	2.E-07	mg/kg/day	2.E-03	1/(mg/kg-day)	3.E-10	6.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Styrene	0.0118	mg/L	5.E-06	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	2.E-01	mg/kg-day	0.0009
				Toluene	0.0421	mg/L	1.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	8.E-02	mg/kg-day	0.006
				Trichloroethylene (TCE)	0.00118	mg/L	2.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	8.E-08	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Xylenes (mixed isomers)	0.0389	mg/L	3.E-05	mg/kg/day	NA	NA	---	9.E-04	mg/kg/day	2.E-01	mg/kg-day	0.004
				2-Methylnaphthalene	0.0209	mg/L	3.E-05	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	4.E-03	mg/kg-day	0.3

Table 7.57 Child CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	On-Site Groundwater		Naphthalene	0.134	mg/L	9.E-05	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	2.E-02	mg/kg-day	0.2
				Bis(2-ethylhexyl)phthalate (DEHP)	0.00441	mg/L	8.E-06	mg/kg/day	1.E-02	1/(mg/kg-day)	1.E-07	3.E-04	mg/kg/day	2.E-02	mg/kg-day	0.01
				4-Methylphenol	0.00553	mg/L	5.E-07	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
				Carbazole	0.00329	mg/L	3.E-06	mg/kg/day	2.E-02	1/(mg/kg-day)	5.E-08	9.E-05	mg/kg/day	NA	NA	---
				Cadmium	0.000595	mg/L	2.E-09	mg/kg/day	NA	NA	---	8.E-08	mg/kg/day	3.E-05	mg/kg-day	0.003
				Chromium VI	0.00882	mg/L	7.E-08	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	8.E-05	mg/kg-day	0.03
				Vanadium	0.234	mg/L	9.E-07	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	1.E-04	mg/kg-day	0.3
				Zinc	0.181	mg/L	4.E-07	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00005
				Cyanide (free)	0.0028	mg/L	1.E-08	mg/kg/day	NA	NA	---	4.E-07	mg/kg/day	2.E-02	mg/kg-day	0.00002
			Exp. Route Total								5.E-07					0.8
	Exposure Medium Total										1.E-04					20
	Shower Vapor (1)	On-Site Groundwater	Inhalation	Benzene	NA	NA	9.E-05	mg/m3	8.E-06	1/(ug/m3)	7.E-07	3.E-03	mg/m3	3.E-02	mg/m3	0.1
				Chloroform	NA	NA	1.E-06	mg/m3	2.E-05	1/(ug/m3)	3.E-08	4.E-05	mg/m3	5.E-02	mg/m3	0.0008
				Ethylbenzene	NA	NA	6.E-05	mg/m3	1.E-06	1/(ug/m3)	7.E-08	2.E-03	mg/m3	1.E+00	mg/m3	0.002
				Methylene chloride (Dichloromethane)	NA	NA	7.E-06	mg/m3	5.E-07	1/(ug/m3)	4.E-09	3.E-04	mg/m3	1.E+00	mg/m3	0.0003
				Methyl tert-butyl ether (MTBE)	NA	NA	2.E-05	mg/m3	3.E-07	1/(ug/m3)	4.E-09	6.E-04	mg/m3	3.E+00	mg/m3	0.0002
				Styrene	NA	NA	4.E-05	mg/m3	NA	NA	---	1.E-03	mg/m3	1.E+00	mg/m3	0.001
				Toluene	NA	NA	1.E-04	mg/m3	NA	NA	---	5.E-03	mg/m3	5.E+00	mg/m3	0.001
				Trichloroethylene (TCE)	NA	NA	4.E-06	mg/m3	1.E-04	1/(ug/m3)	4.E-07	1.E-04	mg/m3	4.E-02	mg/m3	0.004
				Xylenes (mixed isomers)	NA	NA	1.E-04	mg/m3	NA	NA	---	5.E-03	mg/m3	1.E-01	mg/m3	0.05
				2-Methylnaphthalene	NA	NA	7.E-05	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.8
				Naphthalene	NA	NA	5.E-04	mg/m3	NA	NA	---	2.E-02	mg/m3	3.E-03	mg/m3	5
	Exposure Medium Total										1.E-06					6
Groundwater Total											1.E-04					20
											Total of Receptor Risks Across All Media 1.E-04					Total of Receptor Hazards Across All Media 20

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table 7.58 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	2.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	8.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	4.E-03	mg/kg-day	0.001
				Naphthalene	21.8	mg/kg	5.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	2.E-02	mg/kg-day	0.0006
				Benz(a)anthracene	29.5	mg/kg	6.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(a)pyrene	27.6	mg/kg	6.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(b)fluoranthene	32.4	mg/kg	7.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(k)fluoranthene	18.3	mg/kg	4.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	3.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Chrysene	27.4	mg/kg	6.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-08	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Dibenz(ah)anthracene	2.45	mg/kg	5.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Antimony	2.55	mg/kg	5.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-04	mg/kg-day	0.004
				Arsenic	3.92	mg/kg	8.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.008
				Vanadium	34.5	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
				Zinc	1750	mg/kg	4.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	3.E-01	mg/kg-day	0.003
			Exp. Route Total								6.E-05					0.04
			Dermal	2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	5.E-06	mg/kg/day	4.E-03	mg/kg-day	0.001
				Naphthalene	21.8	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	2.E-02	mg/kg-day	0.0005
				Benz(a)anthracene	29.5	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(a)pyrene	27.6	mg/kg	5.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(b)fluoranthene	32.4	mg/kg	6.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(k)fluoranthene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	2.E-07	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Chrysene	27.4	mg/kg	5.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-08	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Dibenz(ah)anthracene	2.45	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	3.92	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	5.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								5.E-05					0.006
Soil Total											1.E-04					0.05
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Inhalation	Benzene	0.000024	mg/m3	3.E-06	mg/m3	8.E-06	1/(ug/m3)	2.E-08	8.E-06	mg/m3	3.E-02	mg/m3	0.0003
				Carbon tetrachloride	1.14E-05	mg/m3	1.E-06	mg/m3	2.E-05	1/(ug/m3)	2.E-08	4.E-06	mg/m3	2.E-03	mg/m3	0.002
				Chloroform	2.37E-05	mg/m3	3.E-06	mg/m3	2.E-05	1/(ug/m3)	7.E-08	8.E-06	mg/m3	5.E-02	mg/m3	0.0002
				1,2-Dichloroethylene (cis)	9.44E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	2.E-01	mg/m3	0.0002
				Ethylbenzene	3.92E-05	mg/m3	5.E-06	mg/m3	1.E-06	1/(ug/m3)	5.E-09	1.E-05	mg/m3	1.E+00	mg/m3	0.00001
				Methylene chloride (Dichloromethane)	0.00014	mg/m3	2.E-05	mg/m3	5.E-07	1/(ug/m3)	8.E-09	5.E-05	mg/m3	1.E+00	mg/m3	0.00005
				Tetrachloroethylene (PCE)	7.15E-05	mg/m3	9.E-06	mg/m3	6.E-06	1/(ug/m3)	5.E-08	2.E-05	mg/m3	3.E-01	mg/m3	0.00008
				Trichloroethylene (TCE)	0.0126	mg/m3	2.E-03	mg/m3	1.E-04	1/(ug/m3)	2.E-04	4.E-03	mg/m3	4.E-02	mg/m3	0.1
				1,2,4-Trimethylbenzene	9.76E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	6.E-03	mg/m3	0.006
				1,3,5-Trimethylbenzene	4.27E-05	mg/m3	5.E-06	mg/m3	NA	NA	---	1.E-05	mg/m3	6.E-03	mg/m3	0.002
				Naphthalene	3.07E-05	mg/m3	4.E-06	mg/m3	NA	NA	---	1.E-05	mg/m3	3.E-03	mg/m3	0.004
Soil Gas Total											2.E-04					0.1
										Total of Receptor Risks Across All Media	3.E-04			Total of Receptor Hazards Across All Media		0.2

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.59 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	2.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	8.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	4.E-03	mg/kg-day	0.001
				Naphthalene	21.8	mg/kg	5.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	2.E-02	mg/kg-day	0.0006
				Benz(a)anthracene	29.5	mg/kg	6.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(a)pyrene	27.6	mg/kg	6.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(b)fluoranthene	32.4	mg/kg	7.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(k)fluoranthene	18.3	mg/kg	4.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	3.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Chrysene	27.4	mg/kg	6.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-08	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Dibenz(ah)anthracene	2.45	mg/kg	5.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Antimony	2.55	mg/kg	5.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-04	mg/kg-day	0.004
				Arsenic	3.92	mg/kg	8.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.008
				Vanadium	34.5	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
				Zinc	1750	mg/kg	4.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	3.E-01	mg/kg-day	0.003
			Exp. Route Total								6.E-05					0.04
			Dermal	2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	5.E-06	mg/kg/day	4.E-03	mg/kg-day	0.001
				Naphthalene	21.8	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	2.E-02	mg/kg-day	0.0005
				Benz(a)anthracene	29.5	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(a)pyrene	27.6	mg/kg	5.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(b)fluoranthene	32.4	mg/kg	6.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(k)fluoranthene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	2.E-07	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Chrysene	27.4	mg/kg	5.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-08	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Dibenz(ah)anthracene	2.45	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Arsenic	3.92	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	5.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								5.E-05					0.006
	Exposure Medium Total										1.E-04					0.05
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Inhalation	Benzene	0.000228	mg/m3	3.E-05	mg/m3	8.E-06	1/(ug/m3)	2.E-07	8.E-05	mg/m3	3.E-02	mg/m3	0.003
				Ethylbenzene	5.29E-05	mg/m3	6.E-06	mg/m3	1.E-06	1/(ug/m3)	7.E-09	2.E-05	mg/m3	1.E+00	mg/m3	0.00002
				Trichloroethylene (TCE)	1.31E-05	mg/m3	2.E-06	mg/m3	1.E-04	1/(ug/m3)	2.E-07	4.E-06	mg/m3	4.E-02	mg/m3	0.0001
				2-Methylnaphthalene	0.00193	mg/m3	2.E-04	mg/m3	NA	NA	---	7.E-04	mg/m3	3.E-03	mg/m3	0.2
				Naphthalene	0.00356	mg/m3	4.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.4
				Heptachlor	1.05E-06	mg/m3	1.E-07	mg/m3	1.E-03	1/(ug/m3)	2.E-07	4.E-07	mg/m3	NA	NA	---
	Exposure Medium Total										6.E-07					0.6
Soil Total											1.E-04					0.7
									Total of Receptor Risks Across All Media		1.E-04	Total of Receptor Hazards Across All Media				0.7

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.60 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	West of South Street On-Facility	Ingestion	Benz(a)anthracene	3.24	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Benzo(a)pyrene	3.65	mg/kg	8.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Benzo(b)fluoranthene	3.57	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Chrysene	3.98	mg/kg	8.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	6.E-09	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Dibenz(ah)anthracene	0.421	mg/kg	9.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	9.48	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								1.E-05					0.02
			Dermal	Benz(a)anthracene	3.24	mg/kg	6.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Benzo(a)pyrene	3.65	mg/kg	7.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Benzo(b)fluoranthene	3.57	mg/kg	6.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Chrysene	3.98	mg/kg	7.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	5.E-09	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Dibenz(ah)anthracene	0.421	mg/kg	8.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-07	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000007
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	9.48	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-07	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.004
			Exp. Route Total								7.E-06					0.004
Soil Total											2.E-05					0.02
Soil/Groundwater (1)	Indoor Air	West of South Street On-Facility	Inhalation	Benzene	0.00303	mg/m3	4.E-04	mg/m3	8.E-06	1/(ug/m3)	3.E-06	1.E-03	mg/m3	3.E-02	mg/m3	0.03
				Carbon disulfide	8.52E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	7.E-01	mg/m3	0.00004
				Chloroform	1.42E-05	mg/m3	2.E-06	mg/m3	2.E-05	1/(ug/m3)	4.E-08	5.E-06	mg/m3	5.E-02	mg/m3	0.0001
				2-Hexanone	1.96E-05	mg/m3	2.E-06	mg/m3	NA	NA	---	7.E-06	mg/m3	5.E-03	mg/m3	0.001
				Trichlorofluoromethane	0.00119	mg/m3	1.E-04	mg/m3	NA	NA	---	4.E-04	mg/m3	7.E-01	mg/m3	0.0006
				2-Methylnaphthalene	0.000701	mg/m3	9.E-05	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.08
				Naphthalene	0.00108	mg/m3	1.E-04	mg/m3	NA	NA	---	4.E-04	mg/m3	3.E-03	mg/m3	0.1
Soil/Groundwater Total											3.E-06					0.2
										Total of Receptor Risks Across All Media	2.E-05			Total of Receptor Hazards Across All Media		0.3

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.

See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

(1) Indoor air concentrations of benzene and naphthalene are modeled from both soil and groundwater. Modeling from groundwater yielded the highest indoor air concentration and this concentration is used to calculate risk and hazard for these COPCs.
Indoor air concentrations of 2-hexanone are modeled from groundwater because this chemical was a COPC in groundwater only. Indoor air concentrations of all other COPCs are modeled from soil.

Table 7.61 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	3.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-07	2.E-05	mg/kg/day	9.E-04	mg/kg-day	0.02
				2-Methylnaphthalene	9.52	mg/kg	3.E-07	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	4.E-03	mg/kg-day	0.005
				Naphthalene	21.8	mg/kg	6.E-07	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	2.E-01	mg/kg-day	0.0002
				Benz(a)anthracene	29.5	mg/kg	8.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-07	6.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0002
				Benzo(a)pyrene	27.6	mg/kg	8.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-06	6.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0002
				Benzo(b)fluoranthene	32.4	mg/kg	9.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-07	7.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0002
				Benzo(k)fluoranthene	18.3	mg/kg	5.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	4.E-08	4.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0001
				Chrysene	27.4	mg/kg	8.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	6.E-09	6.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0002
				Dibenz(ah)anthracene	2.45	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	5.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00006
				Antimony	2.55	mg/kg	7.E-08	mg/kg/day	NA	NA	---	5.E-06	mg/kg/day	4.E-04	mg/kg-day	0.01
				Arsenic	3.92	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	8.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
				Vanadium	34.5	mg/kg	1.E-06	mg/kg/day	NA	NA	---	7.E-05	mg/kg/day	5.E-03	mg/kg-day	0.01
				Zinc	1750	mg/kg	5.E-05	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	3.E-01	mg/kg-day	0.01
			Exp. Route Total								8.E-06					0.09
			Dermal	2-Methylnaphthalene	9.52	mg/kg	1.E-07	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	4.E-03	mg/kg-day	0.002
				Naphthalene	21.8	mg/kg	2.E-07	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	2.E-01	mg/kg-day	0.00009
				Benz(a)anthracene	29.5	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00008
				Benzo(a)pyrene	27.6	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00007
				Benzo(b)fluoranthene	32.4	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	3.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00008
				Benzo(k)fluoranthene	18.3	mg/kg	2.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-08	1.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00005
				Chrysene	27.4	mg/kg	3.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-09	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00007
				Dibenz(ah)anthracene	2.45	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000006
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	7.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Arsenic	3.92	mg/kg	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	7.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								3.E-06					0.005
	Exposure Medium Total										1.E-05					0.1
	Dust	East of South Street On-Facility	Inhalation	Trichloroethylene (TCE)	8.7E-09	mg/m3	3.E-11	mg/m3	1.E-04	1/(ug/m3)	3.E-12	2.E-09	mg/m3	4.E-01	mg/m3	5E-09
				2-Methylnaphthalene	9.2E-09	mg/m3	3.E-11	mg/m3	NA	NA	---	2.E-09	mg/m3	3.E-03	mg/m3	0.0000007
				Naphthalene	2.11E-08	mg/m3	6.E-11	mg/m3	NA	NA	---	5.E-09	mg/m3	3.E-03	mg/m3	0.000002
				Benz(a)anthracene	2.85E-08	mg/m3	9.E-11	mg/m3	9.E-05	1/(ug/m3)	8.E-12	6.E-09	mg/m3	3.E-03	mg/m3	0.000002
				Benzo(a)pyrene	2.67E-08	mg/m3	8.E-11	mg/m3	9.E-04	1/(ug/m3)	7.E-11	6.E-09	mg/m3	3.E-03	mg/m3	0.000002
				Benzo(b)fluoranthene	3.13E-08	mg/m3	1.E-10	mg/m3	9.E-05	1/(ug/m3)	8.E-12	7.E-09	mg/m3	3.E-03	mg/m3	0.000002
				Benzo(k)fluoranthene	1.77E-08	mg/m3	5.E-11	mg/m3	9.E-06	1/(ug/m3)	5.E-13	4.E-09	mg/m3	3.E-03	mg/m3	0.000001
				Chrysene	2.65E-08	mg/m3	8.E-11	mg/m3	9.E-07	1/(ug/m3)	7.E-14	6.E-09	mg/m3	3.E-03	mg/m3	0.000002
				Dibenz(ah)anthracene	2.37E-09	mg/m3	7.E-12	mg/m3	9.E-04	1/(ug/m3)	6.E-12	5.E-10	mg/m3	3.E-03	mg/m3	0.0000002
				Indeno(1,2,3-cd)pyrene	8.87E-09	mg/m3	3.E-11	mg/m3	9.E-05	1/(ug/m3)	2.E-12	2.E-09	mg/m3	3.E-03	mg/m3	0.0000006
				Antimony	2.47E-09	mg/m3	8.E-12	mg/m3	NA	NA	---	5.E-10	mg/m3	6.E-04	mg/m3	0.0000009
				Arsenic	3.79E-09	mg/m3	1.E-11	mg/m3	4.E-03	1/(ug/m3)	5.E-11	8.E-10	mg/m3	NA	NA	---
	Exposure Medium Total										1.E-10					0.00001
Soil Total											1.E-05					0.1

Table 7.61 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	East of South Street On-Facility	Dermal	Chloroform	0.000335	mg/L	1.E-09	mg/kg/day	NA	NA	---	9.E-08	mg/kg/day	1.E-02	mg/kg-day	0.000009
				Trichloroethylene (TCE)	0.000335	mg/L	2.E-09	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-09	2.E-07	mg/kg/day	9.E-04	mg/kg-day	0.0002
				Naphthalene	0.000785	mg/L	2.E-08	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	2.E-01	mg/kg-day	0.000008
				Arsenic	0.0046	mg/L	1.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-09	9.E-08	mg/kg/day	3.E-04	mg/kg-day	0.0003
				Chromium VI	0.0094	mg/L	5.E-09	mg/kg/day	NA	NA	---	4.E-07	mg/kg/day	2.E-04	mg/kg-day	0.002
				Manganese	0.394	mg/L	1.E-07	mg/kg/day	NA	NA	---	8.E-06	mg/kg/day	3.E-03	mg/kg-day	0.003
				Thallium	0.000282	mg/L	8.E-11	mg/kg/day	NA	NA	---	6.E-09	mg/kg/day	7.E-04	mg/kg-day	0.000009
Groundwater Total											3.E-09					0.005
Soil Gas	Trench Vapor	East of South Street On-Facility (SB-09 area)	Inhalation	Trichloroethylene (TCE)	0.0932	mg/m3	3.E-04	mg/m3	1.E-04	1/(ug/m3)	3.E-05	2.E-02	mg/m3	4.E-01	mg/m3	0.05
Soil Gas Total											3.E-05					0.05
										Total of Receptor Risks Across All Media	4.E-05				Total of Receptor Hazards Across All Media	0.2

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.62 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	3.E-07	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-07	2.E-05	mg/kg/day	9.E-04	mg/kg-day	0.02
				2-Methylnaphthalene	9.52	mg/kg	3.E-07	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	4.E-03	mg/kg-day	0.005
				Naphthalene	21.8	mg/kg	6.E-07	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	2.E-01	mg/kg-day	0.0002
				Benz(a)anthracene	29.5	mg/kg	8.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-07	6.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0002
				Benzo(a)pyrene	27.6	mg/kg	8.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-06	6.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0002
				Benzo(b)fluoranthene	32.4	mg/kg	9.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-07	7.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0002
				Benzo(k)fluoranthene	18.3	mg/kg	5.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	4.E-08	4.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0001
				Chrysene	27.4	mg/kg	8.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	6.E-09	6.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0002
				Dibenz(ah)anthracene	2.45	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-07	5.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00006
				Antimony	2.55	mg/kg	7.E-08	mg/kg/day	NA	NA	---	5.E-06	mg/kg/day	4.E-04	mg/kg-day	0.01
				Arsenic	3.92	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	8.E-06	mg/kg/day	3.E-04	mg/kg-day	0.03
				Vanadium	34.5	mg/kg	1.E-06	mg/kg/day	NA	NA	---	7.E-05	mg/kg/day	5.E-03	mg/kg-day	0.01
				Zinc	1750	mg/kg	5.E-05	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	3.E-01	mg/kg-day	0.01
			Exp. Route Total								8.E-06					0.09
			Dermal	2-Methylnaphthalene	9.52	mg/kg	1.E-07	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	4.E-03	mg/kg-day	0.002
				Naphthalene	21.8	mg/kg	2.E-07	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	2.E-01	mg/kg-day	0.00009
				Benz(a)anthracene	29.5	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00008
				Benzo(a)pyrene	27.6	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00007
				Benzo(b)fluoranthene	32.4	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	3.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00008
				Benzo(k)fluoranthene	18.3	mg/kg	2.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-08	1.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00005
				Chrysene	27.4	mg/kg	3.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-09	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00007
				Dibenz(ah)anthracene	2.45	mg/kg	3.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000006
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	7.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Arsenic	3.92	mg/kg	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	7.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								3.E-06					0.005
	Exposure Medium Total										1.E-05					0.1
	Dust	East of South Street On-Facility	Inhalation	Trichloroethylene (TCE)	8.7E-09	mg/m3	3.E-11	mg/m3	1.E-04	1/(ug/m3)	3.E-12	2.E-09	mg/m3	4.E-01	mg/m3	5E-09
				2-Methylnaphthalene	9.2E-09	mg/m3	3.E-11	mg/m3	NA	NA	---	2.E-09	mg/m3	3.E-03	mg/m3	0.0000007
				Naphthalene	2.11E-08	mg/m3	6.E-11	mg/m3	NA	NA	---	5.E-09	mg/m3	3.E-03	mg/m3	0.000002
				Benz(a)anthracene	2.85E-08	mg/m3	9.E-11	mg/m3	9.E-05	1/(ug/m3)	8.E-12	6.E-09	mg/m3	3.E-03	mg/m3	0.000002
				Benzo(a)pyrene	2.67E-08	mg/m3	8.E-11	mg/m3	9.E-04	1/(ug/m3)	7.E-11	6.E-09	mg/m3	3.E-03	mg/m3	0.000002
				Benzo(b)fluoranthene	3.13E-08	mg/m3	1.E-10	mg/m3	9.E-05	1/(ug/m3)	8.E-12	7.E-09	mg/m3	3.E-03	mg/m3	0.000002
				Benzo(k)fluoranthene	1.77E-08	mg/m3	5.E-11	mg/m3	9.E-06	1/(ug/m3)	5.E-13	4.E-09	mg/m3	3.E-03	mg/m3	0.000001
				Chrysene	2.65E-08	mg/m3	8.E-11	mg/m3	9.E-07	1/(ug/m3)	7.E-14	6.E-09	mg/m3	3.E-03	mg/m3	0.000002
				Dibenz(ah)anthracene	2.37E-09	mg/m3	7.E-12	mg/m3	9.E-04	1/(ug/m3)	6.E-12	5.E-10	mg/m3	3.E-03	mg/m3	0.0000002
				Indeno(1,2,3-cd)pyrene	8.87E-09	mg/m3	3.E-11	mg/m3	9.E-05	1/(ug/m3)	2.E-12	2.E-09	mg/m3	3.E-03	mg/m3	0.0000006
				Antimony	2.47E-09	mg/m3	8.E-12	mg/m3	NA	NA	---	5.E-10	mg/m3	6.E-04	mg/m3	0.0000009
				Arsenic	3.79E-09	mg/m3	1.E-11	mg/m3	4.E-03	1/(ug/m3)	5.E-11	8.E-10	mg/m3	NA	NA	---
	Exposure Medium Total										1.E-10					0.00001
	Trench Vapor	East of South Street On-Facility (non-SB-09 area)	Inhalation	Benzene	0.0525	mg/m3	2.E-04	mg/m3	8.E-06	1/(ug/m3)	1.E-06	1.E-02	mg/m3	8.E-02	mg/m3	0.1
				Carbon disulfide	0.0303	mg/m3	9.E-05	mg/m3	NA	NA	---	6.E-03	mg/m3	7.E-01	mg/m3	0.009
				Toluene	0.00842	mg/m3	3.E-05	mg/m3	NA	NA	---	2.E-03	mg/m3	5.E+00	mg/m3	0.0004
				Trichloroethylene (TCE)	0.00176	mg/m3	5.E-06	mg/m3	1.E-04	1/(ug/m3)	6.E-07	4.E-04	mg/m3	4.E-01	mg/m3	0.0009
				Trichlorofluoromethane	0.0132	mg/m3	4.E-05	mg/m3	NA	NA	---	3.E-03	mg/m3	7.E+00	mg/m3	0.0004
				Xylenes (mixed isomers)	0.0614	mg/m3	2.E-04	mg/m3	NA	NA	---	1.E-02	mg/m3	4.E-01	mg/m3	0.03
				2-Methylnaphthalene	0.00959	mg/m3	3.E-05	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.7
				Naphthalene	0.02	mg/m3	6.E-05	mg/m3	NA	NA	---	4.E-03	mg/m3	3.E-03	mg/m3	1
	Exposure Medium Total										2.E-06					2
Soil Total											1.E-05					2

Table 7.62 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	East of South Street On-Facility	Dermal	Chloroform	0.000335	mg/L	1.E-09	mg/kg/day	NA	NA	---	9.E-08	mg/kg/day	1.E-02	mg/kg-day	0.000009
				Trichloroethylene (TCE)	0.000335	mg/L	2.E-09	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-09	2.E-07	mg/kg/day	9.E-04	mg/kg-day	0.0002
				Naphthalene	0.000785	mg/L	2.E-08	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	2.E-01	mg/kg-day	0.000008
				Arsenic	0.0046	mg/L	1.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-09	9.E-08	mg/kg/day	3.E-04	mg/kg-day	0.0003
				Chromium VI	0.0094	mg/L	5.E-09	mg/kg/day	NA	NA	---	4.E-07	mg/kg/day	2.E-04	mg/kg-day	0.002
				Manganese	0.394	mg/L	1.E-07	mg/kg/day	NA	NA	---	8.E-06	mg/kg/day	3.E-03	mg/kg-day	0.003
				Thallium	0.000282	mg/L	8.E-11	mg/kg/day	NA	NA	---	6.E-09	mg/kg/day	7.E-04	mg/kg-day	0.000009
Groundwater Total											3.E-09					0.005
											Total of Receptor Risks Across All Media 1.E-05					Total of Receptor Hazards Across All Media 2

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.62 CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	4.E-08	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-08	3.E-06	mg/kg/day	9.E-04	mg/kg-day	0.003
				2-Methylnaphthalene	9.52	mg/kg	4.E-08	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	4.E-03	mg/kg-day	0.0007
				Naphthalene	21.8	mg/kg	1.E-07	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	2.E-01	mg/kg-day	0.00003
				Benz(a)anthracene	29.5	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	9.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00003
				Benzo(a)pyrene	27.6	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-07	8.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00003
				Benzo(b)fluoranthene	32.4	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	1.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00003
				Benzo(k)fluoranthene	18.3	mg/kg	8.E-08	mg/kg/day	7.E-02	1/(mg/kg-day)	6.E-09	6.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Chrysene	27.4	mg/kg	1.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	9.E-10	8.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00003
				Dibenz(ah)anthracene	2.45	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	7.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	4.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000009
				Antimony	2.55	mg/kg	1.E-08	mg/kg/day	NA	NA	---	8.E-07	mg/kg/day	4.E-04	mg/kg-day	0.002
				Arsenic	3.92	mg/kg	2.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-08	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.004
				Vanadium	34.5	mg/kg	2.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.002
				Zinc	1750	mg/kg	8.E-06	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	3.E-01	mg/kg-day	0.002
			Exp. Route Total								1.E-06					0.01
			Dermal	2-Methylnaphthalene	9.52	mg/kg	2.E-08	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-03	mg/kg-day	0.0003
				Naphthalene	21.8	mg/kg	4.E-08	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	2.E-01	mg/kg-day	0.00001
				Benz(a)anthracene	29.5	mg/kg	6.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	4.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Benzo(a)pyrene	27.6	mg/kg	5.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	4.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Benzo(b)fluoranthene	32.4	mg/kg	6.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	4.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Benzo(k)fluoranthene	18.3	mg/kg	3.E-08	mg/kg/day	7.E-02	1/(mg/kg-day)	2.E-09	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000008
				Chrysene	27.4	mg/kg	5.E-08	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-10	4.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Dibenz(ah)anthracene	2.45	mg/kg	5.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-08	3.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000001
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Arsenic	3.92	mg/kg	2.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-09	1.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0004
			Exp. Route Total								5.E-07					0.0008
	Exposure Medium Total										2.E-06					0.01
	Dust	East of South Street On-Facility	Inhalation	Trichloroethylene (TCE)	8.7E-09	mg/m3	9.E-12	mg/m3	1.E-04	1/(ug/m3)	1.E-12	6.E-10	mg/m3	4.E-01	mg/m3	2E-09
				2-Methylnaphthalene	9.2E-09	mg/m3	9.E-12	mg/m3	NA	NA	---	7.E-10	mg/m3	3.E-03	mg/m3	0.0000002
				Naphthalene	2.11E-08	mg/m3	2.E-11	mg/m3	NA	NA	---	2.E-09	mg/m3	3.E-03	mg/m3	0.0000005
				Benz(a)anthracene	2.85E-08	mg/m3	3.E-11	mg/m3	9.E-05	1/(ug/m3)	3.E-12	2.E-09	mg/m3	3.E-03	mg/m3	0.0000007
				Benzo(a)pyrene	2.67E-08	mg/m3	3.E-11	mg/m3	9.E-04	1/(ug/m3)	2.E-11	2.E-09	mg/m3	3.E-03	mg/m3	0.0000006
				Benzo(b)fluoranthene	3.13E-08	mg/m3	3.E-11	mg/m3	9.E-05	1/(ug/m3)	3.E-12	2.E-09	mg/m3	3.E-03	mg/m3	0.0000007
				Benzo(k)fluoranthene	1.77E-08	mg/m3	2.E-11	mg/m3	9.E-06	1/(ug/m3)	2.E-13	1.E-09	mg/m3	3.E-03	mg/m3	0.0000004
				Chrysene	2.65E-08	mg/m3	3.E-11	mg/m3	9.E-07	1/(ug/m3)	2.E-14	2.E-09	mg/m3	3.E-03	mg/m3	0.0000006
				Dibenz(ah)anthracene	2.37E-09	mg/m3	2.E-12	mg/m3	9.E-04	1/(ug/m3)	2.E-12	2.E-10	mg/m3	3.E-03	mg/m3	0.00000006
				Indeno(1,2,3-cd)pyrene	8.87E-09	mg/m3	9.E-12	mg/m3	9.E-05	1/(ug/m3)	8.E-13	6.E-10	mg/m3	3.E-03	mg/m3	0.0000002
				Antimony	2.47E-09	mg/m3	3.E-12	mg/m3	NA	NA	---	2.E-10	mg/m3	6.E-04	mg/m3	0.0000003
				Arsenic	3.79E-09	mg/m3	4.E-12	mg/m3	4.E-03	1/(ug/m3)	2.E-11	3.E-10	mg/m3	NA	NA	---
	Exposure Medium Total										5.E-11					0.000004
	Trench Vapor	East of South Street On-Facility (non-SB-09 area)	Inhalation	Benzene	0.0525	mg/m3	5.E-05	mg/m3	8.E-06	1/(ug/m3)	4.E-07	4.E-03	mg/m3	8.E-02	mg/m3	0.05
				Carbon disulfide	0.0303	mg/m3	3.E-05	mg/m3	NA	NA	---	2.E-03	mg/m3	7.E-01	mg/m3	0.003
				Toluene	0.00842	mg/m3	9.E-06	mg/m3	NA	NA	---	6.E-04	mg/m3	5.E+00	mg/m3	0.0001
				Trichloroethylene (TCE)	0.00176	mg/m3	2.E-06	mg/m3	1.E-04	1/(ug/m3)	2.E-07	1.E-04	mg/m3	4.E-01	mg/m3	0.0003
				Trichlorofluoromethane	0.0132	mg/m3	1.E-05	mg/m3	NA	NA	---	9.E-04	mg/m3	7.E+00	mg/m3	0.0001
				Xylenes (mixed isomers)	0.0614	mg/m3	6.E-05	mg/m3	NA	NA	---	4.E-03	mg/m3	4.E-01	mg/m3	0.01
				2-Methylnaphthalene	0.00959	mg/m3	1.E-05	mg/m3	NA	NA	---	7.E-04	mg/m3	3.E-03	mg/m3	0.2
				Naphthalene	0.02	mg/m3	2.E-05	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.5
	Exposure Medium Total										6.E-07					0.8
Soil Total											2.E-06					0.8

Table 7.62 CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendancy
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	East of South Street On-Facility	Dermal	Chloroform	0.000335	mg/L	5.E-10	mg/kg/day	NA	NA	---	3.E-08	mg/kg/day	1.E-02	mg/kg-day	0.000003
				Trichloroethylene (TCE)	0.000335	mg/L	9.E-10	mg/kg/day	4.E-01	1/(mg/kg-day)	3.E-10	6.E-08	mg/kg/day	9.E-04	mg/kg-day	0.00007
				Naphthalene	0.000216	mg/L	2.E-09	mg/kg/day	NA	NA	---	1.E-07	mg/kg/day	2.E-01	mg/kg-day	0.0000007
				Arsenic	0.00239	mg/L	2.E-10	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-10	1.E-08	mg/kg/day	3.E-04	mg/kg-day	0.00004
				Chromium VI	0.00299	mg/L	4.E-10	mg/kg/day	NA	NA	---	3.E-08	mg/kg/day	2.E-04	mg/kg-day	0.0002
				Manganese	0.394	mg/L	3.E-08	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	3.E-03	mg/kg-day	0.0007
				Thallium	0.000282	mg/L	2.E-11	mg/kg/day	NA	NA	---	1.E-09	mg/kg/day	7.E-04	mg/kg-day	0.000002
Groundwater Total											6.E-10					0.001
										Total of Receptor Risks Across All Media	2.E-06				Total of Receptor Hazards Across All Media	0.8

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.63 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	West of South Street On-Facility	Ingestion	Benz(a)anthracene	3.24	mg/kg	9.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-08	7.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Benzo(a)pyrene	3.65	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-07	7.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Benzo(b)fluoranthene	3.57	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-08	7.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Chrysene	3.98	mg/kg	1.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	8.E-10	8.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00003
				Dibenz(ah)anthracene	0.421	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-08	8.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Arsenic	9.48	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
			Exp. Route Total								1.E-06					0.06
			Dermal	Benz(a)anthracene	3.24	mg/kg	4.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000008
				Benzo(a)pyrene	3.65	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Benzo(b)fluoranthene	3.57	mg/kg	4.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000009
				Chrysene	3.98	mg/kg	4.E-08	mg/kg/day	7.E-03	1/(mg/kg-day)	3.E-10	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Dibenz(ah)anthracene	0.421	mg/kg	5.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-08	3.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000001
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Arsenic	9.48	mg/kg	2.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-08	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								4.E-07					0.006
	Exposure Medium Total										2.E-06					0.07
	Dust	West of South Street On-Facility	Inhalation	Benz(a)anthracene	3.13E-09	mg/m3	1.E-11	mg/m3	9.E-05	1/(ug/m3)	8.E-13	7.E-10	mg/m3	3.E-03	mg/m3	0.0000002
				Benzo(a)pyrene	3.53E-09	mg/m3	1.E-11	mg/m3	9.E-04	1/(ug/m3)	9.E-12	8.E-10	mg/m3	3.E-03	mg/m3	0.0000003
				Benzo(b)fluoranthene	3.45E-09	mg/m3	1.E-11	mg/m3	9.E-05	1/(ug/m3)	9.E-13	7.E-10	mg/m3	3.E-03	mg/m3	0.0000002
				Chrysene	3.85E-09	mg/m3	1.E-11	mg/m3	9.E-07	1/(ug/m3)	1.E-14	8.E-10	mg/m3	3.E-03	mg/m3	0.0000003
				Dibenz(ah)anthracene	4.07E-10	mg/m3	1.E-12	mg/m3	9.E-04	1/(ug/m3)	1.E-12	9.E-11	mg/m3	3.E-03	mg/m3	0.00000003
				Indeno(1,2,3-cd)pyrene	1.53E-09	mg/m3	5.E-12	mg/m3	9.E-05	1/(ug/m3)	4.E-13	3.E-10	mg/m3	3.E-03	mg/m3	0.0000001
				Arsenic	9.17E-09	mg/m3	3.E-11	mg/m3	4.E-03	1/(ug/m3)	1.E-10	2.E-09	mg/m3	NA	NA	---
	Exposure Medium Total										1.E-10					0.000001
	Trench Vapor	West of South Street On-Facility	Inhalation	Benzene	0.00213	mg/m3	7.E-06	mg/m3	8.E-06	1/(ug/m3)	5.E-08	5.E-04	mg/m3	8.E-02	mg/m3	0.006
				Carbon disulfide	0.119	mg/m3	4.E-04	mg/m3	NA	NA	---	3.E-02	mg/m3	7.E-01	mg/m3	0.04
				Chloroform	0.00281	mg/m3	9.E-06	mg/m3	2.E-05	1/(ug/m3)	2.E-07	6.E-04	mg/m3	5.E-02	mg/m3	0.01
				Toluene	0.0028	mg/m3	9.E-06	mg/m3	NA	NA	---	6.E-04	mg/m3	5.E+00	mg/m3	0.0001
				Trichlorofluoromethane	0.479	mg/m3	1.E-03	mg/m3	NA	NA	---	1.E-01	mg/m3	7.E+00	mg/m3	0.01
				2-Methylnaphthalene	0.00352	mg/m3	1.E-05	mg/m3	NA	NA	---	8.E-04	mg/m3	3.E-03	mg/m3	0.3
				Naphthalene	0.00301	mg/m3	9.E-06	mg/m3	NA	NA	---	6.E-04	mg/m3	3.E-03	mg/m3	0.2
	Exposure Medium Total										2.E-07					0.5
Soil Total											2.E-06					0.6

Table 7.63 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	West of South Street On-Facility	Dermal	Benzene	0.0257	mg/L	2.E-07	mg/kg/day	6.E-02	1/(mg/kg-day)	9.E-09	1.E-05	mg/kg/day	1.E-02	mg/kg-day	0.001
				2-Hexanone	0.0107	mg/L	2.E-08	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-01	mg/kg-day	0.000003
				Trichloroethylene (TCE)	0.00073	mg/L	5.E-09	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-09	4.E-07	mg/kg/day	9.E-04	mg/kg-day	0.0004
				Xylenes (mixed isomers)	0.0145	mg/L	4.E-07	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	2.E-01	mg/kg-day	0.0001
				2-Methylnaphthalene	0.0633	mg/L	4.E-06	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	4.E-03	mg/kg-day	0.06
				Naphthalene	0.217	mg/L	6.E-06	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	2.E-01	mg/kg-day	0.002
				Bis(2-ethylhexyl)phthalate (DEHP)	0.0333	mg/L	2.E-06	mg/kg/day	1.E-02	1/(mg/kg-day)	3.E-08	2.E-04	mg/kg/day	2.E-02	mg/kg-day	0.009
				Antimony	0.00318	mg/L	9.E-10	mg/kg/day	NA	NA	---	6.E-08	mg/kg/day	6.E-05	mg/kg-day	0.001
				Arsenic	0.0448	mg/L	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	9.E-07	mg/kg/day	3.E-04	mg/kg-day	0.003
				Barium	0.145	mg/L	4.E-08	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	1.E-02	mg/kg-day	0.0002
				Chromium VI	0.0753	mg/L	4.E-08	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	2.E-04	mg/kg-day	0.02
				Manganese	3.9	mg/L	1.E-06	mg/kg/day	NA	NA	---	8.E-05	mg/kg/day	3.E-03	mg/kg-day	0.03
				Nickel	0.0499	mg/L	3.E-09	mg/kg/day	NA	NA	---	2.E-07	mg/kg/day	8.E-04	mg/kg-day	0.0003
				Vanadium	0.0549	mg/L	2.E-08	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	1.E-04	mg/kg-day	0.009
Groundwater Total											6.E-08					0.1
										Total of Receptor Risks Across All Media	2.E-06			Total of Receptor Hazards Across All Media		0.7

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.63 CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	West of South Street On-Facility	Ingestion	Benz(a)anthracene	3.24	mg/kg	1.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000003
				Benzo(a)pyrene	3.65	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Benzo(b)fluoranthene	3.57	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Chrysene	3.98	mg/kg	2.E-08	mg/kg/day	7.E-03	1/(mg/kg-day)	1.E-10	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Dibenz(ah)anthracene	0.421	mg/kg	2.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-08	1.E-07	mg/kg/day	3.E-01	mg/kg-day	0.0000004
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	7.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-09	5.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Arsenic	9.48	mg/kg	4.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-08	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								2.E-07					0.01
			Dermal	Benz(a)anthracene	3.24	mg/kg	6.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-09	4.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000001
				Benzo(a)pyrene	3.65	mg/kg	7.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-08	5.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Benzo(b)fluoranthene	3.57	mg/kg	7.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-09	5.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Chrysene	3.98	mg/kg	7.E-09	mg/kg/day	7.E-03	1/(mg/kg-day)	5.E-11	5.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Dibenz(ah)anthracene	0.421	mg/kg	8.E-10	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-09	6.E-08	mg/kg/day	3.E-01	mg/kg-day	0.0000002
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	3.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-09	2.E-07	mg/kg/day	3.E-01	mg/kg-day	0.0000007
				Arsenic	9.48	mg/kg	4.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-09	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.001
			Exp. Route Total								7.E-08					0.001
	Exposure Medium Total										3.E-07					0.01
	Dust	West of South Street On-Facility	Inhalation	Benz(a)anthracene	3.13E-09	mg/m3	3.E-12	mg/m3	9.E-05	1/(ug/m3)	3.E-13	2.E-10	mg/m3	3.E-03	mg/m3	0.00000007
				Benzo(a)pyrene	3.53E-09	mg/m3	4.E-12	mg/m3	9.E-04	1/(ug/m3)	3.E-12	3.E-10	mg/m3	3.E-03	mg/m3	0.00000008
				Benzo(b)fluoranthene	3.45E-09	mg/m3	4.E-12	mg/m3	9.E-05	1/(ug/m3)	3.E-13	2.E-10	mg/m3	3.E-03	mg/m3	0.00000008
				Chrysene	3.85E-09	mg/m3	4.E-12	mg/m3	9.E-07	1/(ug/m3)	3.E-15	3.E-10	mg/m3	3.E-03	mg/m3	0.00000009
				Dibenz(ah)anthracene	4.07E-10	mg/m3	4.E-13	mg/m3	9.E-04	1/(ug/m3)	4.E-13	3.E-11	mg/m3	3.E-03	mg/m3	0.00000001
				Indeno(1,2,3-cd)pyrene	1.53E-09	mg/m3	2.E-12	mg/m3	9.E-05	1/(ug/m3)	1.E-13	1.E-10	mg/m3	3.E-03	mg/m3	0.00000004
				Arsenic	9.17E-09	mg/m3	9.E-12	mg/m3	4.E-03	1/(ug/m3)	4.E-11	7.E-10	mg/m3	NA	NA	---
	Exposure Medium Total										4.E-11					0.0000004
	Trench Vapor	West of South Street On-Facility	Inhalation	Benzene	0.00213	mg/m3	2.E-06	mg/m3	8.E-06	1/(ug/m3)	2.E-08	2.E-04	mg/m3	8.E-02	mg/m3	0.002
				Carbon disulfide	0.119	mg/m3	1.E-04	mg/m3	NA	NA	---	8.E-03	mg/m3	7.E-01	mg/m3	0.01
				Chloroform	0.00281	mg/m3	3.E-06	mg/m3	2.E-05	1/(ug/m3)	7.E-08	2.E-04	mg/m3	5.E-02	mg/m3	0.004
				Toluene	0.0028	mg/m3	3.E-06	mg/m3	NA	NA	---	2.E-04	mg/m3	5.E+00	mg/m3	0.00004
				Trichlorofluoromethane	0.479	mg/m3	5.E-04	mg/m3	NA	NA	---	3.E-02	mg/m3	7.E+00	mg/m3	0.005
				2-Methylnaphthalene	0.00352	mg/m3	4.E-06	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.08
				Naphthalene	0.00301	mg/m3	3.E-06	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.07
	Exposure Medium Total										8.E-08					0.2
Soil Total											4.E-07					0.2

Table 7.63 CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	West of South Street On-Facility	Dermal	Benzene	0.00425	mg/L	1.E-08	mg/kg/day	6.E-02	1/(mg/kg-day)	5.E-10	7.E-07	mg/kg/day	1.E-02	mg/kg-day	0.00007
				2-Hexanone	0.0107	mg/L	7.E-09	mg/kg/day	NA	NA	---	5.E-07	mg/kg/day	4.E-01	mg/kg-day	0.000001
				Trichloroethylene (TCE)	0.00057	mg/L	1.E-09	mg/kg/day	4.E-01	1/(mg/kg-day)	6.E-10	1.E-07	mg/kg/day	9.E-04	mg/kg-day	0.0001
				Xylenes (mixed isomers)	0.0145	mg/L	1.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	2.E-01	mg/kg-day	0.00005
				2-Methylnaphthalene	0.0109	mg/L	2.E-07	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	4.E-03	mg/kg-day	0.004
				Naphthalene	0.0344	mg/L	3.E-07	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	2.E-01	mg/kg-day	0.0001
				Bis(2-ethylhexyl)phthalate (DEHP)	0.0333	mg/L	9.E-07	mg/kg/day	1.E-02	1/(mg/kg-day)	1.E-08	6.E-05	mg/kg/day	2.E-02	mg/kg-day	0.003
				Antimony	0.00318	mg/L	2.E-10	mg/kg/day	NA	NA	---	2.E-08	mg/kg/day	6.E-05	mg/kg-day	0.0003
				Arsenic	0.0111	mg/L	8.E-10	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-09	6.E-08	mg/kg/day	3.E-04	mg/kg-day	0.0002
				Barium	0.145	mg/L	1.E-08	mg/kg/day	NA	NA	---	7.E-07	mg/kg/day	1.E-02	mg/kg-day	0.00005
				Chromium VI	0.0753	mg/L	1.E-08	mg/kg/day	NA	NA	---	8.E-07	mg/kg/day	2.E-04	mg/kg-day	0.004
				Manganese	0.801	mg/L	6.E-08	mg/kg/day	NA	NA	---	4.E-06	mg/kg/day	3.E-03	mg/kg-day	0.001
				Nickel	0.0499	mg/L	7.E-10	mg/kg/day	NA	NA	---	5.E-08	mg/kg/day	8.E-04	mg/kg-day	0.00006
				Vanadium	0.0549	mg/L	4.E-09	mg/kg/day	NA	NA	---	3.E-07	mg/kg/day	1.E-04	mg/kg-day	0.002
Groundwater Total											1.E-08					0.02
										Total of Receptor Risks Across All Media	4.E-07	Total of Receptor Hazards Across All Media				0.2

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.64 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 122	Ingestion	Benzo(a)pyrene	0.376	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-08	8.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000003
				Arsenic	13	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-07	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.09
			Exp. Route Total								6.E-07					0.09
			Dermal	Benzo(a)pyrene	0.376	mg/kg	4.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-08	3.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000001
				Arsenic	13	mg/kg	3.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-08	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.008
			Exp. Route Total								8.E-08					0.008
	Exposure Medium Total										7.E-07					0.1
	Dust	Gleason Court Lot 122	Inhalation	Benzo(a)pyrene	3.64E-10	mg/m3	1.E-12	mg/m3	9.E-04	1/(ug/m3)	1.E-12	8.E-11	mg/m3	3.E-03	mg/m3	0.00000003
				Arsenic	1.26E-08	mg/m3	4.E-11	mg/m3	4.E-03	1/(ug/m3)	2.E-10	3.E-09	mg/m3	NA	NA	---
	Exposure Medium Total										2.E-10					0.00000003
Soil Total											7.E-07					0.1
							Total of Receptor Risks Across All Media				7.E-07	Total of Receptor Hazards Across All Media				0.1

Note: NA = not available/not applicable

Table 7.65 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 124	Ingestion	Benzo(a)pyrene	0.556	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Benzo(b)fluoranthene	0.748	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000005
				Arsenic	3.6	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								3.E-07					0.02
			Dermal	Benzo(a)pyrene	0.556	mg/kg	6.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-08	4.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000001
				Benzo(b)fluoranthene	0.748	mg/kg	8.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-09	6.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Arsenic	3.6	mg/kg	9.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-08	7.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								7.E-08					0.002
	Exposure Medium Total										4.E-07					0.03
	Dust	Gleason Court Lot 124	Inhalation	Benzo(a)pyrene	5.38E-10	mg/m3	2.E-12	mg/m3	9.E-04	1/(ug/m3)	1.E-12	1.E-10	mg/m3	3.E-03	mg/m3	0.00000004
				Benzo(b)fluoranthene	7.23E-10	mg/m3	2.E-12	mg/m3	9.E-05	1/(ug/m3)	2.E-13	2.E-10	mg/m3	3.E-03	mg/m3	0.00000005
				Arsenic	3.48E-09	mg/m3	1.E-11	mg/m3	4.E-03	1/(ug/m3)	5.E-11	7.E-10	mg/m3	NA	NA	---
	Exposure Medium Total										5.E-11					0.00000009
Soil Total											4.E-07					0.03
							Total of Receptor Risks Across All Media				4.E-07	Total of Receptor Hazards Across All Media				0.03

Note: NA = not available/not applicable

Table 7.66 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Lot 125	Ingestion	Benz(a)anthracene	1.04	mg/kg	3.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000007
				Benzo(a)pyrene	1.4	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000009
				Benzo(b)fluoranthene	1.7	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-08	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Arsenic	8.11	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
			Exp. Route Total								7.E-07					0.05
			Dermal	Benz(a)anthracene	1.04	mg/kg	1.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-09	8.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000003
				Benzo(a)pyrene	1.4	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Benzo(b)fluoranthene	1.7	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Arsenic	8.11	mg/kg	2.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-08	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
			Exp. Route Total								2.E-07					0.005
	Exposure Medium Total										9.E-07					0.06
	Dust	Gleason Court Lot 125	Inhalation	Benz(a)anthracene	1.01E-09	mg/m3	3.E-12	mg/m3	9.E-05	1/(ug/m3)	3.E-13	2.E-10	mg/m3	3.E-03	mg/m3	0.00000007
				Benzo(a)pyrene	1.35E-09	mg/m3	4.E-12	mg/m3	9.E-04	1/(ug/m3)	4.E-12	3.E-10	mg/m3	3.E-03	mg/m3	0.0000001
				Benzo(b)fluoranthene	1.64E-09	mg/m3	5.E-12	mg/m3	9.E-05	1/(ug/m3)	4.E-13	4.E-10	mg/m3	3.E-03	mg/m3	0.0000001
				Arsenic	7.84E-09	mg/m3	2.E-11	mg/m3	4.E-03	1/(ug/m3)	1.E-10	2.E-09	mg/m3	NA	NA	---
	Exposure Medium Total										1.E-10					0.0000003
Soil Total											9.E-07					0.06
											Total of Receptor Risks Across All Media 9.E-07					Total of Receptor Hazards Across All Media 0.06

Note: NA = not available/not applicable

Table 7.67 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Gleason Court Vacant Lot	Ingestion	Benzo(a)pyrene	0.29	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	6.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Arsenic	16.7	mg/kg	5.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-07	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
			Exp. Route Total								8.E-07					0.1
			Dermal	Benzo(a)pyrene	0.29	mg/kg	3.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-08	2.E-07	mg/kg/day	3.E-01	mg/kg-day	0.0000008
				Arsenic	16.7	mg/kg	4.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-08	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								9.E-08					0.01
	Exposure Medium Total										9.E-07					0.1
	Dust	Gleason Court Vacant Lot	Inhalation	Benzo(a)pyrene	2.8E-10	mg/m3	9.E-13	mg/m3	9.E-04	1/(ug/m3)	8.E-13	6.E-11	mg/m3	3.E-03	mg/m3	0.00000002
				Arsenic	1.61E-08	mg/m3	5.E-11	mg/m3	4.E-03	1/(ug/m3)	2.E-10	3.E-09	mg/m3	NA	NA	---
	Exposure Medium Total										2.E-10					0.00000002
	Trench Vapor	Gleason Court Vacant Lot	Inhalation	Naphthalene	0.000955	mg/m3	3.E-06	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.07
	Exposure Medium Total										---					0.07
Soil Total											9.E-07					0.2
										Total of Receptor Risks Across All Media	9.E-07			Total of Receptor Hazards Across All Media		0.2

Note: NA = not available/not applicable

Table 7.68 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Ingestion	Benz(a)anthracene	19.4	mg/kg	6.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-07	4.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0001
				Benzo(a)pyrene	8.75	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00006
				Benzo(b)fluoranthene	15.4	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	3.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0001
				Benzo(k)fluoranthene	6.65	mg/kg	2.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-08	1.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00004
				Chrysene	11.3	mg/kg	3.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-09	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00008
				Dibenz(ah)anthracene	2.14	mg/kg	6.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-07	4.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00007
				Arsenic	96.1	mg/kg	3.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-06	2.E-04	mg/kg/day	3.E-04	mg/kg-day	0.6
			Exp. Route Total								7.E-06					0.6
			Dermal	Benz(a)anthracene	19.4	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-07	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00005
				Benzo(a)pyrene	8.75	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-07	7.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Benzo(b)fluoranthene	15.4	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-07	1.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00004
				Benzo(k)fluoranthene	6.65	mg/kg	7.E-08	mg/kg/day	7.E-02	1/(mg/kg-day)	5.E-09	5.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Chrysene	11.3	mg/kg	1.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	9.E-10	9.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00003
				Dibenz(ah)anthracene	2.14	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000006
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	1.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-08	8.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00003
				Arsenic	96.1	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
			Exp. Route Total								2.E-06					0.06
	Exposure Medium Total										9.E-06					0.7
	Dust	Old Railroad and Former Lower Mill Pond Area	Inhalation	Benz(a)anthracene	1.88E-08	mg/m3	6.E-11	mg/m3	9.E-05	1/(ug/m3)	5.E-12	4.E-09	mg/m3	3.E-03	mg/m3	0.000001
				Benzo(a)pyrene	8.46E-09	mg/m3	3.E-11	mg/m3	9.E-04	1/(ug/m3)	2.E-11	2.E-09	mg/m3	3.E-03	mg/m3	0.0000006
				Benzo(b)fluoranthene	1.49E-08	mg/m3	5.E-11	mg/m3	9.E-05	1/(ug/m3)	4.E-12	3.E-09	mg/m3	3.E-03	mg/m3	0.000001
				Benzo(k)fluoranthene	6.43E-09	mg/m3	2.E-11	mg/m3	9.E-06	1/(ug/m3)	2.E-13	1.E-09	mg/m3	3.E-03	mg/m3	0.0000005
				Chrysene	1.09E-08	mg/m3	3.E-11	mg/m3	9.E-07	1/(ug/m3)	3.E-14	2.E-09	mg/m3	3.E-03	mg/m3	0.0000008
				Dibenz(ah)anthracene	2.07E-09	mg/m3	6.E-12	mg/m3	9.E-04	1/(ug/m3)	6.E-12	4.E-10	mg/m3	3.E-03	mg/m3	0.0000001
				Indeno(1,2,3-cd)pyrene	1.04E-08	mg/m3	3.E-11	mg/m3	9.E-05	1/(ug/m3)	3.E-12	2.E-09	mg/m3	3.E-03	mg/m3	0.0000007
				Arsenic	9.29E-08	mg/m3	3.E-10	mg/m3	4.E-03	1/(ug/m3)	1.E-09	2.E-08	mg/m3	NA	NA	---
	Exposure Medium Total										1.E-09					0.000005
	Trench Vapor	Old Railroad and Former Lower Mill Pond Area	Inhalation	Methylene chloride (Dichloromethane)	0.314	mg/m3	1.E-03	mg/m3	5.E-07	1/(ug/m3)	5.E-07	7.E-02	mg/m3	3.E+00	mg/m3	0.02
				2-Methylnaphthalene	0.00447	mg/m3	1.E-05	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.3
				Naphthalene	0.0089	mg/m3	3.E-05	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.6
	Exposure Medium Total										5.E-07					1
Soil Total											1.E-05					2
Groundwater	Groundwater	Old Railroad and Former Lower Mill Pond Area	Dermal	Arsenic	0.00092	mg/L	3.E-10	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-10	2.E-08	mg/kg/day	3.E-04	mg/kg-day	0.00006
				Chromium VI	0.021	mg/L	1.E-08	mg/kg/day	NA	NA	---	8.E-07	mg/kg/day	2.E-04	mg/kg-day	0.004
				Manganese	0.73	mg/L	2.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-03	mg/kg-day	0.005
Groundwater Total											4.E-10					0.01
									Total of Receptor Risks Across All Media		1.E-05			Total of Receptor Hazards Across All Media		2

Note: NA = not available/not applicable

Table 7.68 CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Ingestion	Benz(a)anthracene	19.4	mg/kg	8.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-08	6.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Benzo(a)pyrene	8.75	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000009
				Benzo(b)fluoranthene	15.4	mg/kg	7.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-08	5.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00002
				Benzo(k)fluoranthene	6.65	mg/kg	3.E-08	mg/kg/day	7.E-02	1/(mg/kg-day)	2.E-09	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000007
				Chrysene	11.3	mg/kg	5.E-08	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-10	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Dibenz(ah)anthracene	2.14	mg/kg	9.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-08	7.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Arsenic	96.1	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-07	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
			Exp. Route Total								1.E-06					0.1
			Dermal	Benz(a)anthracene	19.4	mg/kg	4.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000008
				Benzo(a)pyrene	8.75	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Benzo(b)fluoranthene	15.4	mg/kg	3.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000007
				Benzo(k)fluoranthene	6.65	mg/kg	1.E-08	mg/kg/day	7.E-02	1/(mg/kg-day)	9.E-10	9.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000003
				Chrysene	11.3	mg/kg	2.E-08	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-10	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000005
				Dibenz(ah)anthracene	2.14	mg/kg	4.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-08	3.E-07	mg/kg/day	3.E-01	mg/kg-day	0.0000009
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000005
				Arsenic	96.1	mg/kg	4.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-08	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								3.E-07					0.01
	Exposure Medium Total										1.E-06					0.1
	Dust	Old Railroad and Former Lower Mill Pond Area	Inhalation	Benz(a)anthracene	1.88E-08	mg/m3	2.E-11	mg/m3	9.E-05	1/(ug/m3)	2.E-12	1.E-09	mg/m3	3.E-03	mg/m3	0.0000004
				Benzo(a)pyrene	8.46E-09	mg/m3	9.E-12	mg/m3	9.E-04	1/(ug/m3)	8.E-12	6.E-10	mg/m3	3.E-03	mg/m3	0.0000002
				Benzo(b)fluoranthene	1.49E-08	mg/m3	2.E-11	mg/m3	9.E-05	1/(ug/m3)	1.E-12	1.E-09	mg/m3	3.E-03	mg/m3	0.0000004
				Benzo(k)fluoranthene	6.43E-09	mg/m3	7.E-12	mg/m3	9.E-06	1/(ug/m3)	6.E-14	5.E-10	mg/m3	3.E-03	mg/m3	0.0000002
				Chrysene	1.09E-08	mg/m3	1.E-11	mg/m3	9.E-07	1/(ug/m3)	1.E-14	8.E-10	mg/m3	3.E-03	mg/m3	0.0000003
				Dibenz(ah)anthracene	2.07E-09	mg/m3	2.E-12	mg/m3	9.E-04	1/(ug/m3)	2.E-12	1.E-10	mg/m3	3.E-03	mg/m3	0.00000005
				Indeno(1,2,3-cd)pyrene	1.04E-08	mg/m3	1.E-11	mg/m3	9.E-05	1/(ug/m3)	9.E-13	7.E-10	mg/m3	3.E-03	mg/m3	0.0000002
				Arsenic	9.29E-08	mg/m3	9.E-11	mg/m3	4.E-03	1/(ug/m3)	4.E-10	7.E-09	mg/m3	NA	NA	---
	Exposure Medium Total										4.E-10					0.000002
	Trench Vapor	Old Railroad and Former Lower Mill Pond Area	Inhalation	Methylene chloride (Dichloromethane)	0.135	mg/m3	1.E-04	mg/m3	5.E-07	1/(ug/m3)	6.E-08	1.E-02	mg/m3	3.E+00	mg/m3	0.003
				2-Methylnaphthalene	0.00447	mg/m3	5.E-06	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.1
				Naphthalene	0.0089	mg/m3	9.E-06	mg/m3	NA	NA	---	6.E-04	mg/m3	3.E-03	mg/m3	0.2
	Exposure Medium Total										6.E-08					0.3
Soil Total											1.E-06					0.4
Groundwater	Groundwater	Old Railroad and Former Lower Mill Pond Area	Dermal	Arsenic	0.00092	mg/L	7.E-11	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-10	5.E-09	mg/kg/day	3.E-04	mg/kg-day	0.00002
				Chromium VI	0.021	mg/L	3.E-09	mg/kg/day	NA	NA	---	2.E-07	mg/kg/day	2.E-04	mg/kg-day	0.001
				Manganese	0.73	mg/L	5.E-08	mg/kg/day	NA	NA	---	4.E-06	mg/kg/day	3.E-03	mg/kg-day	0.001
Groundwater Total											1.E-10					0.002
										Total of Receptor Risks Across All Media	1.E-06			Total of Receptor Hazards Across All Media		0.4

Note: NA = not available/not applicable

Table 7.69 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Orlando Property	Ingestion	Benz(a)anthracene	1.57	mg/kg	5.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Benzo(a)pyrene	1.27	mg/kg	4.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-07	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000009
				Benzo(b)fluoranthene	1.44	mg/kg	4.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-08	3.E-06	mg/kg/day	3.E-01	mg/kg-day	0.00001
				Indeno(1,2,3-cd)pyrene	0.236	mg/kg	7.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-09	5.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Arsenic	2.82	mg/kg	8.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								5.E-07					0.02
			Dermal	Benz(a)anthracene	1.57	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Benzo(a)pyrene	1.27	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000003
				Benzo(b)fluoranthene	1.44	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-08	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Indeno(1,2,3-cd)pyrene	0.236	mg/kg	3.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-09	2.E-07	mg/kg/day	3.E-01	mg/kg-day	0.0000006
				Arsenic	2.82	mg/kg	7.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-08	5.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								1.E-07					0.002
	Exposure Medium Total										6.E-07					0.02
	Dust	Orlando Property	Inhalation	Benz(a)anthracene	1.52E-09	mg/m3	5.E-12	mg/m3	9.E-05	1/(ug/m3)	4.E-13	3.E-10	mg/m3	3.E-03	mg/m3	0.0000001
				Benzo(a)pyrene	1.23E-09	mg/m3	4.E-12	mg/m3	9.E-04	1/(ug/m3)	3.E-12	3.E-10	mg/m3	3.E-03	mg/m3	0.00000009
				Benzo(b)fluoranthene	1.39E-09	mg/m3	4.E-12	mg/m3	9.E-05	1/(ug/m3)	4.E-13	3.E-10	mg/m3	3.E-03	mg/m3	0.0000001
				Indeno(1,2,3-cd)pyrene	2.28E-10	mg/m3	7.E-13	mg/m3	9.E-05	1/(ug/m3)	6.E-14	5.E-11	mg/m3	3.E-03	mg/m3	0.00000002
				Arsenic	2.73E-09	mg/m3	8.E-12	mg/m3	4.E-03	1/(ug/m3)	4.E-11	6.E-10	mg/m3	NA	NA	---
	Exposure Medium Total										4.E-11					0.0000003
	Trench Vapor	Orlando Property	Inhalation	2-Methylnaphthalene	0.00124	mg/m3	4.E-06	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.09
				Naphthalene	0.00504	mg/m3	2.E-05	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.4
	Exposure Medium Total										---					0.4
Soil Total											6.E-07					0.5
							Total of Receptor Risks Across All Media				6.E-07	Total of Receptor Hazards Across All Media				0.5

Note: NA = not available/not applicable

Table 7.70 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 208	Ingestion	Arsenic	3.4	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								1.E-07					0.02
			Dermal	Arsenic	3.4	mg/kg	9.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-08	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								1.E-08					0.002
	Exposure Medium Total										2.E-07					0.02
	Dust	Lot 208	Inhalation	Arsenic	3.29E-09	mg/m3	1.E-11	mg/m3	4.E-03	1/(ug/m3)	4.E-11	7.E-10	mg/m3	NA	NA	---
	Exposure Medium Total										4.E-11					---
	Trench Vapor	Lot 208	Inhalation	Trichlorofluoromethane	0.193	mg/m3	6.E-04	mg/m3	NA	NA	---	4.E-02	mg/m3	7.E+00	mg/m3	0.006
				Naphthalene	0.00171	mg/m3	5.E-06	mg/m3	NA	NA	---	4.E-04	mg/m3	3.E-03	mg/m3	0.1
	Exposure Medium Total										---					0.1
Soil Total											2.E-07					0.2
							Total of Receptor Risks Across All Media				2.E-07	Total of Receptor Hazards Across All Media				0.2

Note: NA = not available/not applicable

Table 7.71 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Vacant Lot 209	Ingestion	Arsenic	3.4	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								1.E-07					0.02
			Dermal	Arsenic	3.4	mg/kg	9.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-08	6.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								1.E-08					0.002
	Exposure Medium Total										2.E-07					0.02
	Dust	Vacant Lot 209	Inhalation	Arsenic	3.29E-09	mg/m3	1.E-11	mg/m3	4.E-03	1/(ug/m3)	4.E-11	7.E-10	mg/m3	NA	NA	---
	Exposure Medium Total										4.E-11					---
Soil Total											2.E-07					0.02
										Total of Receptor Risks Across All Media	2.E-07			Total of Receptor Hazards Across All Media		0.02

Note: NA = not available/not applicable

Table 7.72 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 210	Ingestion	Benzo(a)pyrene	0.61	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-07	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000004
				Benzo(b)fluoranthene	0.8	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000005
				Arsenic	3.6	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								3.E-07					0.02
			Dermal	Benzo(a)pyrene	0.61	mg/kg	7.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-08	5.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Benzo(b)fluoranthene	0.8	mg/kg	9.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-09	6.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Arsenic	3.6	mg/kg	9.E-09	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-08	7.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								7.E-08					0.002
	Exposure Medium Total										4.E-07					0.03
	Dust	Lot 210	Inhalation	Benzo(a)pyrene	5.9E-10	mg/m3	2.E-12	mg/m3	9.E-04	1/(ug/m3)	2.E-12	1.E-10	mg/m3	3.E-03	mg/m3	0.00000004
				Benzo(b)fluoranthene	7.73E-10	mg/m3	2.E-12	mg/m3	9.E-05	1/(ug/m3)	2.E-13	2.E-10	mg/m3	3.E-03	mg/m3	0.00000006
				Arsenic	3.48E-09	mg/m3	1.E-11	mg/m3	4.E-03	1/(ug/m3)	5.E-11	7.E-10	mg/m3	NA	NA	---
	Exposure Medium Total										5.E-11					0.0000001
	Trench Vapor	Lot 210	Inhalation	Naphthalene	0.00165	mg/m3	5.E-06	mg/m3	NA	NA	---	4.E-04	mg/m3	3.E-03	mg/m3	0.1
	Exposure Medium Total										---					0.1
Soil Total											4.E-07					0.1
										Total of Receptor Risks Across All Media	4.E-07			Total of Receptor Hazards Across All Media		0.1

Note: NA = not available/not applicable

Table 7.73 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 230	Ingestion	Benzo(a)pyrene	0.42	mg/kg	1.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-08	8.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000003
				Arsenic	6.8	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
			Exp. Route Total								4.E-07					0.05
			Dermal	Benzo(a)pyrene	0.42	mg/kg	5.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-08	3.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000001
				Arsenic	6.8	mg/kg	2.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-08	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.004
			Exp. Route Total								6.E-08					0.004
	Exposure Medium Total										4.E-07					0.05
	Dust	Lot 230	Inhalation	Benzo(a)pyrene	4.06E-10	mg/m3	1.E-12	mg/m3	9.E-04	1/(ug/m3)	1.E-12	9.E-11	mg/m3	3.E-03	mg/m3	0.00000003
				Arsenic	6.57E-09	mg/m3	2.E-11	mg/m3	4.E-03	1/(ug/m3)	9.E-11	1.E-09	mg/m3	NA	NA	---
	Exposure Medium Total										9.E-11					0.00000003
	Trench Vapor	Lot 230	Inhalation	Naphthalene	0.00124	mg/m3	4.E-06	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.09
	Exposure Medium Total										---					0.09
Soil Total											4.E-07					0.1
											Total of Receptor Risks Across All Media 4.E-07					Total of Receptor Hazards Across All Media 0.1

Note: NA = not available/not applicable

Table 7.74 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 257	Ingestion	Benz(a)anthracene	0.79	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000005
				Benzo(a)pyrene	0.765	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000005
				Benzo(b)fluoranthene	1.04	mg/kg	3.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000007
				Indeno(1,2,3-cd)pyrene	0.715	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000005
				Arsenic	10.5	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	5.E-07	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
			Exp. Route Total								7.E-07					0.07
			Dermal	Benz(a)anthracene	0.79	mg/kg	9.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-09	6.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Benzo(a)pyrene	0.765	mg/kg	9.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	6.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Benzo(b)fluoranthene	1.04	mg/kg	1.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-09	8.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000003
				Indeno(1,2,3-cd)pyrene	0.715	mg/kg	8.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-09	6.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Arsenic	10.5	mg/kg	3.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-08	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								1.E-07					0.006
	Exposure Medium Total										8.E-07					0.08
	Dust	Lot 257	Inhalation	Benz(a)anthracene	7.64E-10	mg/m3	2.E-12	mg/m3	9.E-05	1/(ug/m3)	2.E-13	2.E-10	mg/m3	3.E-03	mg/m3	0.00000005
				Benzo(a)pyrene	7.4E-10	mg/m3	2.E-12	mg/m3	9.E-04	1/(ug/m3)	2.E-12	2.E-10	mg/m3	3.E-03	mg/m3	0.00000005
				Benzo(b)fluoranthene	1.01E-09	mg/m3	3.E-12	mg/m3	9.E-05	1/(ug/m3)	3.E-13	2.E-10	mg/m3	3.E-03	mg/m3	0.00000007
				Indeno(1,2,3-cd)pyrene	6.91E-10	mg/m3	2.E-12	mg/m3	9.E-05	1/(ug/m3)	2.E-13	1.E-10	mg/m3	3.E-03	mg/m3	0.00000005
				Arsenic	1.02E-08	mg/m3	3.E-11	mg/m3	4.E-03	1/(ug/m3)	1.E-10	2.E-09	mg/m3	NA	NA	---
	Exposure Medium Total										1.E-10					0.0000002
	Trench Vapor	Lot 257	Inhalation	2-Methylnaphthalene	0.000121	mg/m3	4.E-07	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.009
				Naphthalene	0.000283	mg/m3	9.E-07	mg/m3	NA	NA	---	6.E-05	mg/m3	3.E-03	mg/m3	0.02
	Exposure Medium Total										---					0.03
Soil Total											8.E-07					0.1
							Total of Receptor Risks Across All Media				8.E-07	Total of Receptor Hazards Across All Media				0.1

Note: NA = not available/not applicable

Table 7.75 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 282	Ingestion	Arsenic	8.9	mg/kg	3.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	4.E-07	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.06
			Exp. Route Total								4.E-07					0.06
			Dermal	Arsenic	8.9	mg/kg	2.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-08	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
			Exp. Route Total								3.E-08					0.005
	Exposure Medium Total										4.E-07					0.07
	Dust	Lot 282	Inhalation	Arsenic	8.6E-09	mg/m3	3.E-11	mg/m3	4.E-03	1/(ug/m3)	1.E-10	2.E-09	mg/m3	NA	NA	---
	Exposure Medium Total										1.E-10					---
	Trench Vapor	Lot 282	Inhalation	Naphthalene	0.000766	mg/m3	2.E-06	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.05
	Exposure Medium Total										---					0.05
Soil Total											4.E-07					0.1
									Total of Receptor Risks Across All Media		4.E-07	Total of Receptor Hazards Across All Media				0.1

Note: NA = not available/not applicable

Table 7.76 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 283	Ingestion	Benz(a)anthracene	0.78	mg/kg	2.E-08	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-08	2.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000005
				Benzo(a)pyrene	0.72	mg/kg	2.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-07	1.E-06	mg/kg/day	3.E-01	mg/kg-day	0.000005
				Arsenic	4.9	mg/kg	1.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.03
			Exp. Route Total								4.E-07					0.03
			Dermal	Benz(a)anthracene	0.78	mg/kg	9.E-09	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-09	6.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Benzo(a)pyrene	0.72	mg/kg	8.E-09	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-08	6.E-07	mg/kg/day	3.E-01	mg/kg-day	0.000002
				Arsenic	4.9	mg/kg	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	9.E-07	mg/kg/day	3.E-04	mg/kg-day	0.003
			Exp. Route Total								8.E-08					0.003
	Exposure Medium Total										5.E-07					0.04
	Dust	Lot 283	Inhalation	Benz(a)anthracene	7.54E-10	mg/m3	2.E-12	mg/m3	9.E-05	1/(ug/m3)	2.E-13	2.E-10	mg/m3	3.E-03	mg/m3	0.00000005
				Benzo(a)pyrene	6.96E-10	mg/m3	2.E-12	mg/m3	9.E-04	1/(ug/m3)	2.E-12	1.E-10	mg/m3	3.E-03	mg/m3	0.00000005
				Arsenic	4.74E-09	mg/m3	1.E-11	mg/m3	4.E-03	1/(ug/m3)	6.E-11	1.E-09	mg/m3	NA	NA	---
	Exposure Medium Total										6.E-11					0.0000001
	Trench Vapor	Lot 283	Inhalation	Chloroform	0.0238	mg/m3	7.E-05	mg/m3	2.E-05	1/(ug/m3)	2.E-06	5.E-03	mg/m3	5.E-02	mg/m3	0.1
				Naphthalene	0.00228	mg/m3	7.E-06	mg/m3	NA	NA	---	5.E-04	mg/m3	3.E-03	mg/m3	0.2
	Exposure Medium Total										2.E-06					0.3
Soil Total											2.E-06					0.3
										Total of Receptor Risks Across All Media	2.E-06			Total of Receptor Hazards Across All Media		0.3

Note: NA = not available/not applicable

Table 7.77 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Lot 342	Ingestion	Arsenic	5.7	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
			Exp. Route Total								2.E-07					0.04
			Dermal	Arsenic	5.7	mg/kg	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.003
			Exp. Route Total								2.E-08					0.003
	Exposure Medium Total										3.E-07					0.04
	Dust	Lot 342	Inhalation	Arsenic	5.51E-09	mg/m3	2.E-11	mg/m3	4.E-03	1/(ug/m3)	7.E-11	1.E-09	mg/m3	NA	NA	---
	Exposure Medium Total										7.E-11					---
	Trench Vapor	Lot 342	Inhalation	Naphthalene	0.00147	mg/m3	4.E-06	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.1
	Exposure Medium Total										---					0.1
Soil Total											3.E-07					0.1
							Total of Receptor Risks Across All Media				3.E-07	Total of Receptor Hazards Across All Media				0.1

Note: NA = not available/not applicable

Table 7.78 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Trench Vapor	Lot 350	Inhalation	Naphthalene	0.00192	mg/m3	6.E-06	mg/m3	NA	NA	---	4.E-04	mg/m3	3.E-03	mg/m3	0.1
Soil Total											---					0.1
											---					0.1

Total of Receptor Risks Across All Media

Total of Receptor Hazards Across All Media

Note: NA = not available/not applicable

Table 7.79 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Trench Vapor	Lot 360	Inhalation	2-Methylnaphthalene	0.000398	mg/m3	1.E-06	mg/m3	NA	NA	---	8.E-05	mg/m3	3.E-03	mg/m3	0.03
				Naphthalene	0.00118	mg/m3	4.E-06	mg/m3	NA	NA	---	3.E-04	mg/m3	3.E-03	mg/m3	0.08
Soil Total											---					0.1
										Total of Receptor Risks Across All Media	---				Total of Receptor Hazards Across All Media	0.1

Note: NA = not available/not applicable

Table 7.80 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Trench Vapor	Lots South of the AOC	Inhalation	Benzene	0.0047	mg/m3	1.E-05	mg/m3	8.E-06	1/(ug/m3)	1.E-07	1.E-03	mg/m3	8.E-02	mg/m3	0.01
				Carbon disulfide	0.595	mg/m3	2.E-03	mg/m3	NA	NA	---	1.E-01	mg/m3	7.E-01	mg/m3	0.2
				Chloroform	0.00281	mg/m3	9.E-06	mg/m3	2.E-05	1/(ug/m3)	2.E-07	6.E-04	mg/m3	5.E-02	mg/m3	0.01
				Trichlorofluoromethane	0.78	mg/m3	2.E-03	mg/m3	NA	NA	---	2.E-01	mg/m3	7.E+00	mg/m3	0.02
				2-Methylnaphthalene	0.000164	mg/m3	5.E-07	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
				Naphthalene	0.000801	mg/m3	2.E-06	mg/m3	NA	NA	---	2.E-04	mg/m3	3.E-03	mg/m3	0.06
Soil Total											3.E-07					0.3
											Total of Receptor Risks Across All Media	3.E-07				Total of Receptor Hazards Across All Media	0.3

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.

See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.80 CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Trench Vapor	Lots South of the AOC	Inhalation	Benzene	0.0047	mg/m3	5.E-06	mg/m3	8.E-06	1/(ug/m3)	4.E-08	3.E-04	mg/m3	8.E-02	mg/m3	0.004
				Carbon disulfide	0.126	mg/m3	1.E-04	mg/m3	NA	NA	---	9.E-03	mg/m3	7.E-01	mg/m3	0.01
				Chloroform	0.00281	mg/m3	3.E-06	mg/m3	2.E-05	1/(ug/m3)	7.E-08	2.E-04	mg/m3	5.E-02	mg/m3	0.004
				Trichlorofluoromethane	0.78	mg/m3	8.E-04	mg/m3	NA	NA	---	6.E-02	mg/m3	7.E+00	mg/m3	0.008
				2-Methylnaphthalene	0.000164	mg/m3	2.E-07	mg/m3	NA	NA	---	1.E-05	mg/m3	3.E-03	mg/m3	0.004
				Naphthalene	0.000801	mg/m3	8.E-07	mg/m3	NA	NA	---	6.E-05	mg/m3	3.E-03	mg/m3	0.02
Soil Total											1.E-07					0.05
											Total of Receptor Risks Across All Media	1.E-07				Total of Receptor Hazards Across All Media	0.05

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.

See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 7.81 RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Dermal	Benzene	0.0041	mg/L	3.E-08	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-09	2.E-06	mg/kg/day	1.E-02	mg/kg-day	0.0002
				2-Methylnaphthalene	0.0125	mg/L	7.E-07	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	4.E-03	mg/kg-day	0.01
				Naphthalene	0.0349	mg/L	1.E-06	mg/kg/day	NA	NA	---	7.E-05	mg/kg/day	2.E-01	mg/kg-day	0.0003
				Arsenic	0.0515	mg/L	1.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-08	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.003
				Chromium VI	0.0216	mg/L	1.E-08	mg/kg/day	NA	NA	---	9.E-07	mg/kg/day	2.E-04	mg/kg-day	0.004
				Manganese	0.644	mg/L	2.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-03	mg/kg-day	0.005
				Vanadium	0.177	mg/L	5.E-08	mg/kg/day	NA	NA	---	4.E-06	mg/kg/day	1.E-04	mg/kg-day	0.03
Groundwater Total											2.E-08					0.05
										Total of Receptor Risks Across All Media	2.E-08			Total of Receptor Hazards Across All Media		0.05

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

APPENDIX L
RAGS Table 9 Series (Summary of Receptor Risks and Hazards for COPCs)

Table 9.1 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Lot 122	Benzo(a)pyrene	2.E-06	8.E-07	---	3.E-06	Renal	0.00007	0.00003	---	0.0001
			Arsenic	1.E-05	1.E-06	---	2.E-05	Integumental; Cardiovascular	0.3	0.02	---	0.3
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			2.E-05	2.E-06	---	2.E-05		0.3	0.02	---	0.3
	Plant tissue	Gleason Court Lot 122	Arsenic	4.E-05	---	---	4.E-05	Integumental; Cardiovascular	0.3	---	---	0.3
	Exposure Medium Total			4.E-05	---	---	4.E-05		0.3	---	---	0.3
Soil Total				5.E-05	2.E-06	---	6.E-05		0.6	0.02	---	0.6
							Total Risk Across All Media					Total Hazard Across All Media
							6.E-05					0.6

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.2 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Lot 124	Benzo(a)pyrene	3.E-06	1.E-06	---	4.E-06	Renal	0.0001	4E-05	---	0.0002
			Benzo(b)fluoranthene	4.E-07	2.E-07	---	6.E-07	Renal	0.0002	6E-05	---	0.0002
			Dibenz(ah)anthracene	4.E-07	2.E-07	---	5.E-07	Renal	0.00001	5E-06	---	0.00002
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
Soil Total				4.E-06	2.E-06	---	6.E-06		0.04	0.0001	---	0.04
Soil Gas	Indoor Air	Gleason Court Lot 124	Trichloroethylene (TCE)	---	---	6.E-07	6.E-07	Neurological; Hepatic; Endocrine	---	---	0.0003	0.0003
			1,2,4-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.02	0.02
			1,3,5-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.005	0.005
			Naphthalene	---	---	---	---	Respiratory	---	---	0.01	0.01
Soil Gas Total				---	---	6.E-07	6.E-07		---	---	0.04	0.04
							Total Risk Across All Media	6.E-06				Total Hazard Across All Media	0.07

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.3 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Lot 125	Benz(a)anthracene	6.E-07	2.E-07	---	8.E-07	Renal	0.0002	8E-05	---	0.0003
			Benzo(a)pyrene	7.E-06	3.E-06	---	1.E-05	Renal	0.0003	9E-05	---	0.0003
			Benzo(b)fluoranthene	8.E-07	3.E-07	---	1.E-06	Renal	0.0003	0.0001	---	0.0004
			Dibenz(ah)anthracene	6.E-07	2.E-07	---	8.E-07	Renal	0.00002	8E-06	---	0.00003
			Arsenic	2.E-06	2.E-07	---	2.E-06	Integumental; Cardiovascular	0.04	0.003	---	0.04
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
	Exposure Medium Total			1.E-05	4.E-06	---	1.E-05		0.09	0.003	---	0.09
	Plant tissue	Gleason Court Lot 125	Arsenic	5.E-06	---	---	5.E-06	Integumental; Cardiovascular	0.04	---	---	0.04
	Exposure Medium Total			5.E-06	---	---	5.E-06		0.04	---	---	0.04
Soil Total				2.E-05	4.E-06	---	2.E-05		0.1	0.003	---	0.1
Soil Gas	Indoor Air	Gleason Court Lot 125	Trichloroethylene (TCE)	---	---	4.E-07	4.E-07	Neurological; Hepatic; Endocrine	---	---	0.0002	0.0002
			1,2,4-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.02	0.02
			1,3,5-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.005	0.005
			Naphthalene	---	---	---	---	Respiratory	---	---	0.01	0.01
Soil Gas Total				---	---	4.E-07	4.E-07		---	---	0.04	0.04
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.4 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Vacant Lot	Benzo(a)pyrene	1.E-06	6.E-07	---	2.E-06	Renal	0.00005	0.00002	---	0.00007
			Arsenic	2.E-05	2.E-06	---	2.E-05	Integumental; Cardiovascular	0.4	0.03	---	0.4
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
Soil Total				2.E-05	2.E-06	---	2.E-05		0.4	0.03	---	0.4
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.4

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.5 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Orlando Property	Benz(a)anthracene	8.E-07	3.E-07	---	1.E-06	Renal	0.0003	0.0001	---	0.0004
			Benzo(a)pyrene	6.E-06	3.E-06	---	9.E-06	Renal	0.0002	0.00009	---	0.0003
			Benzo(b)fluoranthene	7.E-07	3.E-07	---	1.E-06	Renal	0.0003	0.0001	---	0.0004
			Dibenz(ah)anthracene	4.E-07	1.E-07	---	5.E-07	Renal	0.00001	0.000005	---	0.00002
			Indeno(1,2,3-cd)pyrene	2.E-07	7.E-08	---	2.E-07	Renal	0.00006	0.00002	---	0.00008
			Arsenic	3.E-06	3.E-07	---	4.E-06	Integumental; Cardiovascular	0.06	0.005	---	0.07
			Chromium VI	---	---	---	---	None observed	0.03	---	---	0.03
			Manganese	---	---	---	---	Neurological	0.03	---	---	0.03
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			1.E-05	4.E-06	---	2.E-05		0.2	0.005	---	0.2
	Indoor Air	Orlando Property	Naphthalene	---	---	---	---	Respiratory	---	---	0.3	0.3
	Exposure Medium Total			---	---	---	---		---	---	0.3	0.3
	Plant tissue	Orlando Property	Arsenic	9.E-06	---	---	9.E-06	Integumental; Cardiovascular	0.07	---	---	0.07
			Chromium VI	---	---	---	---	None observed	0.1	---	---	0.1
	Exposure Medium Total			9.E-06	---	---	9.E-06		0.2	---	---	0.2
Soil Total				2.E-05	4.E-06	---	2.E-05		0.3	0.005	0.3	0.7
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.7

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.6 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 208	Benzo(a)pyrene	3.E-07	1.E-07	---	4.E-07	Renal	0.00001	0.000004	---	0.00002
			Arsenic	3.E-06	3.E-07	---	4.E-06	Integumental; Cardiovascular	0.06	0.005	---	0.07
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.02	---	---	0.02
			Cyanide (free)	---	---	---	---	Whole Body; Endocrine; Neurological	0.0009	---	---	0.0009
	Exposure Medium Total			4.E-06	5.E-07	---	4.E-06		0.1	0.005	---	0.1
	Plant tissue	Lot 208	Arsenic	9.E-06	---	---	9.E-06	Integumental; Cardiovascular	0.07	---	---	0.07
	Exposure Medium Total			9.E-06	---	---	9.E-06		0.07	---	---	0.07
Soil Total				1.E-05	5.E-07	---	1.E-05		0.2	0.005	---	0.2
							Total Risk Across All Media	1.E-05				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.7 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 210	Benzo(a)pyrene	3.E-06	1.E-06	---	4.E-06	Renal	0.0001	0.00004	---	0.0002
			Benzo(b)fluoranthene	4.E-07	2.E-07	---	6.E-07	Renal	0.0001	0.00005	---	0.0002
			Arsenic	4.E-06	3.E-07	---	4.E-06	Integumental; Cardiovascular	0.07	0.006	---	0.07
			Manganese	---	---	---	---	Neurological	0.03	---	---	0.03
			Nickel	---	---	---	---	Whole Body; Hepatic	0.05	---	---	0.05
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			7.E-06	2.E-06	---	9.E-06		0.2	0.006	---	0.2
	Plant tissue	Lot 210	Arsenic	1.E-05	---	---	1.E-05	Integumental; Cardiovascular	0.07	---	---	0.07
			Nickel	---	---	---	---	Whole Body; Hepatic	0.04	---	---	0.04
	Exposure Medium Total			1.E-05	---	---	1.E-05		0.1	---	---	0.1
Soil Total				2.E-05	2.E-06	---	2.E-05		0.3	0.006	---	0.3
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.8 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 230	Benzo(a)pyrene	2.E-06	8.E-07	---	3.E-06	Renal	0.00008	0.00003	---	0.0001
			Arsenic	7.E-06	6.E-07	---	7.E-06	Integumental; Cardiovascular	0.1	0.01	---	0.1
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
	Exposure Medium Total			9.E-06	1.E-06	---	1.E-05		0.2	0.01	---	0.2
	Plant tissue	Lot 230	Arsenic	2.E-05	---	---	2.E-05	Integumental; Cardiovascular	0.1	---	---	0.1
	Exposure Medium Total			2.E-05	---	---	2.E-05		0.1	---	---	0.1
Soil Total				3.E-05	1.E-06	---	3.E-05		0.3	0.01	---	0.3
							Total Risk Across All Media	3.E-05				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.9 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 257	Benz(a)anthracene	4.E-07	2.E-07	---	5.E-07	Renal	0.0001	0.00005	---	0.0002
			Benzo(a)pyrene	4.E-06	2.E-06	---	5.E-06	Renal	0.0001	0.00005	---	0.0002
			Benzo(b)fluoranthene	5.E-07	2.E-07	---	7.E-07	Renal	0.0002	0.00007	---	0.0003
			Dibenz(ah)anthracene	7.E-07	3.E-07	---	1.E-06	Renal	0.00003	0.00001	---	0.00004
			Indeno(1,2,3-cd)pyrene	4.E-07	1.E-07	---	5.E-07	Renal	0.0001	0.00005	---	0.0002
			Arsenic	1.E-05	1.E-06	---	1.E-05	Integumental; Cardiovascular	0.2	0.02	---	0.2
			Chromium VI	---	---	---	---	None observed	0.05	---	---	0.05
			Manganese	---	---	---	---	Neurological	0.03	---	---	0.03
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			2.E-05	3.E-06	---	2.E-05		0.3	0.02	---	0.3
	Plant tissue	Lot 257	Arsenic	3.E-05	---	---	3.E-05	Integumental; Cardiovascular	0.2	---	---	0.2
			Chromium VI	---	---	---	---	None observed	0.2	---	---	0.2
	Exposure Medium Total			3.E-05	---	---	3.E-05		0.4	---	---	0.4
Soil Total				4.E-05	3.E-06	---	5.E-05		0.7	0.02	---	0.7
							Total Risk Across All Media	5.E-05				Total Hazard Across All Media	0.7

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.10 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 282	Benzo(a)pyrene	8.E-07	3.E-07	---	1.E-06	Renal	0.00003	0.00001	---	0.00004
			Arsenic	9.E-06	8.E-07	---	1.E-05	Integumental; Cardiovascular	0.2	0.01	---	0.2
			Manganese	---	---	---	---	Neurological	0.03	---	---	0.03
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			1.E-05	1.E-06	---	1.E-05		0.2	0.01	---	0.2
	Plant tissue	Lot 282	Arsenic	2.E-05	---	---	2.E-05	Integumental; Cardiovascular	0.2	---	---	0.2
	Exposure Medium Total			2.E-05	---	---	2.E-05		0.2	---	---	0.2
Soil Total				3.E-05	1.E-06	---	3.E-05		0.4	0.01	---	0.4
							Total Risk Across All Media	3.E-05				Total Hazard Across All Media	0.4

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.11 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 283	Benz(a)anthracene	4.E-07	2.E-07	---	5.E-07	Renal	0.0001	5E-05	---	0.0002
			Benzo(a)pyrene	4.E-06	1.E-06	---	5.E-06	Renal	0.0001	5E-05	---	0.0002
			Benzo(b)fluoranthene	3.E-07	1.E-07	---	4.E-07	Renal	0.0001	4E-05	---	0.0002
			Dibenz(ah)anthracene	3.E-07	1.E-07	---	4.E-07	Renal	0.00001	4E-06	---	0.00001
			Arsenic	5.E-06	5.E-07	---	5.E-06	Integumental; Cardiovascular	0.09	0.008	---	0.1
			Manganese	---	---	---	---	Neurological	0.06	---	---	0.06
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			9.E-06	2.E-06	---	1.E-05		0.2	0.008	---	0.2
	Indoor Air	Lot 283	Chloroform	---	---	4.E-08	4.E-08	Renal; Hepatic; Neurological	---	---	0.00008	0.00008
			Naphthalene	---	---	---	---	Respiratory	---	---	0.09	0.09
	Exposure Medium Total			---	---	4.E-08	4.E-08		---	---	0.09	0.09
	Plant tissue	Lot 283	Arsenic	1.E-05	---	---	1.E-05	Integumental; Cardiovascular	0.1	---	---	0.1
	Exposure Medium Total			1.E-05	---	---	1.E-05		0.1	---	---	0.1
Soil Total				2.E-05	2.E-06	4.E-08	2.E-05		0.3	0.008	0.09	0.4
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.4

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.12 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 342	Benzo(a)pyrene	5.E-07	2.E-07	---	7.E-07	Renal	0.00002	0.000007	---	0.00002
			Arsenic	6.E-06	5.E-07	---	6.E-06	Integumental; Cardiovascular	0.1	0.009	---	0.1
			Chromium VI	---	---	---	---	None observed	0.05	---	---	0.05
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			6.E-06	7.E-07	---	7.E-06		0.2	0.009	---	0.2
	Plant tissue	Lot 342	Arsenic	2.E-05	---	---	2.E-05	Integumental; Cardiovascular	0.1	---	---	0.1
			Chromium VI	---	---	---	---	None observed	0.2	---	---	0.2
	Exposure Medium Total			2.E-05	---	---	2.E-05		0.3	---	---	0.3
Soil Total				2.E-05	7.E-07	---	2.E-05		0.5	0.009	---	0.5
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.5

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.13 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 360	Benz(a)anthracene	3.E-07	1.E-07	---	4.E-07	Renal	0.00009	3E-05	---	0.0001
			Benzo(a)pyrene	2.E-06	9.E-07	---	3.E-06	Renal	0.00008	3E-05	---	0.0001
			Benzo(b)fluoranthene	3.E-07	1.E-07	---	5.E-07	Renal	0.0001	4E-05	---	0.0002
			Dibenz(ah)anthracene	4.E-07	2.E-07	---	6.E-07	Renal	0.00002	6E-06	---	0.00002
			Antimony	---	---	---	---	Whole Body; Hepatic	0.09	---	---	0.09
			Arsenic	2.E-05	2.E-06	---	2.E-05	Integumental; Cardiovascular	0.3	0.03	---	0.4
			Chromium VI	---	---	---	---	None observed	0.2	---	---	0.2
			Vanadium	---	---	---	---	Renal	0.05	---	---	0.05
	Exposure Medium Total			2.E-05	3.E-06	---	2.E-05		0.7	0.03	---	0.7
	Plant tissue	Lot 360	Arsenic	5.E-05	---	---	5.E-05	Integumental; Cardiovascular	0.4	---	---	0.4
			Chromium VI	---	---	---	---	None observed	0.6	---	---	0.6
	Exposure Medium Total			5.E-05	---	---	5.E-05		1	---	---	1
Soil Total				7.E-05	3.E-06	---	7.E-05		2	0.03	---	2
							Total Risk Across All Media	7.E-05				Total Hazard Across All Media	2

Total Cardiovascular HI Across All Media	0.8
Total Hepatic HI Across All Media	0.2
Total Integumental HI Across All Media	0.8
Total Renal HI Across All Media	0.1
Total None observed HI Across All Media	0.9
Total Whole Body HI Across All Media	0.09

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.13 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 360	Benz(a)anthracene	4.E-08	6.E-09	---	5.E-08	Renal	0.00005	7E-06	---	0.00005
			Benzo(a)pyrene	4.E-07	5.E-08	---	4.E-07	Renal	0.00004	6E-06	---	0.00005
			Benzo(b)fluoranthene	5.E-08	8.E-09	---	6.E-08	Renal	0.00006	9E-06	---	0.00007
			Dibenz(ah)anthracene	7.E-08	1.E-08	---	8.E-08	Renal	0.000008	1E-06	---	0.000009
			Antimony	---	---	---	---	Whole Body; Hepatic	0.03	---	---	0.03
			Arsenic	3.E-06	1.E-07	---	3.E-06	Integumental; Cardiovascular	0.2	0.006	---	0.2
			Chromium VI	---	---	---	---	None observed	0.06	---	---	0.06
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
Soil Total				3.E-06	2.E-07	---	4.E-06		0.3	0.006	---	0.3
							Total Risk Across All Media	4.E-06				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.14 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Indoor Air	Off-Site Residential Building 1	Naphthalene	---	---	---	---	Respiratory	---	---	0.02	0.02
Soil Total				---	---	---	---		---	---	0.02	0.02
							Total Risk Across All Media	---				Total Hazard Across All Media	0.02

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.15 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Indoor Air	Off-Site Residential Building 2	Naphthalene	---	---	---	---	Respiratory	---	---	0.2	0.2
Soil Total				---	---	---	---		---	---	0.2	0.2
							Total Risk Across All Media	---				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.15 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Indoor Air	Off-Site Residential Building 2	Naphthalene	---	---	---	---	Respiratory	---	---	0.04	0.04
Soil Total				---	---	---	---		---	---	0.04	0.04
							Total Risk Across All Media	---				Total Hazard Across All Media	0.04

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.16 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Indoor Air	Off-Site Residential Building 3	Naphthalene	---	---	---	---	Respiratory	---	---	0.1	0.1
			Heptachlor	---	---	6.E-07	6.E-07		---	---	---	---
Soil Total				---	---	6.E-07	6.E-07		---	---	0.1	0.1
							Total Risk Across All Media					Total Hazard Across All Media
							6.E-07					0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.17 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	West of South Street On-Facility and Vacant Lot 209	Benz(a)anthracene	2.E-07	1.E-07	---	3.E-07	Renal	0.00007	0.00006	---	0.0001
			Benzo(a)pyrene	2.E-06	1.E-06	---	3.E-06	Renal	0.00008	0.00007	---	0.0001
			Benzo(b)fluoranthene	2.E-07	1.E-07	---	3.E-07	Renal	0.00008	0.00007	---	0.0001
			Chrysene	2.E-09	1.E-09	---	3.E-09	Renal	0.00008	0.00007	---	0.0002
			Dibenz(ah)anthracene	2.E-07	2.E-07	---	3.E-07	Renal	0.000009	0.000007	---	0.00002
			Indeno(1,2,3-cd)pyrene	8.E-08	6.E-08	---	1.E-07	Renal	0.00003	0.00003	---	0.00006
			Arsenic	2.E-06	3.E-07	---	2.E-06	Integumental; Cardiovascular	0.04	0.007	---	0.05
			Manganese	---	---	---	---	Neurological	0.002	---	---	0.002
			Vanadium	---	---	---	---	Renal	0.003	---	---	0.003
Soil Total				4.E-06	2.E-06	---	6.E-06		0.04	0.008	---	0.05
							Total Risk Across All Media	6.E-06				Total Hazard Across All Media	0.05

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.18 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Benz(a)anthracene	1.E-06	8.E-07	---	2.E-06	Renal	0.0005	0.0004	---	0.0009
			Benzo(a)pyrene	8.E-06	7.E-06	---	2.E-05	Renal	0.0004	0.0003	---	0.0007
			Benzo(b)fluoranthene	1.E-06	1.E-06	---	3.E-06	Renal	0.0006	0.0005	---	0.001
			Benzo(k)fluoranthene	7.E-08	5.E-08	---	1.E-07	Renal	0.0003	0.0002	---	0.0005
			Chrysene	1.E-08	9.E-09	---	2.E-08	Renal	0.0005	0.0004	---	0.0009
			Dibenz(ah)anthracene	2.E-06	1.E-06	---	3.E-06	Renal	0.00007	0.00006	---	0.0001
			Indeno(1,2,3-cd)pyrene	6.E-07	5.E-07	---	1.E-06	Renal	0.0003	0.0002	---	0.0005
			Antimony	---	---	---	---	Whole Body; Hepatic	0.005	---	---	0.005
			Arsenic	8.E-06	2.E-06	---	1.E-05	Integumental; Cardiovascular	0.2	0.03	---	0.2
			Chromium VI	---	---	---	---	None observed	0.007	---	---	0.007
			Manganese	---	---	---	---	Neurological	0.003	---	---	0.003
			Vanadium	---	---	---	---	Renal	0.004	---	---	0.004
Soil Total				2.E-05	1.E-05	---	3.E-05		0.2	0.04	---	0.2
							Total Risk Across All Media	3.E-05				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.19 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 350	Benzo(a)pyrene	7.E-08	6.E-08	---	1.E-07	Renal	0.000003	0.000003	---	0.000006
			Antimony	---	---	---	---	Whole Body; Hepatic	0.006	---	---	0.006
			Arsenic	7.E-07	1.E-07	---	9.E-07	Integumental; Cardiovascular	0.02	0.003	---	0.02
			Vanadium	---	---	---	---	Renal	0.006	---	---	0.006
Soil Total				8.E-07	2.E-07	---	1.E-06		0.03	0.003	---	0.03
							Total Risk Across All Media	1.E-06				Total Hazard Across All Media	0.03

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.20 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	1.E-08	---	---	1.E-08	Hepatic; Renal; Developmental; Immunological	0.0003	---	---	0.0003
			Benz(a)anthracene	3.E-06	2.E-06	---	5.E-06	Renal	0.0004	0.0003	---	0.0007
			Benzo(a)pyrene	2.E-05	2.E-05	---	4.E-05	Renal	0.0003	0.0002	---	0.0005
			Benzo(b)fluoranthene	3.E-06	2.E-06	---	5.E-06	Renal	0.0003	0.0003	---	0.0006
			Benzo(k)fluoranthene	1.E-07	1.E-07	---	2.E-07	Renal	0.0002	0.0001	---	0.0003
			Chrysene	3.E-08	2.E-08	---	5.E-08	Renal	0.0003	0.0003	---	0.0006
			Dibenz(ah)anthracene	3.E-06	2.E-06	---	5.E-06	Renal	0.00003	3E-05	---	0.00006
			Indeno(1,2,3-cd)pyrene	1.E-06	1.E-06	---	3.E-06	Renal	0.0002	0.0002	---	0.0003
			Arsenic	2.E-06	3.E-07	---	2.E-06	Integumental; Cardiovascular	0.01	0.002	---	0.01
Soil Total				3.E-05	3.E-05	---	6.E-05		0.01	0.003	---	0.02
Soil Gas	Indoor Air	East of South Street On-Facility Building 1	Benzene	---	---	5.E-09	5.E-09	Hematological; Immunological	---	---	0.00005	0.00005
			Carbon tetrachloride	---	---	2.E-06	2.E-06	Hepatic	---	---	0.2	0.2
			Methylene chloride (Dichloromethane)	---	---	2.E-09	2.E-09	Hepatic	---	---	0.00001	0.00001
			Trichloroethylene (TCE)	---	---	2.E-07	2.E-07	Neurological; Hepatic; Endocrine	---	---	0.0002	0.0002
Soil Gas Total				---	---	2.E-06	2.E-06		---	---	0.2	0.2
							Total Risk Across All Media					Total Hazard Across All Media
							6.E-05					0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.21 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	1.E-08	---	---	1.E-08	Hepatic; Renal; Developmental; Immunological	0.0003	---	---	0.0003
			Benz(a)anthracene	3.E-06	2.E-06	---	5.E-06	Renal	0.0004	0.0003	---	0.0007
			Benzo(a)pyrene	2.E-05	2.E-05	---	4.E-05	Renal	0.0003	0.0002	---	0.0005
			Benzo(b)fluoranthene	3.E-06	2.E-06	---	5.E-06	Renal	0.0003	0.0003	---	0.0006
			Benzo(k)fluoranthene	1.E-07	1.E-07	---	2.E-07	Renal	0.0002	0.0001	---	0.0003
			Chrysene	3.E-08	2.E-08	---	5.E-08	Renal	0.0003	0.0003	---	0.0006
			Dibenz(ah)anthracene	3.E-06	2.E-06	---	5.E-06	Renal	0.00003	3E-05	---	0.00006
			Indeno(1,2,3-cd)pyrene	1.E-06	1.E-06	---	3.E-06	Renal	0.0002	0.0002	---	0.0003
			Arsenic	2.E-06	3.E-07	---	2.E-06	Integumental; Cardiovascular	0.01	0.002	---	0.01
Soil Total				3.E-05	3.E-05	---	6.E-05		0.01	0.003	---	0.02
Soil Gas	Indoor Air	East of South Street On-Facility Building 2	Benzene	---	---	7.E-09	7.E-09	Hematological; Immunological	---	---	0.00008	0.00008
			Tetrachloroethylene (PCE)	---	---	1.E-08	1.E-08	Neurological	---	---	0.00002	0.00002
			Trichloroethylene (TCE)	---	---	4.E-08	4.E-08	Neurological; Hepatic; Endocrine	---	---	0.00003	0.00003
			1,2,4-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.0007	0.0007
			Naphthalene	---	---	---	---	Respiratory	---	---	0.0005	0.0005
Soil Gas Total				---	---	6.E-08	6.E-08		---	---	0.001	0.001
						Total Risk Across All Media	6.E-05				Total Hazard Across All Media	0.02

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.22 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	1.E-08	---	---	1.E-08	Hepatic; Renal; Developmental; Immunological	0.0003	---	---	0.0003
			Benz(a)anthracene	3.E-06	2.E-06	---	5.E-06	Renal	0.0004	0.0003	---	0.0007
			Benzo(a)pyrene	2.E-05	2.E-05	---	4.E-05	Renal	0.0003	0.0002	---	0.0005
			Benzo(b)fluoranthene	3.E-06	2.E-06	---	5.E-06	Renal	0.0003	0.0003	---	0.0006
			Benzo(k)fluoranthene	1.E-07	1.E-07	---	2.E-07	Renal	0.0002	0.0001	---	0.0003
			Chrysene	3.E-08	2.E-08	---	5.E-08	Renal	0.0003	0.0003	---	0.0006
			Dibenz(ah)anthracene	3.E-06	2.E-06	---	5.E-06	Renal	0.00003	3E-05	---	0.00006
			Indeno(1,2,3-cd)pyrene	1.E-06	1.E-06	---	3.E-06	Renal	0.0002	0.0002	---	0.0003
			Arsenic	2.E-06	3.E-07	---	2.E-06	Integumental; Cardiovascular	0.01	0.002	---	0.01
	Exposure Medium Total			3.E-05	3.E-05	---	6.E-05		0.01	0.003	---	0.02
	Indoor Air	East of South Street On-Facility Building 3	Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.002	0.002
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.007	0.007
			Naphthalene	---	---	---	---	Respiratory	---	---	0.02	0.02
			Heptachlor	---	---	2.E-08	2.E-08		---	---	---	---
	Exposure Medium Total			---	---	2.E-08	2.E-08		---	---	0.03	0.03
Soil Total				3.E-05	3.E-05	2.E-08	6.E-05		0.01	0.003	0.03	0.05
							Total Risk Across All Media	6.E-05				Total Hazard Across All Media	0.05

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.23 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	1.E-08	---	---	1.E-08	Hepatic; Renal; Developmental; Immunological	0.0003	---	---	0.0003
			Benz(a)anthracene	3.E-06	2.E-06	---	5.E-06	Renal	0.0004	0.0003	---	0.0007
			Benzo(a)pyrene	2.E-05	2.E-05	---	4.E-05	Renal	0.0003	0.0002	---	0.0005
			Benzo(b)fluoranthene	3.E-06	2.E-06	---	5.E-06	Renal	0.0003	0.0003	---	0.0006
			Benzo(k)fluoranthene	1.E-07	1.E-07	---	2.E-07	Renal	0.0002	0.0001	---	0.0003
			Chrysene	3.E-08	2.E-08	---	5.E-08	Renal	0.0003	0.0003	---	0.0006
			Dibenz(ah)anthracene	3.E-06	2.E-06	---	5.E-06	Renal	0.00003	3E-05	---	0.00006
			Indeno(1,2,3-cd)pyrene	1.E-06	1.E-06	---	3.E-06	Renal	0.0002	0.0002	---	0.0003
			Arsenic	2.E-06	3.E-07	---	2.E-06	Integumental; Cardiovascular	0.01	0.002	---	0.01
	Exposure Medium Total			3.E-05	3.E-05	---	6.E-05		0.01	0.003	---	0.02
	Indoor Air	East of South Street On-Facility Building 4	Benzene	---	---	1.E-06	1.E-06	Hematological; Immunological	---	---	0.01	0.01
			Ethylbenzene	---	---	1.E-08	1.E-08	Developmental	---	---	0.00003	0.00003
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.04	0.04
			Naphthalene	---	---	---	---	Respiratory	---	---	0.08	0.08
	Exposure Medium Total			---	---	1.E-06	1.E-06		---	---	0.1	0.1
Soil Total				3.E-05	3.E-05	1.E-06	6.E-05		0.01	0.003	0.1	0.1
							Total Risk Across All Media	6.E-05				Total Hazard Across All Media	0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.24 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	1.E-08	---	---	1.E-08	Hepatic; Renal; Developmental; Immunological	0.0003	---	---	0.0003
			Benz(a)anthracene	3.E-06	2.E-06	---	5.E-06	Renal	0.0004	0.0003	---	0.0007
			Benzo(a)pyrene	2.E-05	2.E-05	---	4.E-05	Renal	0.0003	0.0002	---	0.0005
			Benzo(b)fluoranthene	3.E-06	2.E-06	---	5.E-06	Renal	0.0003	0.0003	---	0.0006
			Benzo(k)fluoranthene	1.E-07	1.E-07	---	2.E-07	Renal	0.0002	0.0001	---	0.0003
			Chrysene	3.E-08	2.E-08	---	5.E-08	Renal	0.0003	0.0003	---	0.0006
			Dibenz(ah)anthracene	3.E-06	2.E-06	---	5.E-06	Renal	0.00003	3E-05	---	0.00006
			Indeno(1,2,3-cd)pyrene	1.E-06	1.E-06	---	3.E-06	Renal	0.0002	0.0002	---	0.0003
			Arsenic	2.E-06	3.E-07	---	2.E-06	Integumental; Cardiovascular	0.01	0.002	---	0.01
	Exposure Medium Total			3.E-05	3.E-05	---	6.E-05		0.01	0.003	---	0.02
	Indoor Air	East of South Street On-Facility Building 5	Benzene	---	---	1.E-07	1.E-07	Hematological; Immunological	---	---	0.001	0.001
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.02	0.02
			Naphthalene	---	---	---	---	Respiratory	---	---	0.07	0.07
	Exposure Medium Total			---	---	1.E-07	1.E-07		---	---	0.09	0.09
Soil Total				3.E-05	3.E-05	1.E-07	6.E-05		0.01	0.003	0.09	0.1
						Total Risk Across All Media	6.E-05				Total Hazard Across All Media	0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.25 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Wader
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Sediment	Sediment	Lewis Pond	Benz(a)anthracene	7.E-08	8.E-08	---	2.E-07	Renal	0.00003	0.00004	---	0.00007
			Benzo(a)pyrene	8.E-07	8.E-07	---	2.E-06	Renal	0.00003	0.00004	---	0.00007
			Benzo(b)fluoranthene	1.E-07	1.E-07	---	2.E-07	Renal	0.00004	0.00005	---	0.00009
			Dibenz(ah)anthracene	6.E-08	6.E-08	---	1.E-07	Renal	0.000003	0.000003	---	0.000006
			Indeno(1,2,3-cd)pyrene	2.E-08	2.E-08	---	4.E-08	Renal	0.000009	0.000009	---	0.00002
			Antimony	---	---	---	---	Whole Body; Hepatic	0.007	---	---	0.007
			Arsenic	1.E-06	3.E-07	---	2.E-06	Integumental; Cardiovascular	0.03	0.007	---	0.03
			Beryllium	---	---	---	---	Gastrointestinal Tract	0.0001	---	---	0.0001
			Cadmium	---	---	---	---	Renal	0.002	0.0007	---	0.003
			Chromium VI	---	---	---	---	None observed	0.04	---	---	0.04
			Manganese	---	---	---	---	Neurological	0.005	---	---	0.005
			Nickel	---	---	---	---	Whole Body; Hepatic	0.006	---	---	0.006
			Vanadium	---	---	---	---	Renal	0.005	---	---	0.005
Sediment Total				2.E-06	1.E-06	---	4.E-06		0.09	0.008	---	0.1
							Total Risk Across All Media	4.E-06				Total Hazard Across All Media	0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.26 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Wader
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Water	Surface Water	Neponset River East of South Street	Manganese	---	---	---	---	Neurological	---	0.0007	---	0.0007
Surface Water Total				---	---	---	---		---	0.0007	---	0.0007
Sediment	Sediment	Neponset River East of South Street	Benzo(a)pyrene	8.E-08	8.E-08	---	2.E-07	Renal	0.000004	0.000004	---	0.000008
			Arsenic	9.E-08	2.E-08	---	1.E-07	Integumental; Cardiovascular	0.002	0.0005	---	0.002
			Manganese	---	---	---	---	Neurological	0.004	---	---	0.004
			Vanadium	---	---	---	---	Renal	0.002	---	---	0.002
Sediment Total				2.E-07	1.E-07	---	3.E-07		0.008	0.0005	---	0.008
							Total Risk Across All Media	3.E-07				Total Hazard Across All Media	0.009

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.27 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Wader
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Water	Surface Water	Neponset River West of South Street	Manganese	---	---	---	---	Neurological	---	0.001	---	0.001
Surface Water Total				---	---	---	---		---	0.001	---	0.001
Sediment	Sediment	Neponset River West of South Street	Benz(a)anthracene	4.E-08	4.E-08	---	8.E-08	Renal	0.00002	0.00002	---	0.00004
			Benzo(a)pyrene	4.E-07	4.E-07	---	8.E-07	Renal	0.00002	0.00002	---	0.00004
			Benzo(b)fluoranthene	5.E-08	5.E-08	---	9.E-08	Renal	0.00002	0.00002	---	0.00004
			Dibenz(ah)anthracene	6.E-08	6.E-08	---	1.E-07	Renal	0.000003	0.000003	---	0.000005
			Indeno(1,2,3-cd)pyrene	2.E-08	2.E-08	---	4.E-08	Renal	0.000008	0.000009	---	0.00002
			Arsenic	2.E-07	6.E-08	---	3.E-07	Integumental; Cardiovascular	0.006	0.001	---	0.007
			Manganese	---	---	---	---	Neurological	0.004	---	---	0.004
			Vanadium	---	---	---	---	Renal	0.001	---	---	0.001
Sediment Total				8.E-07	7.E-07	---	1.E-06		0.01	0.001	---	0.01
							Total Risk Across All Media	1.E-06				Total Hazard Across All Media	0.01

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.28 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Wader
Receptor Age: Older Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Water	Surface Water	Former Mill Tailrace	Naphthalene	---	---	---	---	Whole Body	---	0.0001	---	0.0001
			Arsenic	---	7.E-08	---	7.E-08	Integumental; Cardiovascular	---	0.002	---	0.002
			Chromium VI	---	---	---	---	None observed	---	0.01	---	0.01
			Manganese	---	---	---	---	Neurological	---	0.005	---	0.005
			Vanadium	---	---	---	---	Renal	---	0.01	---	0.01
Surface Water Total				---	7.E-08	---	7.E-08		---	0.03	---	0.03
Sediment	Sediment	Former Mill Tailrace	Benz(a)anthracene	1.E-07	1.E-07	---	2.E-07	Renal	0.00004	0.00005	---	0.00009
			Benzo(a)pyrene	8.E-07	9.E-07	---	2.E-06	Renal	0.00004	0.00004	---	0.00008
			Benzo(b)fluoranthene	1.E-07	1.E-07	---	3.E-07	Renal	0.00006	0.00006	---	0.0001
			Dibenz(ah)anthracene	6.E-08	6.E-08	---	1.E-07	Renal	0.000003	0.000003	---	0.000006
			Indeno(1,2,3-cd)pyrene	6.E-08	7.E-08	---	1.E-07	Renal	0.00003	0.00003	---	0.00006
			Arsenic	6.E-07	1.E-07	---	8.E-07	Integumental; Cardiovascular	0.01	0.003	---	0.02
			Chromium VI	---	---	---	---	None observed	0.005	---	---	0.005
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.004	---	---	0.004
Sediment Total				2.E-06	1.E-06	---	3.E-06		0.04	0.003	---	0.04
							Total Risk Across All Media	3.E-06				Total Hazard Across All Media	0.08

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.29 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fisher and Fish Consumer
Receptor Age: Adult and Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Sediment	Sediment	Lewis Pond	Benz(a)anthracene	1.E-07	7.E-08	---	2.E-07	Renal	0.00002	0.00001	---	0.00003
			Benzo(a)pyrene	1.E-06	8.E-07	---	2.E-06	Renal	0.00002	0.00001	---	0.00003
			Benzo(b)fluoranthene	2.E-07	1.E-07	---	3.E-07	Renal	0.00002	0.00001	---	0.00004
			Dibenz(ah)anthracene	1.E-07	6.E-08	---	2.E-07	Renal	0.000001	0.0000008	---	0.000002
			Indeno(1,2,3-cd)pyrene	3.E-08	2.E-08	---	5.E-08	Renal	0.000005	0.000002	---	0.000007
			Antimony	---	---	---	---	Whole Body; Hepatic	0.004	---	---	0.004
			Arsenic	2.E-06	3.E-07	---	3.E-06	Integumental; Cardiovascular	0.01	0.002	---	0.02
			Beryllium	---	---	---	---	Gastrointestinal Tract	0.00008	---	---	0.00008
			Cadmium	---	---	---	---	Renal	0.001	0.0002	---	0.001
			Chromium VI	---	---	---	---	None observed	0.02	---	---	0.02
			Manganese	---	---	---	---	Neurological	0.002	---	---	0.002
			Nickel	---	---	---	---	Whole Body; Hepatic	0.003	---	---	0.003
			Vanadium	---	---	---	---	Renal	0.002	---	---	0.002
Sediment Total				4.E-06	1.E-06	---	5.E-06		0.05	0.002	---	0.05
Fish	Fish tissue	Lewis Pond	Benzo(a)pyrene	5.E-06	---	---	5.E-06	Renal	0.00009	---	---	0.00009
			Benzo(b)fluoranthene	8.E-07	---	---	8.E-07	Renal	0.0002	---	---	0.0002
			Bis(2-ethylhexyl)phthalate (DEHP)	2.E-05	---	---	2.E-05	Hepatic	0.2	---	---	0.2
			Arsenic	1.E-05	---	---	1.E-05	Integumental; Cardiovascular	0.1	---	---	0.1
			Mercury	---	---	---	---	Immunological	0.2	---	---	0.2
Fish Total				3.E-05	---	---	3.E-05		0.5	---	---	0.5
							Total Risk Across All Media	4.E-05				Total Hazard Across All Media	0.6

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.30 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fisher and Fish Consumer
Receptor Age: Adult and Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Water	Surface Water	Neponset River East of South Street	Manganese	---	---	---	---	Neurological	---	0.0006	---	0.0006
Surface Water Total				---	---	---	---		---	0.0006	---	0.0006
Sediment	Sediment	Neponset River East of South Street	Benzo(a)pyrene	1.E-07	8.E-08	---	2.E-07	Renal	0.000002	0.000001	---	0.000003
			Arsenic	2.E-07	2.E-08	---	2.E-07	Integumental; Cardiovascular	0.001	0.0001	---	0.001
			Manganese	---	---	---	---	Neurological	0.002	---	---	0.002
			Vanadium	---	---	---	---	Renal	0.0009	---	---	0.0009
Sediment Total				3.E-07	1.E-07	---	4.E-07		0.004	0.0001	---	0.004
Fish	Fish tissue	Neponset River	Benzo(a)pyrene	2.E-06	---	---	2.E-06	Renal	0.00005	---	---	0.00005
			Dibenz(ah)anthracene	2.E-06	---	---	2.E-06	Renal	0.00003	---	---	0.00003
			Bis(2-ethylhexyl)phthalate (DEHP)	7.E-05	---	---	7.E-05	Hepatic	1	---	---	1
			Arsenic	6.E-06	---	---	6.E-06	Integumental; Cardiovascular	0.05	---	---	0.05
			Mercury	---	---	---	---	Immunological	0.4	---	---	0.4
			Zinc	---	---	---	---	Hematological	0.06	---	---	0.06
Fish Total				8.E-05	---	---	8.E-05		2	---	---	2
							Total Risk Across All Media	8.E-05				Total Hazard Across All Media	2

Total Cardiovascular HI Across All Media	0.06
Total Hematological HI Across All Media	0.06
Total Hepatic HI Across All Media	1
Total Immunological HI Across All Media	0.4
Total Integumental HI Across All Media	0.06
Total Neurological HI Across All Media	0.003
Total Renal HI Across All Media	0.001

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.30 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fisher and Fish Consumer
Receptor Age: Adult and Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Water	Surface Water	Neponset River East of South Street	Manganese	---	---	---	---	Neurological	---	0.0001	---	0.0001
Surface Water Total				---	---	---	---		---	0.0001	---	0.0001
Sediment	Sediment	Neponset River East of South Street	Benzo(a)pyrene	3.E-09	4.E-10	---	3.E-09	Renal	1E-07	2E-08	---	0.0000001
			Arsenic	4.E-09	1.E-10	---	4.E-09	Integumental; Cardiovascular	0.00009	3E-06	---	0.00009
			Manganese	---	---	---	---	Neurological	0.0001	---	---	0.0001
			Vanadium	---	---	---	---	Renal	0.00008	---	---	0.00008
Sediment Total				7.E-09	6.E-10	---	7.E-09		0.0003	3E-06	---	0.0003
Fish	Fish tissue	Neponset River	Benzo(a)pyrene	3.E-07	---	---	3.E-07	Renal	0.00002	---	---	0.00002
			Dibenz(ah)anthracene	2.E-07	---	---	2.E-07	Renal	0.00001	---	---	0.00001
			Bis(2-ethylhexyl)phthalate (DEHP)	2.E-06	---	---	2.E-06	Hepatic	0.1	---	---	0.1
			Arsenic	7.E-07	---	---	7.E-07	Integumental; Cardiovascular	0.02	---	---	0.02
			Mercury	---	---	---	---	Immunological	0.2	---	---	0.2
			Zinc	---	---	---	---	Hematological	0.02	---	---	0.02
Fish Total				3.E-06	---	---	3.E-06		0.3	---	---	0.3
							Total Risk Across All Media	3.E-06				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.31 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fisher and Fish Consumer
Receptor Age: Adult and Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Water	Surface Water	Neponset River West of South Street	Manganese	---	---	---	---	Neurological	---	0.001	---	0.001
Surface Water Total				---	---	---	---		---	0.001	---	0.001
Sediment	Sediment	Neponset River West of South Street	Benz(a)anthracene	7.E-08	4.E-08	---	1.E-07	Renal	0.000009	5E-06	---	0.00001
			Benzo(a)pyrene	7.E-07	4.E-07	---	1.E-06	Renal	0.00001	5E-06	---	0.00002
			Benzo(b)fluoranthene	8.E-08	5.E-08	---	1.E-07	Renal	0.00001	6E-06	---	0.00002
			Dibenz(ah)anthracene	1.E-07	6.E-08	---	2.E-07	Renal	0.000001	7E-07	---	0.000002
			Indeno(1,2,3-cd)pyrene	3.E-08	2.E-08	---	5.E-08	Renal	0.000004	2E-06	---	0.000007
			Arsenic	5.E-07	6.E-08	---	5.E-07	Integumental; Cardiovascular	0.003	0.0004	---	0.003
			Manganese	---	---	---	---	Neurological	0.002	---	---	0.002
			Vanadium	---	---	---	---	Renal	0.0007	---	---	0.0007
Sediment Total				1.E-06	6.E-07	---	2.E-06		0.006	0.0004	---	0.006
Fish	Fish tissue	Neponset River	Benzo(a)pyrene	2.E-06	---	---	2.E-06	Renal	0.00005	---	---	0.00005
			Dibenz(ah)anthracene	2.E-06	---	---	2.E-06	Renal	0.00003	---	---	0.00003
			Bis(2-ethylhexyl)phthalate (DEHP)	7.E-05	---	---	7.E-05	Hepatic	1	---	---	1
			Arsenic	6.E-06	---	---	6.E-06	Integumental; Cardiovascular	0.05	---	---	0.05
			Mercury	---	---	---	---	Immunological	0.4	---	---	0.4
			Zinc	---	---	---	---	Hematological	0.06	---	---	0.06
Fish Total				8.E-05	---	---	8.E-05		2	---	---	2
							Total Risk Across All Media	8.E-05				Total Hazard Across All Media	2

Total Cardiovascular HI Across All Media	0.06
Total Hematological HI Across All Media	0.06
Total Hepatic HI Across All Media	1
Total Immunological HI Across All Media	0.4
Total Integumental HI Across All Media	0.06
Total Neurological HI Across All Media	0.003
Total Renal HI Across All Media	0.004

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.31 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Current/Future
Receptor Population: Fisher and Fish Consumer
Receptor Age: Adult and Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Water	Surface Water	Neponset River West of South Street	Manganese	---	---	---	---	Neurological	---	0.0002	---	0.0002
Surface Water Total				---	---	---	---		---	0.0002	---	0.0002
Sediment	Sediment	Neponset River West of South Street	Benz(a)anthracene	2.E-09	4.E-10	---	3.E-09	Renal	0.000001	2E-07	---	0.000001
			Benzo(a)pyrene	3.E-08	4.E-09	---	3.E-08	Renal	0.000001	2E-07	---	0.000001
			Benzo(b)fluoranthene	3.E-09	4.E-10	---	3.E-09	Renal	0.000001	2E-07	---	0.000001
			Dibenz(ah)anthracene	3.E-09	5.E-10	---	4.E-09	Renal	2E-07	2E-08	---	0.0000002
			Indeno(1,2,3-cd)pyrene	1.E-09	2.E-10	---	1.E-09	Renal	5E-07	8E-08	---	0.0000006
			Arsenic	2.E-08	6.E-10	---	2.E-08	Integumental; Cardiovascular	0.0003	1E-05	---	0.0004
			Manganese	---	---	---	---	Neurological	0.0003	---	---	0.0003
			Vanadium	---	---	---	---	Renal	0.00008	---	---	0.00008
Sediment Total				5.E-08	6.E-09	---	6.E-08		0.0007	1E-05	---	0.0007
Fish	Fish tissue	Neponset River	Benzo(a)pyrene	3.E-07	---	---	3.E-07	Renal	0.00002	---	---	0.00002
			Dibenz(ah)anthracene	2.E-07	---	---	2.E-07	Renal	0.00001	---	---	0.00001
			Bis(2-ethylhexyl)phthalate (DEHP)	2.E-06	---	---	2.E-06	Hepatic	0.1	---	---	0.1
			Arsenic	7.E-07	---	---	7.E-07	Integumental; Cardiovascular	0.02	---	---	0.02
			Mercury	---	---	---	---	Immunological	0.2	---	---	0.2
			Zinc	---	---	---	---	Hematological	0.02	---	---	0.02
Fish Total				3.E-06	---	---	3.E-06		0.3	---	---	0.3
							Total Risk Across All Media	3.E-06				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.32 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	2.E-06	---	---	2.E-06	Hepatic; Renal; Developmental; Immunological	0.2	---	---	0.2
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.01	0.005	---	0.02
			Naphthalene	---	---	---	---	Whole Body	0.006	0.002	---	0.008
			Benz(a)anthracene	1.E-05	6.E-06	---	2.E-05	Renal	0.005	0.002	---	0.007
			Benzo(a)pyrene	1.E-04	6.E-05	---	2.E-04	Renal	0.005	0.002	---	0.007
			Benzo(b)fluoranthene	2.E-05	7.E-06	---	2.E-05	Renal	0.006	0.002	---	0.008
			Benzo(k)fluoranthene	9.E-07	4.E-07	---	1.E-06	Renal	0.003	0.001	---	0.005
			Chrysene	1.E-07	6.E-08	---	2.E-07	Renal	0.005	0.002	---	0.007
			Dibenz(ah)anthracene	1.E-05	5.E-06	---	2.E-05	Renal	0.0004	0.0002	---	0.0006
			Indeno(1,2,3-cd)pyrene	4.E-06	2.E-06	---	6.E-06	Renal	0.002	0.0006	---	0.002
			Dibenzofuran	---	---	---	---	Renal	0.03	0.008	---	0.04
			Antimony	---	---	---	---	Whole Body; Hepatic	0.03	---	---	0.03
			Arsenic	4.E-06	4.E-07	---	4.E-06	Integumental; Cardiovascular	0.07	0.006	---	0.08
			Chromium VI	---	---	---	---	None observed	0.03	---	---	0.03
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Mercury	---	---	---	---	Immunological	0.1	---	---	0.1
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
			Zinc	---	---	---	---	Hematological	0.03	---	---	0.03
	Exposure Medium Total			2.E-04	8.E-05	---	3.E-04		0.6	0.03	---	0.6
	Plant tissue	East of South Street On-Facility	Arsenic	1.E-05	---	---	1.E-05	Integumental; Cardiovascular	0.08	---	---	0.08
			Chromium VI	---	---	---	---	None observed	0.1	---	---	0.1
			Mercury	---	---	---	---	Immunological	0.03	---	---	0.03
			Zinc	---	---	---	---	Hematological	0.2	---	---	0.2
	Exposure Medium Total			1.E-05	---	---	1.E-05		0.5	---	---	0.5
Soil Total				2.E-04	8.E-05	---	3.E-04		1	0.03	---	1

Table 9.32 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Benzene	---	---	8.E-08	8.E-08	Hematological; Immunological	---	---	0.0008	0.0008
			Carbon tetrachloride	---	---	7.E-08	7.E-08	Hepatic	---	---	0.005	0.005
			Chloroform	---	---	2.E-07	2.E-07	Renal; Hepatic; Neurological	---	---	0.0005	0.0005
			1,2-Dichloroethylene (cis)	---	---	---	---	Hepatic	---	---	0.0005	0.0005
			Ethylbenzene	---	---	2.E-08	2.E-08	Developmental	---	---	0.00004	0.00004
			Methylene chloride (Dichloromethane)	---	---	3.E-08	3.E-08	Hepatic	---	---	0.0001	0.0001
			Tetrachloroethylene (PCE)	---	---	2.E-07	2.E-07	Neurological	---	---	0.0002	0.0002
			Trichloroethylene (TCE)	---	---	6.E-04	6.E-04	Neurological; Hepatic; Endocrine	---	---	0.3	0.3
			1,2,4-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.02	0.02
			1,3,5-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.007	0.007
			Naphthalene	---	---	---	---	Respiratory	---	---	0.01	0.01
Soil Gas Total				---	---	6.E-04	6.E-04		---	---	0.3	0.3
							Total Risk Across All Media	8.E-04				Total Hazard Across All Media	1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.32 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	4.E-07	---	---	4.E-07	Hepatic; Renal; Developmental; Immunological	0.08	---	---	0.08
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.007	0.0009	---	0.007
			Naphthalene	---	---	---	---	Whole Body	0.003	0.0004	---	0.003
			Benz(a)anthracene	2.E-06	3.E-07	---	3.E-06	Renal	0.003	0.0004	---	0.003
			Benzo(a)pyrene	2.E-05	3.E-06	---	2.E-05	Renal	0.003	0.0004	---	0.003
			Benzo(b)fluoranthene	3.E-06	4.E-07	---	3.E-06	Renal	0.003	0.0004	---	0.003
			Benzo(k)fluoranthene	1.E-07	2.E-08	---	2.E-07	Renal	0.002	0.0002	---	0.002
			Chrysene	2.E-08	3.E-09	---	2.E-08	Renal	0.003	0.0004	---	0.003
			Dibenz(ah)anthracene	2.E-06	3.E-07	---	2.E-06	Renal	0.0002	3E-05	---	0.0003
			Indeno(1,2,3-cd)pyrene	7.E-07	1.E-07	---	8.E-07	Renal	0.0008	0.0001	---	0.001
			Dibenzofuran	---	---	---	---	Renal	0.01	0.002	---	0.02
			Antimony	---	---	---	---	Whole Body; Hepatic	0.02	---	---	0.02
			Arsenic	6.E-07	2.E-08	---	7.E-07	Integumental; Cardiovascular	0.04	0.001	---	0.04
			Chromium VI	---	---	---	---	None observed	0.01	---	---	0.01
			Manganese	---	---	---	---	Neurological	0.009	---	---	0.009
			Mercury	---	---	---	---	Immunological	0.05	---	---	0.05
			Vanadium	---	---	---	---	Renal	0.02	---	---	0.02
			Zinc	---	---	---	---	Hematological	0.02	---	---	0.02
Soil Total				3.E-05	4.E-06	---	3.E-05		0.3	0.006	---	0.3
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Benzene	---	---	2.E-08	2.E-08	Hematological; Immunological	---	---	0.0007	0.0007
			Carbon tetrachloride	---	---	1.E-08	1.E-08	Hepatic	---	---	0.005	0.005
			Chloroform	---	---	5.E-08	5.E-08	Renal; Hepatic; Neurological	---	---	0.0004	0.0004
			1,2-Dichloroethylene (cis)	---	---	---	---	Hepatic	---	---	0.0004	0.0004
			Ethylbenzene	---	---	4.E-09	4.E-09	Developmental	---	---	0.00003	0.00003
			Methylene chloride (Dichloromethane)	---	---	6.E-09	6.E-09	Hepatic	---	---	0.0001	0.0001
			Tetrachloroethylene (PCE)	---	---	4.E-08	4.E-08	Neurological	---	---	0.0002	0.0002
			Trichloroethylene (TCE)	---	---	1.E-05	1.E-05	Neurological; Hepatic; Endocrine	---	---	0.03	0.03
			1,2,4-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.01	0.01
			1,3,5-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.006	0.006
			Naphthalene	---	---	---	---	Respiratory	---	---	0.009	0.009
Soil Gas Total				---	---	1.E-05	1.E-05		---	---	0.06	0.06
							Total Risk Across All Media	5.E-05				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.33 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	2.E-06	---	---	2.E-06	Hepatic; Renal; Developmental; Immunological	0.2	---	---	0.2
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.01	0.005	---	0.02
			Naphthalene	---	---	---	---	Whole Body	0.006	0.002	---	0.008
			Benz(a)anthracene	1.E-05	6.E-06	---	2.E-05	Renal	0.005	0.002	---	0.007
			Benzo(a)pyrene	1.E-04	6.E-05	---	2.E-04	Renal	0.005	0.002	---	0.007
			Benzo(b)fluoranthene	2.E-05	7.E-06	---	2.E-05	Renal	0.006	0.002	---	0.008
			Benzo(k)fluoranthene	9.E-07	4.E-07	---	1.E-06	Renal	0.003	0.001	---	0.005
			Chrysene	1.E-07	6.E-08	---	2.E-07	Renal	0.005	0.002	---	0.007
			Dibenz(ah)anthracene	1.E-05	5.E-06	---	2.E-05	Renal	0.0004	0.0002	---	0.0006
			Indeno(1,2,3-cd)pyrene	4.E-06	2.E-06	---	6.E-06	Renal	0.002	0.0006	---	0.002
			Dibenzofuran	---	---	---	---	Renal	0.03	0.008	---	0.04
			Antimony	---	---	---	---	Whole Body; Hepatic	0.03	---	---	0.03
			Arsenic	4.E-06	4.E-07	---	4.E-06	Integumental; Cardiovascular	0.07	0.006	---	0.08
			Chromium VI	---	---	---	---	None observed	0.03	---	---	0.03
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Mercury	---	---	---	---	Immunological	0.1	---	---	0.1
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
			Zinc	---	---	---	---	Hematological	0.03	---	---	0.03
	Exposure Medium Total			2.E-04	8.E-05	---	3.E-04		0.6	0.03	---	0.6
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Benzene	---	---	6.E-07	6.E-07	Hematological; Immunological	---	---	0.006	0.006
			Ethylbenzene	---	---	2.E-08	2.E-08	Developmental	---	---	0.00004	0.00004
			Trichloroethylene (TCE)	---	---	5.E-07	5.E-07	Neurological; Hepatic; Endocrine	---	---	0.0003	0.0003
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.6	0.6
			Naphthalene	---	---	---	---	Respiratory	---	---	1	1
			Heptachlor	---	---	5.E-07	5.E-07		---	---	---	---
	Exposure Medium Total			---	---	2.E-06	2.E-06		---	---	2	2
	Plant tissue	East of South Street On-Facility	Arsenic	1.E-05	---	---	1.E-05	Integumental; Cardiovascular	0.08	---	---	0.08
			Chromium VI	---	---	---	---	None observed	0.1	---	---	0.1
			Mercury	---	---	---	---	Immunological	0.03	---	---	0.03
			Zinc	---	---	---	---	Hematological	0.2	---	---	0.2
	Exposure Medium Total			1.E-05	---	---	1.E-05		0.5	---	---	0.5
Soil Total				2.E-04	8.E-05	2.E-06	3.E-04		1	0.03	2	3
							Total Risk Across All Media	3.E-04				Total Hazard Across All Media	3

Total Respiratory HI Across All Media: 2

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.33 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	4.E-07	---	---	4.E-07	Hepatic; Renal; Developmental; Immunological	0.08	---	---	0.08
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.007	0.0009	---	0.007
			Naphthalene	---	---	---	---	Whole Body	0.003	0.0004	---	0.003
			Benz(a)anthracene	2.E-06	3.E-07	---	3.E-06	Renal	0.003	0.0004	---	0.003
			Benzo(a)pyrene	2.E-05	3.E-06	---	2.E-05	Renal	0.003	0.0004	---	0.003
			Benzo(b)fluoranthene	3.E-06	4.E-07	---	3.E-06	Renal	0.003	0.0004	---	0.003
			Benzo(k)fluoranthene	1.E-07	2.E-08	---	2.E-07	Renal	0.002	0.0002	---	0.002
			Chrysene	2.E-08	3.E-09	---	2.E-08	Renal	0.003	0.0004	---	0.003
			Dibenz(ah)anthracene	2.E-06	3.E-07	---	2.E-06	Renal	0.0002	3E-05	---	0.0003
			Indeno(1,2,3-cd)pyrene	7.E-07	1.E-07	---	8.E-07	Renal	0.0008	0.0001	---	0.001
			Dibenzofuran	---	---	---	---	Renal	0.01	0.002	---	0.02
			Antimony	---	---	---	---	Whole Body; Hepatic	0.02	---	---	0.02
			Arsenic	6.E-07	2.E-08	---	7.E-07	Integumental; Cardiovascular	0.04	0.001	---	0.04
			Chromium VI	---	---	---	---	None observed	0.01	---	---	0.01
			Manganese	---	---	---	---	Neurological	0.009	---	---	0.009
			Mercury	---	---	---	---	Immunological	0.05	---	---	0.05
			Vanadium	---	---	---	---	Renal	0.02	---	---	0.02
			Zinc	---	---	---	---	Hematological	0.02	---	---	0.02
	Exposure Medium Total			3.E-05	4.E-06	---	3.E-05		0.3	0.006	---	0.3
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Benzene	---	---	4.E-07	4.E-07	Hematological; Immunological	---	---	0.02	0.02
			Ethylbenzene	---	---	1.E-08	1.E-08	Developmental	---	---	0.0001	0.0001
			Trichloroethylene (TCE)	---	---	3.E-07	3.E-07	Neurological; Hepatic; Endocrine	---	---	0.0008	0.0008
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.5	0.5
			Naphthalene	---	---	---	---	Respiratory	---	---	1	1
			Heptachlor	---	---	1.E-07	1.E-07		---	---	---	---
	Exposure Medium Total			---	---	9.E-07	9.E-07		---	---	2	2
Soil Total				3.E-05	4.E-06	9.E-07	4.E-05		0.3	0.006	2	2
							Total Risk Across All Media	4.E-05				Total Hazard Across All Media	2

Total Respiratory HI Across All Media: 2

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.34 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	West of South Street On-Facility	Benz(a)anthracene	2.E-06	7.E-07	---	2.E-06	Renal	0.0006	0.0002	---	0.0008
			Benzo(a)pyrene	2.E-05	7.E-06	---	3.E-05	Renal	0.0007	0.0002	---	0.0009
			Benzo(b)fluoranthene	2.E-06	7.E-07	---	2.E-06	Renal	0.0007	0.0002	---	0.0009
			Chrysene	2.E-08	8.E-09	---	3.E-08	Renal	0.0007	0.0003	---	0.001
			Dibenz(ah)anthracene	2.E-06	8.E-07	---	3.E-06	Renal	0.00008	3E-05	---	0.0001
			Indeno(1,2,3-cd)pyrene	8.E-07	3.E-07	---	1.E-06	Renal	0.0003	0.0001	---	0.0004
			Arsenic	1.E-05	9.E-07	---	1.E-05	Integumental; Cardiovascular	0.2	0.01	---	0.2
			Chromium VI	---	---	---	---	None observed	0.02	---	---	0.02
			Manganese	---	---	---	---	Neurological	0.01	---	---	0.01
			Mercury	---	---	---	---	Immunological	0.04	---	---	0.04
			Vanadium	---	---	---	---	Renal	0.02	---	---	0.02
	Exposure Medium Total			3.E-05	1.E-05	---	4.E-05		0.3	0.02	---	0.3
	Plant tissue	West of South Street On-Facility	Arsenic	3.E-05	---	---	3.E-05	Integumental; Cardiovascular	0.2	---	---	0.2
			Chromium VI	---	---	---	---	None observed	0.07	---	---	0.07
			Mercury	---	---	---	---	Immunological	0.02	---	---	0.02
	Exposure Medium Total			3.E-05	---	---	3.E-05		0.3	---	---	0.3
Soil Total				6.E-05	1.E-05	---	7.E-05		0.6	0.02	---	0.6
Soil/Groundwater (1)	Indoor Air	West of South Street On-Facility	Benzene	---	---	1.E-05	1.E-05	Hematological; Immunological	---	---	0.1	0.1
			Carbon disulfide	---	---	---	---	Neurological	---	---	0.0001	0.0001
			Chloroform	---	---	1.E-07	1.E-07	Renal; Hepatic; Neurological	---	---	0.0002	0.0002
			2-Hexanone	---	---	---	---	Neurological; Reproductive	---	---	0.004	0.004
			Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.001	0.001
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.2	0.2
			Naphthalene	---	---	---	---	Respiratory	---	---	0.3	0.3
Soil/Groundwater Total				---	---	1.E-05	1.E-05		---	---	0.7	0.7
						Total Risk Across All Media	8.E-05				Total Hazard Across All Media	1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.
(1) Indoor air concentrations of benzene and naphthalene are modeled from both soil and groundwater. Modeling from groundwater yielded the highest indoor air concentration and this concentration is used to calculate risk and hazard for these COPCs. Indoor air concentrations of 2-hexanone are modeled from groundwater because this chemical was a COPC in groundwater only. Indoor air concentrations of all other COPCs are modeled from soil.

Table 9.35 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Lot 122	Benzo(a)pyrene	2.E-06	8.E-07	---	3.E-06	Renal	0.00007	0.00002	---	0.00009
			Arsenic	1.E-05	1.E-06	---	1.E-05	Integumental; Cardiovascular	0.2	0.02	---	0.3
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			1.E-05	2.E-06	---	2.E-05		0.3	0.02	---	0.3
	Plant tissue	Gleason Court Lot 122	Arsenic	3.E-05	---	---	3.E-05	Integumental; Cardiovascular	0.3	---	---	0.3
	Exposure Medium Total			3.E-05	---	---	3.E-05		0.3	---	---	0.3
Soil Total				5.E-05	2.E-06	---	5.E-05		0.6	0.02	---	0.6
							Total Risk Across All Media					Total Hazard Across All Media
							5.E-05					0.6

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.36 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Lot 124	Benzo(a)pyrene	3.E-06	1.E-06	---	4.E-06	Renal	0.0001	4E-05	---	0.0001
			Benzo(b)fluoranthene	4.E-07	2.E-07	---	5.E-07	Renal	0.0001	5E-05	---	0.0002
			Dibenz(ah)anthracene	3.E-07	1.E-07	---	4.E-07	Renal	0.00001	4E-06	---	0.00002
			Arsenic	4.E-06	3.E-07	---	4.E-06	Integumental; Cardiovascular	0.07	0.006	---	0.07
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
	Exposure Medium Total			7.E-06	2.E-06	---	9.E-06		0.1	0.006	---	0.1
	Plant tissue	Gleason Court Lot 124	Arsenic	1.E-05	---	---	1.E-05	Integumental; Cardiovascular	0.07	---	---	0.07
	Exposure Medium Total			1.E-05	---	---	1.E-05		0.07	---	---	0.07
Soil Total				2.E-05	2.E-06	---	2.E-05		0.2	0.006	---	0.2
Soil Gas	Indoor Air	Gleason Court Lot 124	Trichloroethylene (TCE)	---	---	6.E-07	6.E-07	Neurological; Hepatic; Endocrine	---	---	0.0003	0.0003
			1,2,4-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.02	0.02
			1,3,5-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.005	0.005
			Naphthalene	---	---	---	---	Respiratory	---	---	0.01	0.01
Soil Gas Total				---	---	6.E-07	6.E-07		---	---	0.04	0.04
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.37 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Lot 125	Benz(a)anthracene	5.E-07	2.E-07	---	7.E-07	Renal	0.0002	7E-05	---	0.0003
			Benzo(a)pyrene	7.E-06	3.E-06	---	1.E-05	Renal	0.0003	9E-05	---	0.0003
			Benzo(b)fluoranthene	8.E-07	3.E-07	---	1.E-06	Renal	0.0003	0.0001	---	0.0004
			Dibenz(ah)anthracene	6.E-07	2.E-07	---	8.E-07	Renal	0.00002	8E-06	---	0.00003
			Arsenic	8.E-06	8.E-07	---	9.E-06	Integumental; Cardiovascular	0.1	0.01	---	0.2
			Barium	---	---	---	---	Renal	0.02	---	---	0.02
			Manganese	---	---	---	---	Neurological	0.03	---	---	0.03
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
	Exposure Medium Total			2.E-05	4.E-06	---	2.E-05		0.2	0.01	---	0.2
	Plant tissue	Gleason Court Lot 125	Arsenic	2.E-05	---	---	2.E-05	Integumental; Cardiovascular	0.2	---	---	0.2
	Exposure Medium Total			2.E-05	---	---	2.E-05		0.2	---	---	0.2
Soil Total				4.E-05	4.E-06	---	4.E-05		0.4	0.01	---	0.4
Soil Gas	Indoor Air	Gleason Court Lot 125	Trichloroethylene (TCE)	---	---	4.E-07	4.E-07	Neurological; Hepatic; Endocrine	---	---	0.0002	0.0002
			1,2,4-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.02	0.02
			1,3,5-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.005	0.005
			Naphthalene	---	---	---	---	Respiratory	---	---	0.01	0.01
Soil Gas Total				---	---	4.E-07	4.E-07		---	---	0.04	0.04
							Total Risk Across All Media	4.E-05				Total Hazard Across All Media	0.4

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.38 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Vacant Lot	Benzo(a)pyrene	1.E-06	6.E-07	---	2.E-06	Renal	0.00005	0.00002	---	0.00007
			Arsenic	2.E-05	2.E-06	---	2.E-05	Integumental; Cardiovascular	0.3	0.03	---	0.3
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
	Exposure Medium Total			2.E-05	2.E-06	---	2.E-05		0.4	0.03	---	0.4
	Plant tissue	Gleason Court Vacant Lot	Arsenic	4.E-05	---	---	4.E-05	Integumental; Cardiovascular	0.3	---	---	0.3
	Exposure Medium Total			4.E-05	---	---	4.E-05		0.3	---	---	0.3
Soil Total				6.E-05	2.E-06	---	7.E-05		0.7	0.03	---	0.7
							Total Risk Across All Media					Total Hazard Across All Media
							7.E-05					0.7

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.39 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Benz(a)anthracene	1.E-05	4.E-06	---	1.E-05	Renal	0.004	0.001	---	0.005
			Benzo(a)pyrene	4.E-05	2.E-05	---	6.E-05	Renal	0.002	0.0006	---	0.002
			Benzo(b)fluoranthene	8.E-06	3.E-06	---	1.E-05	Renal	0.003	0.001	---	0.004
			Benzo(k)fluoranthene	3.E-07	1.E-07	---	5.E-07	Renal	0.001	0.0004	---	0.002
			Chrysene	6.E-08	2.E-08	---	8.E-08	Renal	0.002	0.0008	---	0.003
			Dibenz(ah)anthracene	1.E-05	4.E-06	---	1.E-05	Renal	0.0004	0.0001	---	0.0005
			Indeno(1,2,3-cd)pyrene	5.E-06	2.E-06	---	7.E-06	Renal	0.002	0.0007	---	0.003
			Antimony	---	---	---	---	Whole Body; Hepatic	0.05	---	---	0.05
			Arsenic	1.E-04	9.E-06	---	1.E-04	Integumental; Cardiovascular	2	0.1	---	2
			Chromium VI	---	---	---	---	None observed	0.04	---	---	0.04
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
	Exposure Medium Total			2.E-04	4.E-05	---	2.E-04		2	0.2	---	2
	Indoor Air	Old Railroad and Former Lower Mill Pond Area	Methylene chloride (Dichloromethane)	---	---	4.E-08	4.E-08	Hepatic	---	---	0.0002	0.0002
			Naphthalene	---	---	---	---	Respiratory	---	---	0.5	0.5
	Exposure Medium Total			---	---	4.E-08	4.E-08		---	---	0.5	0.5
	Plant tissue	Old Railroad and Former Lower Mill Pond Area	Arsenic	3.E-04	---	---	3.E-04	Integumental; Cardiovascular	2	---	---	2
			Chromium VI	---	---	---	---	None observed	0.1	---	---	0.1
	Exposure Medium Total			3.E-04	---	---	3.E-04		2	---	---	2
Soil Total				4.E-04	4.E-05	4.E-08	5.E-04		4	0.2	0.5	5
							Total Risk Across All Media	5.E-04				Total Hazard Across All Media	5

Total Cardiovascular HI Across All Media	4
Total Integumental HI Across All Media	4

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.39 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Benz(a)anthracene	2.E-06	2.E-07	---	2.E-06	Renal	0.002	0.0003	---	0.002
			Benzo(a)pyrene	7.E-06	1.E-06	---	8.E-06	Renal	0.0008	0.0001	---	0.0009
			Benzo(b)fluoranthene	1.E-06	2.E-07	---	1.E-06	Renal	0.001	0.0002	---	0.002
			Benzo(k)fluoranthene	5.E-08	8.E-09	---	6.E-08	Renal	0.0006	9E-05	---	0.0007
			Chrysene	9.E-09	1.E-09	---	1.E-08	Renal	0.001	0.0002	---	0.001
			Dibenz(ah)anthracene	2.E-06	2.E-07	---	2.E-06	Renal	0.0002	3E-05	---	0.0002
			Indeno(1,2,3-cd)pyrene	8.E-07	1.E-07	---	1.E-06	Renal	0.001	0.0001	---	0.001
			Antimony	---	---	---	---	Whole Body; Hepatic	0.03	---	---	0.03
			Arsenic	2.E-05	5.E-07	---	2.E-05	Integumental; Cardiovascular	0.9	0.03	---	0.9
			Chromium VI	---	---	---	---	None observed	0.02	---	---	0.02
			Manganese	---	---	---	---	Neurological	0.01	---	---	0.01
			Vanadium	---	---	---	---	Renal	0.01	---	---	0.01
	Exposure Medium Total			3.E-05	2.E-06	---	3.E-05		1	0.03	---	1
	Indoor Air	Old Railroad and Former Lower Mill Pond Area	Methylene chloride (Dichloromethane)	---	---	1.E-08	1.E-08	Hepatic	---	---	0.0002	0.0002
			Naphthalene	---	---	---	---	Respiratory	---	---	0.4	0.4
	Exposure Medium Total			---	---	1.E-08	1.E-08		---	---	0.4	0.4
Soil Total				3.E-05	2.E-06	1.E-08	3.E-05		1	0.03	0.4	1
							Total Risk Across All Media	3.E-05				Total Hazard Across All Media	1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.40 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Orlando Property	Benz(a)anthracene	8.E-07	3.E-07	---	1.E-06	Renal	0.0003	0.0001	---	0.0004
			Benzo(a)pyrene	6.E-06	3.E-06	---	9.E-06	Renal	0.0002	0.00008	---	0.0003
			Benzo(b)fluoranthene	7.E-07	3.E-07	---	1.E-06	Renal	0.0003	0.0001	---	0.0004
			Dibenz(ah)anthracene	2.E-07	1.E-07	---	3.E-07	Renal	0.000009	0.000003	---	0.00001
			Indeno(1,2,3-cd)pyrene	1.E-07	5.E-08	---	2.E-07	Renal	0.00004	0.00002	---	0.00006
			Arsenic	3.E-06	3.E-07	---	3.E-06	Integumental; Cardiovascular	0.05	0.004	---	0.06
			Chromium VI	---	---	---	---	None observed	0.03	---	---	0.03
			Manganese	---	---	---	---	Neurological	0.03	---	---	0.03
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
	Exposure Medium Total			1.E-05	4.E-06	---	1.E-05		0.1	0.005	---	0.1
	Indoor Air	Orlando Property	Naphthalene	---	---	---	---	Respiratory	---	---	0.3	0.3
	Exposure Medium Total			---	---	---	---		---	---	0.3	0.3
	Plant tissue	Orlando Property	Arsenic	8.E-06	---	---	8.E-06	Integumental; Cardiovascular	0.06	---	---	0.06
			Chromium VI	---	---	---	---	None observed	0.1	---	---	0.1
	Exposure Medium Total			8.E-06	---	---	8.E-06		0.2	---	---	0.2
Soil Total				2.E-05	4.E-06	---	2.E-05		0.3	0.005	0.3	0.6
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.6

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.41 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 208	Benzo(a)pyrene	3.E-07	1.E-07	---	4.E-07	Renal	0.00001	4E-06	---	0.00002
			Arsenic	3.E-06	3.E-07	---	4.E-06	Integumental; Cardiovascular	0.06	0.005	---	0.07
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.02	---	---	0.02
			Cyanide (free)	---	---	---	---	Whole Body; Endocrine; Neurological	0.0009	---	---	0.0009
	Exposure Medium Total			4.E-06	5.E-07	---	4.E-06		0.1	0.005	---	0.1
	Indoor Air	Lot 208	Naphthalene	---	---	---	---	Respiratory	---	---	0.06	0.06
	Exposure Medium Total			---	---	---	---		---	---	0.06	0.06
	Plant tissue	Lot 208	Arsenic	9.E-06	---	---	9.E-06	Integumental; Cardiovascular	0.07	---	---	0.07
	Exposure Medium Total			9.E-06	---	---	9.E-06		0.07	---	---	0.07
Soil Total				1.E-05	5.E-07	---	1.E-05		0.2	0.005	0.06	0.2
							Total Risk Across All Media	1.E-05				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.42 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Vacant Lot 209	Arsenic	3.E-06	3.E-07	---	4.E-06	Integumental; Cardiovascular	0.06	0.005	---	0.07
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			3.E-06	3.E-07	---	4.E-06		0.1	0.005	---	0.1
	Plant tissue	Vacant Lot 209	Arsenic	9.E-06	---	---	9.E-06	Integumental; Cardiovascular	0.07	---	---	0.07
	Exposure Medium Total			9.E-06	---	---	9.E-06		0.07	---	---	0.07
Soil Total				1.E-05	3.E-07	---	1.E-05		0.2	0.005	---	0.2
							Total Risk Across All Media	1.E-05				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.43 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 210	Benzo(a)pyrene	3.E-06	1.E-06	---	4.E-06	Renal	0.0001	0.00004	---	0.0002
			Benzo(b)fluoranthene	4.E-07	2.E-07	---	6.E-07	Renal	0.0001	0.00005	---	0.0002
			Arsenic	4.E-06	3.E-07	---	4.E-06	Integumental; Cardiovascular	0.07	0.006	---	0.07
			Manganese	---	---	---	---	Neurological	0.03	---	---	0.03
			Nickel	---	---	---	---	Whole Body; Hepatic	0.05	---	---	0.05
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			7.E-06	2.E-06	---	9.E-06		0.2	0.006	---	0.2
	Plant tissue	Lot 210	Arsenic	1.E-05	---	---	1.E-05	Integumental; Cardiovascular	0.07	---	---	0.07
			Nickel	---	---	---	---	Whole Body; Hepatic	0.04	---	---	0.04
	Exposure Medium Total			1.E-05	---	---	1.E-05		0.1	---	---	0.1
Soil Total				2.E-05	2.E-06	---	2.E-05		0.3	0.006	---	0.3
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.44 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 230	Benzo(a)pyrene	2.E-06	8.E-07	---	3.E-06	Renal	0.00008	0.00003	---	0.0001
			Arsenic	7.E-06	6.E-07	---	7.E-06	Integumental; Cardiovascular	0.1	0.01	---	0.1
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
	Exposure Medium Total			9.E-06	1.E-06	---	1.E-05		0.2	0.01	---	0.2
	Plant tissue	Lot 230	Arsenic	2.E-05	---	---	2.E-05	Integumental; Cardiovascular	0.1	---	---	0.1
	Exposure Medium Total			2.E-05	---	---	2.E-05		0.1	---	---	0.1
Soil Total				3.E-05	1.E-06	---	3.E-05		0.3	0.01	---	0.3
							Total Risk Across All Media					Total Hazard Across All Media
							3.E-05					0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.45 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 257	Benz(a)anthracene	4.E-07	2.E-07	---	5.E-07	Renal	0.0001	0.00005	---	0.0002
			Benzo(a)pyrene	4.E-06	2.E-06	---	5.E-06	Renal	0.0001	0.00005	---	0.0002
			Benzo(b)fluoranthene	5.E-07	2.E-07	---	7.E-07	Renal	0.0002	0.00007	---	0.0003
			Dibenz(ah)anthracene	7.E-07	3.E-07	---	1.E-06	Renal	0.00003	0.00001	---	0.00004
			Indeno(1,2,3-cd)pyrene	4.E-07	1.E-07	---	5.E-07	Renal	0.0001	0.00005	---	0.0002
			Arsenic	1.E-05	1.E-06	---	1.E-05	Integumental; Cardiovascular	0.2	0.02	---	0.2
			Chromium VI	---	---	---	---	None observed	0.05	---	---	0.05
			Manganese	---	---	---	---	Neurological	0.03	---	---	0.03
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			2.E-05	3.E-06	---	2.E-05		0.3	0.02	---	0.3
	Indoor Air	Lot 257	Naphthalene	---	---	---	---	Respiratory	---	---	0.02	0.02
	Exposure Medium Total			---	---	---	---		---	---	0.02	0.02
	Plant tissue	Lot 257	Arsenic	3.E-05	---	---	3.E-05	Integumental; Cardiovascular	0.2	---	---	0.2
			Chromium VI	---	---	---	---	None observed	0.2	---	---	0.2
	Exposure Medium Total			3.E-05	---	---	3.E-05		0.4	---	---	0.4
Soil Total				4.E-05	3.E-06	---	5.E-05		0.7	0.02	0.02	0.7
							Total Risk Across All Media	5.E-05				Total Hazard Across All Media	0.7

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.46 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 282	Benzo(a)pyrene	8.E-07	3.E-07	---	1.E-06	Renal	0.00003	0.00001	---	0.00004
			Arsenic	9.E-06	8.E-07	---	1.E-05	Integumental; Cardiovascular	0.2	0.01	---	0.2
			Manganese	---	---	---	---	Neurological	0.03	---	---	0.03
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			1.E-05	1.E-06	---	1.E-05		0.2	0.01	---	0.2
	Plant tissue	Lot 282	Arsenic	2.E-05	---	---	2.E-05	Integumental; Cardiovascular	0.2	---	---	0.2
	Exposure Medium Total			2.E-05	---	---	2.E-05		0.2	---	---	0.2
Soil Total				3.E-05	1.E-06	---	3.E-05		0.4	0.01	---	0.4
							Total Risk Across All Media	3.E-05				Total Hazard Across All Media	0.4

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.47 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 283	Benz(a)anthracene	4.E-07	2.E-07	---	5.E-07	Renal	0.0001	5E-05	---	0.0002
			Benzo(a)pyrene	4.E-06	1.E-06	---	5.E-06	Renal	0.0001	5E-05	---	0.0002
			Benzo(b)fluoranthene	3.E-07	1.E-07	---	4.E-07	Renal	0.0001	4E-05	---	0.0002
			Dibenz(ah)anthracene	3.E-07	1.E-07	---	4.E-07	Renal	0.00001	4E-06	---	0.00001
			Arsenic	5.E-06	5.E-07	---	5.E-06	Integumental; Cardiovascular	0.09	0.008	---	0.1
			Manganese	---	---	---	---	Neurological	0.06	---	---	0.06
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			9.E-06	2.E-06	---	1.E-05		0.2	0.008	---	0.2
	Indoor Air	Lot 283	Chloroform	---	---	4.E-08	4.E-08	Renal; Hepatic; Neurological	---	---	0.00008	0.00008
			Naphthalene	---	---	---	---	Respiratory	---	---	0.09	0.09
	Exposure Medium Total			---	---	4.E-08	4.E-08		---	---	0.09	0.09
	Plant tissue	Lot 283	Arsenic	1.E-05	---	---	1.E-05	Integumental; Cardiovascular	0.1	---	---	0.1
	Exposure Medium Total			1.E-05	---	---	1.E-05		0.1	---	---	0.1
Soil Total				2.E-05	2.E-06	4.E-08	2.E-05		0.3	0.008	0.09	0.4
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.4

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.48 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 342	Benzo(a)pyrene	5.E-07	2.E-07	---	7.E-07	Renal	0.00002	0.000007	---	0.00002
			Arsenic	6.E-06	5.E-07	---	6.E-06	Integumental; Cardiovascular	0.1	0.009	---	0.1
			Chromium VI	---	---	---	---	None observed	0.05	---	---	0.05
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
	Exposure Medium Total			6.E-06	7.E-07	---	7.E-06		0.2	0.009	---	0.2
	Plant tissue	Lot 342	Arsenic	2.E-05	---	---	2.E-05	Integumental; Cardiovascular	0.1	---	---	0.1
			Chromium VI	---	---	---	---	None observed	0.2	---	---	0.2
	Exposure Medium Total			2.E-05	---	---	2.E-05		0.3	---	---	0.3
Soil Total				2.E-05	7.E-07	---	2.E-05		0.5	0.009	---	0.5
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.5

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.49 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 350	Benzo(a)pyrene	7.E-07	3.E-07	---	1.E-06	Renal	0.00003	0.00001	---	0.00004
			Antimony	---	---	---	---	Whole Body; Hepatic	0.05	---	---	0.05
			Arsenic	8.E-06	7.E-07	---	8.E-06	Integumental; Cardiovascular	0.1	0.01	---	0.2
			Vanadium	---	---	---	---	Renal	0.05	---	---	0.05
	Exposure Medium Total			8.E-06	1.E-06	---	9.E-06		0.2	0.01	---	0.3
	Indoor Air	Lot 350	Naphthalene	---	---	---	---	Respiratory	---	---	0.1	0.1
	Exposure Medium Total			---	---	---	---		---	---	0.1	0.1
	Plant tissue	Lot 350	Arsenic	2.E-05	---	---	2.E-05	Integumental; Cardiovascular	0.2	---	---	0.2
	Exposure Medium Total			2.E-05	---	---	2.E-05		0.2	---	---	0.2
Soil Total				3.E-05	1.E-06	---	3.E-05		0.4	0.01	0.1	0.5
							Total Risk Across All Media					0.5

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.50 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 360	Benz(a)anthracene	3.E-07	1.E-07	---	4.E-07	Renal	0.00009	3E-05	---	0.0001
			Benzo(a)pyrene	2.E-06	9.E-07	---	3.E-06	Renal	0.00008	3E-05	---	0.0001
			Benzo(b)fluoranthene	3.E-07	1.E-07	---	5.E-07	Renal	0.0001	4E-05	---	0.0002
			Dibenz(ah)anthracene	4.E-07	2.E-07	---	6.E-07	Renal	0.00002	6E-06	---	0.00002
			Antimony	---	---	---	---	Whole Body; Hepatic	0.09	---	---	0.09
			Arsenic	2.E-05	2.E-06	---	2.E-05	Integumental; Cardiovascular	0.3	0.03	---	0.4
			Chromium VI	---	---	---	---	None observed	0.2	---	---	0.2
			Vanadium	---	---	---	---	Renal	0.05	---	---	0.05
	Exposure Medium Total			2.E-05	3.E-06	---	2.E-05		0.7	0.03	---	0.7
	Indoor Air	Lot 360	Naphthalene	---	---	---	---	Respiratory	---	---	0.07	0.07
	Exposure Medium Total			---	---	---	---		---	---	0.07	0.07
	Plant tissue	Lot 360	Arsenic	5.E-05	---	---	5.E-05	Integumental; Cardiovascular	0.4	---	---	0.4
			Chromium VI	---	---	---	---	None observed	0.6	---	---	0.6
	Exposure Medium Total			5.E-05	---	---	5.E-05		1	---	---	1
Soil Total				7.E-05	3.E-06	---	7.E-05		2	0.03	0.07	2
							Total Risk Across All Media	7.E-05				Total Hazard Across All Media	2

Total Cardiovascular HI Across All Media	0.8
Total Hepatic HI Across All Media	0.2
Total Integumental HI Across All Media	0.8
Total Renal HI Across All Media	0.1
Total Respiratory HI Across All Media	0.2
Total None observed HI Across All Media	0.9
Total Whole Body HI Across All Media	0.09

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.50 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 360	Benz(a)anthracene	4.E-08	6.E-09	---	5.E-08	Renal	0.00005	7E-06	---	0.00005
			Benzo(a)pyrene	4.E-07	5.E-08	---	4.E-07	Renal	0.00004	6E-06	---	0.00005
			Benzo(b)fluoranthene	5.E-08	8.E-09	---	6.E-08	Renal	0.00006	9E-06	---	0.00007
			Dibenz(ah)anthracene	7.E-08	1.E-08	---	8.E-08	Renal	0.000008	1E-06	---	0.000009
			Antimony	---	---	---	---	Whole Body; Hepatic	0.03	---	---	0.03
			Arsenic	3.E-06	1.E-07	---	3.E-06	Integumental; Cardiovascular	0.2	0.006	---	0.2
			Chromium VI	---	---	---	---	None observed	0.06	---	---	0.06
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
	Exposure Medium Total			3.E-06	2.E-07	---	4.E-06		0.3	0.006	---	0.3
	Indoor Air	Lot 360	Naphthalene	---	---	---	---	Respiratory	---	---	0.06	0.06
	Exposure Medium Total			---	---	---	---		---	---	0.06	0.06
Soil Total				3.E-06	2.E-07	---	4.E-06		0.3	0.006	0.06	0.3
							Total Risk Across All Media	4.E-06				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.51 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Indoor Air	Lots South of AOC	Benzene	---	---	2.E-07	2.E-07	Hematological; Immunological	---	---	0.002	0.002
			Carbon disulfide	---	---	---	---	Neurological	---	---	0.001	0.001
			Chloroform	---	---	3.E-07	3.E-07	Renal; Hepatic; Neurological	---	---	0.0007	0.0007
			Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.007	0.007
			Naphthalene	---	---	---	---	Respiratory	---	---	0.05	0.05
Soil Total				---	---	6.E-07	6.E-07		---	---	0.06	0.06
							Total Risk Across All Media	6.E-07				Total Hazard Across All Media	0.06

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.52 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Indoor Air	West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Benzene	---	---	2.E-06	2.E-06	Hematological; Immunological	---	---	0.02	0.02
			Naphthalene	---	---	---	---	Respiratory	---	---	0.1	0.1
Groundwater Total				---	---	2.E-06	2.E-06		---	---	0.1	0.1
							Total Risk Across All Media	2.E-06			Total Hazard Across All Media	0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.53 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-site groundwater west of Neponset River	Arsenic	2.E-05	---	---	2.E-05	Integumental; Cardiovascular	0.2	---	---	0.2
			Manganese	---	---	---	---	Neurological	0.5	---	---	0.5
Groundwater Total				2.E-05	---	---	2.E-05		0.7	---	---	0.7
							Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.7

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.54 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-27)	Trichloroethylene (TCE)	4.E-05	5.E-06	---	4.E-05	Hepatic; Renal; Developmental; Immunological	2	0.2	---	2
			Benzo(a)pyrene	2.E-06	---	---	2.E-06	Renal	0.00004	---	---	0.00004
			4-Nitrophenol	---	---	---	---	Hepatic; Renal; Respiratory	0.001	---	---	0.001
			Antimony	---	---	---	---	Whole Body; Hepatic	0.5	---	---	0.5
			Arsenic	4.E-05	---	---	4.E-05	Integumental; Cardiovascular	0.5	---	---	0.5
			Manganese	---	---	---	---	Neurological	2	---	---	2
			Vanadium	---	---	---	---	Renal	0.09	0.02	---	0.1
	Exposure Medium Total			8.E-05	5.E-06	---	9.E-05		4	0.2	---	5
	Shower Vapor (1)	Off-site groundwater east of Neponset River (SH-27)	Trichloroethylene (TCE)	---	---	3.E-05	3.E-05	Neurological; Hepatic; Endocrine	---	---	0.02	0.02
	Exposure Medium Total			---	---	3.E-05	3.E-05		---	---	0.02	0.02
Groundwater Total				8.E-05	5.E-06	3.E-05	1.E-04		4	0.2	0.02	5
							Total Risk Across All Media	1.E-04				Total Hazard Across All Media	5

Total Developmental HI Across All Media	2
Total Hepatic HI Across All Media	2
Total Immunological HI Across All Media	2
Total Neurological HI Across All Media	2
Total Renal HI Across All Media	2

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.55 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-28)	Trichloroethylene (TCE)	3.E-06	4.E-07	---	3.E-06	Hepatic; Renal; Developmental; Immunological	0.1	0.02	---	0.2
			Arsenic	2.E-05	---	---	2.E-05	Integumental; Cardiovascular	0.3	---	---	0.3
			Manganese	---	---	---	---	Neurological	3	---	---	3
	Exposure Medium Total			3.E-05	4.E-07	---	3.E-05		3	0.02	---	3
	Shower Vapor (1)	Off-site groundwater east of Neponset River (SH-28)	Trichloroethylene (TCE)	---	---	2.E-06	2.E-06	Neurological; Hepatic; Endocrine	---	---	0.002	0.002
	Exposure Medium Total			---	---	2.E-06	2.E-06		---	---	0.002	0.002
Groundwater Total				3.E-05	4.E-07	2.E-06	3.E-05		3	0.02	0.002	3
							Total Risk Across All Media	3.E-05				Total Hazard Across All Media	3

Total Neurological HI Across All Media: 3

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.55 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-28)	Trichloroethylene (TCE)	4.E-07	5.E-08	---	4.E-07	Hepatic; Renal; Developmental; Immunological	0.05	0.005	---	0.05
			Arsenic	3.E-06	---	---	3.E-06	Integumental; Cardiovascular	0.1	---	---	0.1
			Manganese	---	---	---	---	Neurological	0.7	---	---	0.7
	Exposure Medium Total			3.E-06	5.E-08	---	3.E-06		0.8	0.005	---	0.8
	Shower Vapor (1)	Off-site groundwater east of Neponset River (SH-28)	Trichloroethylene (TCE)	---	---	3.E-07	3.E-07	Neurological; Hepatic; Endocrine	---	---	0.0008	0.0008
	Exposure Medium Total			---	---	3.E-07	3.E-07		---	---	0.0008	0.0008
Groundwater Total				3.E-06	5.E-08	3.E-07	4.E-06		0.8	0.005	0.0008	0.8
							Total Risk Across All Media	4.E-06				Total Hazard Across All Media	0.8

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose, where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals. See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.56 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Benzene	4.E-06	6.E-07	---	5.E-06	Hematological; Immunological	0.1	0.01	---	0.1
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.3	0.3	---	0.6
			Naphthalene	---	---	---	---	Whole Body	0.2	0.08	---	0.3
			Benzo(a)pyrene	1.E-05	---	---	1.E-05	Renal	0.0002	---	---	0.0002
			Dibenz(ah)anthracene	3.E-06	---	---	3.E-06	Renal	0.00008	---	---	0.00008
			Arsenic	2.E-03	---	---	2.E-03	Integumental; Cardiovascular	20	---	---	20
			Chromium VI	---	---	---	---	None observed	1	0.3	---	1
			Manganese	---	---	---	---	Neurological	2	---	---	2
			Vanadium	---	---	---	---	Renal	4	0.7	---	5
	Exposure Medium Total			2.E-03	6.E-07	---	2.E-03		30	1	---	30
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Benzene	---	---	2.E-06	2.E-06	Hematological; Immunological	---	---	0.03	0.03
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.8	0.8
			Naphthalene	---	---	---	---	Respiratory	---	---	2	2
	Exposure Medium Total			---	---	2.E-06	2.E-06		---	---	3	3
Groundwater Total				2.E-03	6.E-07	2.E-06	2.E-03		30	1	3	30
							Total Risk Across All Media	2.E-03				Total Hazard Across All Media	30

Total Cardiovascular HI Across All Media	20
Total Integumental HI Across All Media	20
Total Neurological HI Across All Media	3
Total Renal HI Across All Media	5
Total Respiratory HI Across All Media	4

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.56 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Benzene	4.E-07	8.E-08	---	4.E-07	Hematological; Immunological	0.03	0.005	---	0.03
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.08	0.1	---	0.2
			Naphthalene	---	---	---	---	Whole Body	0.04	0.03	---	0.08
			Benzo(a)pyrene	8.E-07	---	---	8.E-07	Renal	0.00006	---	---	0.00006
			Dibenz(ah)anthracene	2.E-07	---	---	2.E-07	Renal	0.00002	---	---	0.00002
			Arsenic	1.E-04	---	---	1.E-04	Integumental; Cardiovascular	4	---	---	4
			Chromium VI	---	---	---	---	None observed	0.2	0.03	---	0.2
			Manganese	---	---	---	---	Neurological	0.4	---	---	0.4
			Vanadium	---	---	---	---	Renal	0.8	0.2	---	1
	Exposure Medium Total			1.E-04	8.E-08	---	1.E-04		6	0.4	---	6
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Benzene	---	---	1.E-07	1.E-07	Hematological; Immunological	---	---	0.007	0.007
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.2	0.2
			Naphthalene	---	---	---	---	Respiratory	---	---	0.6	0.6
	Exposure Medium Total			---	---	1.E-07	1.E-07		---	---	0.8	0.8
Groundwater Total				1.E-04	8.E-08	1.E-07	1.E-04		6	0.4	0.8	7
							Total Risk Across All Media	1.E-04				Total Hazard Across All Media	7

Total Cardiovascular HI Across All Media	4
Total Integumental HI Across All Media	4

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.57 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	On-Site Groundwater	Benzene	6.E-04	7.E-05	---	6.E-04	Hematological; Immunological	10	1	---	20
			Chloroform	---	---	---	---	Hepatic	0.003	---	---	0.003
			Ethylbenzene	---	---	---	---	Hepatic; Renal	0.3	0.1	---	0.5
			Methylene chloride (Dichloromethane)	4.E-06	---	---	4.E-06	Hepatic	0.05	---	---	0.05
			Methyl tert-butyl ether (MTBE)	8.E-07	2.E-08	---	8.E-07	Hepatic; Renal	0.008	0.0002	---	0.008
			Styrene	---	---	---	---	Hematological; Hepatic; Renal	0.1	0.04	---	0.2
			Toluene	---	---	---	---	Renal; Hepatic	1	0.2	---	1
			Trichloroethylene (TCE)	2.E-05	3.E-06	---	2.E-05	Hepatic; Renal; Developmental; Immunological	0.8	0.09	---	0.9
			Xylenes (mixed isomers)	---	---	---	---	Whole Body	0.3	0.1	---	0.5
			Acenaphthene	---	---	---	---	Hepatic	0.1	---	---	0.1
			Acenaphthylene	---	---	---	---	Renal	0.3	---	---	0.3
			Fluorene	---	---	---	---	Hematological	0.1	---	---	0.1
			2-Methylnaphthalene	---	---	---	---	Respiratory	10	10	---	20
			Naphthalene	---	---	---	---	Whole Body	20	6	---	20
			Pyrene	---	---	---	---	Renal	0.05	---	---	0.05
			Benz(a)anthracene	1.E-05	---	---	1.E-05	Renal	0.002	---	---	0.002
			Benzo(a)pyrene	2.E-04	---	---	2.E-04	Renal	0.005	---	---	0.005
			Benzo(b)fluoranthene	5.E-06	---	---	5.E-06	Renal	0.001	---	---	0.001
			Dibenz(ah)anthracene	8.E-05	---	---	8.E-05	Renal	0.002	---	---	0.002
			Indeno(1,2,3-cd)pyrene	4.E-06	---	---	4.E-06	Renal	0.0009	---	---	0.0009
			Bis(2-ethylhexyl)phthalate (DEHP)	9.E-06	1.E-05	---	2.E-05	Hepatic	0.2	0.2	---	0.4
			4-Methylphenol	---	---	---	---	Neurological; Respiratory; Developmental; Whole Body	2	0.1	---	2
			Carbazole	2.E-05	1.E-05	---	4.E-05		---	---	---	---
			Antimony	---	---	---	---	Whole Body; Hepatic	8	---	---	8
			Arsenic	2.E-02	---	---	2.E-02	Integumental; Cardiovascular	200	---	---	200
			Barium	---	---	---	---	Renal	0.1	---	---	0.1
			Cadmium	---	---	---	---	Renal	0.3	0.03	---	0.4
			Chromium VI	---	---	---	---	None observed	4	1	---	6
			Manganese	---	---	---	---	Neurological	20	---	---	20
			Mercury	---	---	---	---	Immunological	0.4	---	---	0.4
			Nickel	---	---	---	---	Whole Body; Hepatic	3	---	---	3
			Selenium	---	---	---	---	Neurological; Hepatic; Hematological; Integumental	0.4	---	---	0.4
			Thallium	---	---	---	---	None observed	0.4	---	---	0.4
			Vanadium	---	---	---	---	Renal	60	10	---	80
			Zinc	---	---	---	---	Hematological	2	0.004	---	2
			Cyanide (free)	---	---	---	---	Whole Body; Endocrine; Neurological	0.02	0.0001	---	0.02
	Exposure Medium Total			2.E-02	1.E-04	---	2.E-02		300	30	---	400

Table 9.57 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Shower Vapor (1)	On-Site Groundwater	Benzene	---	---	2.E-04	2.E-04	Hematological; Immunological	---	---	3	3
			Chloroform	---	---	4.E-07	4.E-07	Renal; Hepatic; Neurological	---	---	0.001	0.001
			Ethylbenzene	---	---	2.E-05	2.E-05	Developmental	---	---	0.06	0.06
			Methylene chloride (Dichloromethane)	---	---	8.E-07	8.E-07	Hepatic	---	---	0.006	0.006
			Methyl tert-butyl ether (MTBE)	---	---	3.E-07	3.E-07	Hepatic; Renal; Neurological	---	---	0.001	0.001
			Styrene	---	---	---	---	Neurological	---	---	0.05	0.05
			Toluene	---	---	---	---	Neurological	---	---	0.03	0.03
			Trichloroethylene (TCE)	---	---	1.E-05	1.E-05	Neurological; Hepatic; Endocrine	---	---	0.01	0.01
			Xylenes (mixed isomers)	---	---	---	---	Neurological	---	---	1	1
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	30	30
			Naphthalene	---	---	---	---	Respiratory	---	---	200	200
	Exposure Medium Total			---	---	3.E-04	3.E-04		---	---	200	200
Groundwater Total				2.E-02	1.E-04	3.E-04	2.E-02		300	30	200	600
							Total Risk Across All Media	2.E-02				Total Hazard Across All Media	600

Total Cardiovascular HI Across All Media	200
Total Developmental HI Across All Media	40
Total Hematological HI Across All Media	60
Total Hepatic HI Across All Media	40
Total Immunological HI Across All Media	60
Total Integumental HI Across All Media	200
Total Neurological HI Across All Media	50
Total Renal HI Across All Media	100
Total Respiratory HI Across All Media	300
Total None observed HI Across All Media	40
Total Whole Body HI Across All Media	30

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.57 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	On-Site Groundwater	Benzene	5.E-06	6.E-07	---	6.E-06	Hematological; Immunological	0.4	0.03	---	0.4
			Chloroform	---	---	---	---	Hepatic	0.002	---	---	0.002
			Ethylbenzene	---	---	---	---	Hepatic; Renal	0.01	0.004	---	0.01
			Methylene chloride (Dichloromethane)	6.E-08	---	---	6.E-08	Hepatic	0.002	---	---	0.002
			Methyl tert-butyl ether (MTBE)	3.E-08	9.E-10	---	3.E-08	Hepatic; Renal	0.0009	0.00002	---	0.0009
			Styrene	---	---	---	---	Hematological; Hepatic; Renal	0.003	0.0009	---	0.004
			Toluene	---	---	---	---	Renal; Hepatic	0.03	0.006	---	0.04
			Trichloroethylene (TCE)	2.E-06	2.E-07	---	2.E-06	Hepatic; Renal; Developmental; Immunological	0.2	0.02	---	0.2
			Xylenes (mixed isomers)	---	---	---	---	Whole Body	0.01	0.004	---	0.02
			Acenaphthene	---	---	---	---	Hepatic	0.003	---	---	0.003
			Acenaphthylene	---	---	---	---	Renal	0.005	---	---	0.005
			Fluorene	---	---	---	---	Hematological	0.003	---	---	0.003
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.3	0.3	---	0.5
			Naphthalene	---	---	---	---	Whole Body	0.4	0.2	---	0.5
			Pyrene	---	---	---	---	Renal	0.001	---	---	0.001
			Benz(a)anthracene	7.E-07	---	---	7.E-07	Renal	0.0005	---	---	0.0005
			Benzo(a)pyrene	2.E-06	---	---	2.E-06	Renal	0.0002	---	---	0.0002
			Benzo(b)fluoranthene	6.E-07	---	---	6.E-07	Renal	0.0005	---	---	0.0005
			Dibenz(ah)anthracene	8.E-07	---	---	8.E-07	Renal	0.00006	---	---	0.00006
			Indeno(1,2,3-cd)pyrene	6.E-07	---	---	6.E-07	Renal	0.0004	---	---	0.0004
			Bis(2-ethylhexyl)phthalate (DEHP)	2.E-07	3.E-07	---	5.E-07	Hepatic	0.01	0.01	---	0.03
			4-Methylphenol	---	---	---	---	Neurological; Respiratory; Developmental; Whole Body	0.06	0.004	---	0.07
			Carbazole	2.E-07	1.E-07	---	4.E-07		---	---	---	---
			Antimony	---	---	---	---	Whole Body; Hepatic	0.6	---	---	0.6
			Arsenic	3.E-04	---	---	3.E-04	Integumental; Cardiovascular	10	---	---	10
			Barium	---	---	---	---	Renal	0.01	---	---	0.01
			Cadmium	---	---	---	---	Renal	0.07	0.003	---	0.07
			Chromium VI	---	---	---	---	None observed	0.2	0.03	---	0.2
			Manganese	---	---	---	---	Neurological	2	---	---	2
			Mercury	---	---	---	---	Immunological	0.03	---	---	0.03
			Nickel	---	---	---	---	Whole Body; Hepatic	0.1	---	---	0.1
			Selenium	---	---	---	---	Neurological; Hepatic; Hematological; Integumental	0.03	---	---	0.03
			Thallium	---	---	---	---	None observed	0.2	---	---	0.2
			Vanadium	---	---	---	---	Renal	3	0.3	---	3
			Zinc	---	---	---	---	Hematological	0.03	0.00005	---	0.03
			Cyanide (free)	---	---	---	---	Whole Body; Endocrine; Neurological	0.008	0.00002	---	0.008
	Exposure Medium Total			3.E-04	1.E-06	---	3.E-04		20	0.8	---	20

Table 9.57 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Shower Vapor (1)	On-Site Groundwater	Benzene	---	---	2.E-06	2.E-06	Hematological; Immunological	---	---	0.1	0.1
			Chloroform	---	---	7.E-08	7.E-08	Renal; Hepatic; Neurological	---	---	0.0008	0.0008
			Ethylbenzene	---	---	2.E-07	2.E-07	Developmental	---	---	0.002	0.002
			Methylene chloride (Dichloromethane)	---	---	1.E-08	1.E-08	Hepatic	---	---	0.0003	0.0003
			Methyl tert-butyl ether (MTBE)	---	---	1.E-08	1.E-08	Hepatic; Renal; Neurological	---	---	0.0002	0.0002
			Styrene	---	---	---	---	Neurological	---	---	0.001	0.001
			Toluene	---	---	---	---	Neurological	---	---	0.001	0.001
			Trichloroethylene (TCE)	---	---	1.E-06	1.E-06	Neurological; Hepatic; Endocrine	---	---	0.004	0.004
			Xylenes (mixed isomers)	---	---	---	---	Neurological	---	---	0.05	0.05
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.8	0.8
			Naphthalene	---	---	---	---	Respiratory	---	---	5	5
	Exposure Medium Total			---	---	4.E-06	4.E-06		---	---	6	6
Groundwater Total				3.E-04	1.E-06	4.E-06	3.E-04		20	0.8	6	20
							Total Risk Across All Media	3.E-04				Total Hazard Across All Media	20

Total Cardiovascular HI Across All Media	10
Total Integumental HI Across All Media	10
Total Neurological HI Across All Media	3
Total Renal HI Across All Media	5
Total Respiratory HI Across All Media	8

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.58 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	8.E-07	---	---	8.E-07	Hepatic; Renal; Developmental; Immunological	0.02	---	---	0.02
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.001	0.001	---	0.003
			Naphthalene	---	---	---	---	Whole Body	0.0006	0.0005	---	0.001
			Benz(a)anthracene	5.E-06	4.E-06	---	8.E-06	Renal	0.0006	0.0005	---	0.001
			Benzo(a)pyrene	4.E-05	4.E-05	---	8.E-05	Renal	0.0005	0.0005	---	0.001
			Benzo(b)fluoranthene	5.E-06	4.E-06	---	9.E-06	Renal	0.0006	0.0005	---	0.001
			Benzo(k)fluoranthene	3.E-07	2.E-07	---	5.E-07	Renal	0.0004	0.0003	---	0.0007
			Chrysene	4.E-08	4.E-08	---	8.E-08	Renal	0.0005	0.0005	---	0.001
			Dibenz(ah)anthracene	4.E-06	3.E-06	---	7.E-06	Renal	0.00005	4E-05	---	0.00009
			Indeno(1,2,3-cd)pyrene	1.E-06	1.E-06	---	3.E-06	Renal	0.0002	0.0002	---	0.0003
			Antimony	---	---	---	---	Whole Body; Hepatic	0.004	---	---	0.004
			Arsenic	1.E-06	2.E-07	---	1.E-06	Integumental; Cardiovascular	0.008	0.002	---	0.009
			Vanadium	---	---	---	---	Renal	0.004	---	---	0.004
			Zinc	---	---	---	---	Hematological	0.003	---	---	0.003
Soil Total				6.E-05	5.E-05	---	1.E-04		0.04	0.006	---	0.05
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Benzene	---	---	2.E-08	2.E-08	Hematological; Immunological	---	---	0.0003	0.0003
			Carbon tetrachloride	---	---	2.E-08	2.E-08	Hepatic	---	---	0.002	0.002
			Chloroform	---	---	7.E-08	7.E-08	Renal; Hepatic; Neurological	---	---	0.0002	0.0002
			1,2-Dichloroethylene (cis)	---	---	---	---	Hepatic	---	---	0.0002	0.0002
			Ethylbenzene	---	---	5.E-09	5.E-09	Developmental	---	---	0.00001	0.00001
			Methylene chloride (Dichloromethane)	---	---	8.E-09	8.E-09	Hepatic	---	---	0.00005	0.00005
			Tetrachloroethylene (PCE)	---	---	5.E-08	5.E-08	Neurological	---	---	0.00008	0.00008
			Trichloroethylene (TCE)	---	---	2.E-04	2.E-04	Neurological; Hepatic; Endocrine	---	---	0.1	0.1
			1,2,4-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.006	0.006
			1,3,5-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.002	0.002
			Naphthalene	---	---	---	---	Respiratory	---	---	0.004	0.004
Soil Gas Total				---	---	2.E-04	2.E-04		---	---	0.1	0.1
							Total Risk Across All Media	3.E-04				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.58 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	1.E-07	---	---	1.E-07	Hepatic; Renal; Developmental; Immunological	0.009	---	---	0.009
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.0007	0.0002	---	0.0009
			Naphthalene	---	---	---	---	Whole Body	0.0003	0.0001	---	0.0004
			Benz(a)anthracene	8.E-07	3.E-07	---	1.E-06	Renal	0.0003	0.0001	---	0.0004
			Benzo(a)pyrene	8.E-06	3.E-06	---	1.E-05	Renal	0.0003	9E-05	---	0.0004
			Benzo(b)fluoranthene	9.E-07	3.E-07	---	1.E-06	Renal	0.0003	0.0001	---	0.0004
			Benzo(k)fluoranthene	5.E-08	2.E-08	---	7.E-08	Renal	0.0002	6E-05	---	0.0002
			Chrysene	8.E-09	3.E-09	---	1.E-08	Renal	0.0003	9E-05	---	0.0004
			Dibenz(ah)anthracene	7.E-07	2.E-07	---	9.E-07	Renal	0.00002	8E-06	---	0.00003
			Indeno(1,2,3-cd)pyrene	3.E-07	9.E-08	---	3.E-07	Renal	0.00009	3E-05	---	0.0001
			Antimony	---	---	---	---	Whole Body; Hepatic	0.002	---	---	0.002
			Arsenic	2.E-07	2.E-08	---	2.E-07	Integumental; Cardiovascular	0.004	0.0003	---	0.004
			Vanadium	---	---	---	---	Renal	0.002	---	---	0.002
			Zinc	---	---	---	---	Hematological	0.002	---	---	0.002
Soil Total				1.E-05	4.E-06	---	1.E-05		0.02	0.001	---	0.02
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Benzene	---	---	5.E-09	5.E-09	Hematological; Immunological	---	---	0.0002	0.0002
			Carbon tetrachloride	---	---	4.E-09	4.E-09	Hepatic	---	---	0.001	0.001
			Chloroform	---	---	1.E-08	1.E-08	Renal; Hepatic; Neurological	---	---	0.00009	0.00009
			1,2-Dichloroethylene (cis)	---	---	---	---	Hepatic	---	---	0.00009	0.00009
			Ethylbenzene	---	---	1.E-09	1.E-09	Developmental	---	---	0.000008	0.000008
			Methylene chloride (Dichloromethane)	---	---	2.E-09	2.E-09	Hepatic	---	---	0.00003	0.00003
			Tetrachloroethylene (PCE)	---	---	1.E-08	1.E-08	Neurological	---	---	0.00005	0.00005
			Trichloroethylene (TCE)	---	---	4.E-06	4.E-06	Neurological; Hepatic; Endocrine	---	---	0.006	0.006
			1,2,4-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.003	0.003
			1,3,5-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.001	0.001
			Naphthalene	---	---	---	---	Respiratory	---	---	0.002	0.002
Soil Gas Total				---	---	4.E-06	4.E-06		---	---	0.01	0.01
							Total Risk Across All Media					Total Hazard Across All Media
							2.E-05					0.04

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.59 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	8.E-07	---	---	8.E-07	Hepatic; Renal; Developmental; Immunological	0.02	---	---	0.02
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.001	0.001	---	0.003
			Naphthalene	---	---	---	---	Whole Body	0.0006	0.0005	---	0.001
			Benz(a)anthracene	5.E-06	4.E-06	---	8.E-06	Renal	0.0006	0.0005	---	0.001
			Benzo(a)pyrene	4.E-05	4.E-05	---	8.E-05	Renal	0.0005	0.0005	---	0.001
			Benzo(b)fluoranthene	5.E-06	4.E-06	---	9.E-06	Renal	0.0006	0.0005	---	0.001
			Benzo(k)fluoranthene	3.E-07	2.E-07	---	5.E-07	Renal	0.0004	0.0003	---	0.0007
			Chrysene	4.E-08	4.E-08	---	8.E-08	Renal	0.0005	0.0005	---	0.001
			Dibenz(ah)anthracene	4.E-06	3.E-06	---	7.E-06	Renal	0.00005	4E-05	---	0.00009
			Indeno(1,2,3-cd)pyrene	1.E-06	1.E-06	---	3.E-06	Renal	0.0002	0.0002	---	0.0003
			Antimony	---	---	---	---	Whole Body; Hepatic	0.004	---	---	0.004
			Arsenic	1.E-06	2.E-07	---	1.E-06	Integumental; Cardiovascular	0.008	0.002	---	0.009
			Vanadium	---	---	---	---	Renal	0.004	---	---	0.004
			Zinc	---	---	---	---	Hematological	0.003	---	---	0.003
	Exposure Medium Total			6.E-05	5.E-05	---	1.E-04		0.04	0.006	---	0.05
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Benzene	---	---	2.E-07	2.E-07	Hematological; Immunological	---	---	0.003	0.003
			Ethylbenzene	---	---	7.E-09	7.E-09	Developmental	---	---	0.00002	0.00002
			Trichloroethylene (TCE)	---	---	2.E-07	2.E-07	Neurological; Hepatic; Endocrine	---	---	0.0001	0.0001
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.2	0.2
			Naphthalene	---	---	---	---	Respiratory	---	---	0.4	0.4
			Heptachlor	---	---	2.E-07	2.E-07		---	---	---	---
	Exposure Medium Total			---	---	6.E-07	6.E-07		---	---	0.6	0.6
Soil Total				6.E-05	5.E-05	6.E-07	1.E-04		0.04	0.006	0.6	0.7
						Total Risk Across All Media	1.E-04				Total Hazard Across All Media	0.7

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.60 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	West of South Street On-Facility	Benz(a)anthracene	5.E-07	4.E-07	---	9.E-07	Renal	0.00006	5E-05	---	0.0001
			Benzo(a)pyrene	6.E-06	5.E-06	---	1.E-05	Renal	0.00007	6E-05	---	0.0001
			Benzo(b)fluoranthene	5.E-07	5.E-07	---	1.E-06	Renal	0.00007	6E-05	---	0.0001
			Chrysene	6.E-09	5.E-09	---	1.E-08	Renal	0.00008	7E-05	---	0.0001
			Dibenz(ah)anthracene	6.E-07	6.E-07	---	1.E-06	Renal	0.000008	7E-06	---	0.00002
			Indeno(1,2,3-cd)pyrene	2.E-07	2.E-07	---	4.E-07	Renal	0.00003	3E-05	---	0.00006
			Arsenic	3.E-06	6.E-07	---	4.E-06	Integumental; Cardiovascular	0.02	0.004	---	0.02
Soil Total				1.E-05	7.E-06	---	2.E-05		0.02	0.004	---	0.02
Soil/Groundwater (1)	Indoor Air	West of South Street On-Facility	Benzene	---	---	3.E-06	3.E-06	Hematological; Immunological	---	---	0.03	0.03
			Carbon disulfide	---	---	---	---	Neurological	---	---	0.00004	0.00004
			Chloroform	---	---	4.E-08	4.E-08	Renal; Hepatic; Neurological	---	---	0.0001	0.0001
			2-Hexanone	---	---	---	---	Neurological; Reproductive	---	---	0.001	0.001
			Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.0006	0.0006
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.08	0.08
			Naphthalene	---	---	---	---	Respiratory	---	---	0.1	0.1
Soil/Groundwater Total				---	---	3.E-06	3.E-06		---	---	0.2	0.2
						Total Risk Across All Media	2.E-05				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.
(1) Indoor air concentrations of benzene and naphthalene are modeled from both soil and groundwater. Modeling from groundwater yielded the highest indoor air concentration and this concentration is used to calculate risk and hazard for these COPCs. Indoor air concentrations of 2-hexanone are modeled from groundwater because this chemical was a COPC in groundwater only. Indoor air concentrations of all other COPCs are modeled from soil.

Table 9.61 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	1.E-07	---	---	1.E-07	Hepatic; Renal; Developmental; Immunological	0.02	---	---	0.02
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.005	0.002	---	0.007
			Naphthalene	---	---	---	---	Whole Body	0.0002	9E-05	---	0.0003
			Benz(a)anthracene	6.E-07	2.E-07	---	9.E-07	Renal	0.0002	8E-05	---	0.0003
			Benzo(a)pyrene	6.E-06	2.E-06	---	8.E-06	Renal	0.0002	7E-05	---	0.0003
			Benzo(b)fluoranthene	7.E-07	3.E-07	---	9.E-07	Renal	0.0002	8E-05	---	0.0003
			Benzo(k)fluoranthene	4.E-08	1.E-08	---	5.E-08	Renal	0.0001	5E-05	---	0.0002
			Chrysene	6.E-09	2.E-09	---	8.E-09	Renal	0.0002	7E-05	---	0.0003
			Dibenz(ah)anthracene	5.E-07	2.E-07	---	7.E-07	Renal	0.00002	6E-06	---	0.00002
			Indeno(1,2,3-cd)pyrene	2.E-07	8.E-08	---	3.E-07	Renal	0.00006	2E-05	---	0.00009
			Antimony	---	---	---	---	Whole Body; Hepatic	0.01	---	---	0.01
			Arsenic	2.E-07	2.E-08	---	2.E-07	Integumental	0.03	0.002	---	0.03
			Vanadium	---	---	---	---	Renal	0.01	---	---	0.01
			Zinc	---	---	---	---	Hematological	0.01	---	---	0.01
	Exposure Medium Total			8.E-06	3.E-06	---	1.E-05		0.09	0.005	---	0.1
	Dust	East of South Street On-Facility	Trichloroethylene (TCE)	---	---	3.E-12	3.E-12	Neurological; Hepatic; Endocrine	---	---	5E-09	0.000000005
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	7E-07	0.0000007
			Naphthalene	---	---	---	---	Respiratory	---	---	0.000002	0.000002
			Benz(a)anthracene	---	---	8.E-12	8.E-12	Respiratory	---	---	0.000002	0.000002
			Benzo(a)pyrene	---	---	7.E-11	7.E-11	Respiratory	---	---	0.000002	0.000002
			Benzo(b)fluoranthene	---	---	8.E-12	8.E-12	Respiratory	---	---	0.000002	0.000002
			Benzo(k)fluoranthene	---	---	5.E-13	5.E-13	Respiratory	---	---	0.000001	0.000001
			Chrysene	---	---	7.E-14	7.E-14	Respiratory	---	---	0.000002	0.000002
			Dibenz(ah)anthracene	---	---	6.E-12	6.E-12	Respiratory	---	---	2E-07	0.0000002
			Indeno(1,2,3-cd)pyrene	---	---	2.E-12	2.E-12	Respiratory	---	---	6E-07	0.0000006
			Antimony	---	---	---	---	Respiratory	---	---	9E-07	0.0000009
			Arsenic	---	---	5.E-11	5.E-11		---	---	---	---
	Exposure Medium Total			---	---	1.E-10	1.E-10		---	---	0.00001	0.00001
Soil Total				8.E-06	3.E-06	1.E-10	1.E-05		0.09	0.005	0.00001	0.1

Table 9.61 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Groundwater	East of South Street On-Facility	Chloroform	---	---	---	---	Hepatic	---	9E-06	---	0.000009
			Trichloroethylene (TCE)	---	1.E-09	---	1.E-09	Hepatic; Renal; Developmental; Immunological	---	0.0002	---	0.0002
			Naphthalene	---	---	---	---	Whole Body	---	8E-06	---	0.000008
			Arsenic	---	2.E-09	---	2.E-09	Integumental	---	0.0003	---	0.0003
			Chromium VI	---	---	---	---	None observed	---	0.002	---	0.002
			Manganese	---	---	---	---	Neurological	---	0.003	---	0.003
			Thallium	---	---	---	---	None observed	---	9E-06	---	0.000009
Groundwater Total				---	3.E-09	---	3.E-09		---	0.005	---	0.005
Soil Gas	Trench Vapor	East of South Street On-Facility (SB-09 area)	Trichloroethylene (TCE)	---	---	3.E-05	3.E-05	Neurological; Hepatic; Endocrine	---	---	0.05	0.05
Soil Gas Total				---	---	3.E-05	3.E-05		---	---	0.05	0.05
						Total Risk Across All Media	4.E-05				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.62 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	1.E-07	---	---	1.E-07	Hepatic; Renal; Developmental; Immunological	0.02	---	---	0.02
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.005	0.002	---	0.007
			Naphthalene	---	---	---	---	Whole Body	0.0002	9E-05	---	0.0003
			Benz(a)anthracene	6.E-07	2.E-07	---	9.E-07	Renal	0.0002	8E-05	---	0.0003
			Benzo(a)pyrene	6.E-06	2.E-06	---	8.E-06	Renal	0.0002	7E-05	---	0.0003
			Benzo(b)fluoranthene	7.E-07	3.E-07	---	9.E-07	Renal	0.0002	8E-05	---	0.0003
			Benzo(k)fluoranthene	4.E-08	1.E-08	---	5.E-08	Renal	0.0001	5E-05	---	0.0002
			Chrysene	6.E-09	2.E-09	---	8.E-09	Renal	0.0002	7E-05	---	0.0003
			Dibenz(ah)anthracene	5.E-07	2.E-07	---	7.E-07	Renal	0.00002	6E-06	---	0.00002
			Indeno(1,2,3-cd)pyrene	2.E-07	8.E-08	---	3.E-07	Renal	0.00006	2E-05	---	0.00009
			Antimony	---	---	---	---	Whole Body; Hepatic	0.01	---	---	0.01
			Arsenic	2.E-07	2.E-08	---	2.E-07	Integumental	0.03	0.002	---	0.03
			Vanadium	---	---	---	---	Renal	0.01	---	---	0.01
			Zinc	---	---	---	---	Hematological	0.01	---	---	0.01
	Exposure Medium Total			8.E-06	3.E-06	---	1.E-05		0.09	0.005	---	0.1
	Dust	East of South Street On-Facility	Trichloroethylene (TCE)	---	---	3.E-12	3.E-12	Neurological; Hepatic; Endocrine	---	---	5E-09	0.000000005
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	7E-07	0.0000007
			Naphthalene	---	---	---	---	Respiratory	---	---	0.000002	0.000002
			Benz(a)anthracene	---	---	8.E-12	8.E-12	Respiratory	---	---	0.000002	0.000002
			Benzo(a)pyrene	---	---	7.E-11	7.E-11	Respiratory	---	---	0.000002	0.000002
			Benzo(b)fluoranthene	---	---	8.E-12	8.E-12	Respiratory	---	---	0.000002	0.000002
			Benzo(k)fluoranthene	---	---	5.E-13	5.E-13	Respiratory	---	---	0.000001	0.000001
			Chrysene	---	---	7.E-14	7.E-14	Respiratory	---	---	0.000002	0.000002
			Dibenz(ah)anthracene	---	---	6.E-12	6.E-12	Respiratory	---	---	2E-07	0.0000002
			Indeno(1,2,3-cd)pyrene	---	---	2.E-12	2.E-12	Respiratory	---	---	6E-07	0.0000006
			Antimony	---	---	---	---	Respiratory	---	---	9E-07	0.0000009
			Arsenic	---	---	5.E-11	5.E-11		---	---	---	---
	Exposure Medium Total			---	---	1.E-10	1.E-10		---	---	0.00001	0.00001
	Trench Vapor	East of South Street On-Facility (non-SB-09 area)	Benzene	---	---	1.E-06	1.E-06	Hematological; Immunological	---	---	0.1	0.1
			Carbon disulfide	---	---	---	---	Neurological	---	---	0.009	0.009
			Toluene	---	---	---	---	Neurological	---	---	0.0004	0.0004
			Trichloroethylene (TCE)	---	---	6.E-07	6.E-07	Neurological; Hepatic; Endocrine	---	---	0.0009	0.0009
			Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.0004	0.0004
			Xylenes (mixed isomers)	---	---	---	---	Neurological	---	---	0.03	0.03
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.7	0.7
			Naphthalene	---	---	---	---	Respiratory	---	---	1	1
	Exposure Medium Total			---	---	2.E-06	2.E-06		---	---	2	2
Soil Total				8.E-06	3.E-06	2.E-06	1.E-05		0.09	0.005	2	2

Table 9.62 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Groundwater	East of South Street On-Facility	Chloroform	---	---	---	---	Hepatic	---	9E-06	---	0.000009
			Trichloroethylene (TCE)	---	1.E-09	---	1.E-09	Hepatic; Renal; Developmental; Immunological	---	0.0002	---	0.0002
			Naphthalene	---	---	---	---	Whole Body	---	8E-06	---	0.000008
			Arsenic	---	2.E-09	---	2.E-09	Integumental	---	0.0003	---	0.0003
			Chromium VI	---	---	---	---	None observed	---	0.002	---	0.002
			Manganese	---	---	---	---	Neurological	---	0.003	---	0.003
			Thallium	---	---	---	---	None observed	---	9E-06	---	0.000009
Groundwater Total				---	3.E-09	---	3.E-09		---	0.005	---	0.005
							Total Risk Across All Media	1.E-05			Total Hazard Across All Media	2

Total Respiratory HI Across All Media: 2

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.62 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	2.E-08	---	---	2.E-08	Hepatic; Renal; Developmental; Immunological	0.003	---	---	0.003
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.0007	0.0003	---	0.001
			Naphthalene	---	---	---	---	Whole Body	0.00003	1E-05	---	0.00005
			Benz(a)anthracene	9.E-08	4.E-08	---	1.E-07	Renal	0.00003	1E-05	---	0.00004
			Benzo(a)pyrene	9.E-07	4.E-07	---	1.E-06	Renal	0.00003	1E-05	---	0.00004
			Benzo(b)fluoranthene	1.E-07	4.E-08	---	1.E-07	Renal	0.00003	1E-05	---	0.00005
			Benzo(k)fluoranthene	6.E-09	2.E-09	---	8.E-09	Renal	0.00002	8E-06	---	0.00003
			Chrysene	9.E-10	4.E-10	---	1.E-09	Renal	0.00003	1E-05	---	0.00004
			Dibenz(ah)anthracene	8.E-08	3.E-08	---	1.E-07	Renal	0.000002	1E-06	---	0.000004
			Indeno(1,2,3-cd)pyrene	3.E-08	1.E-08	---	4.E-08	Renal	0.000009	4E-06	---	0.00001
			Antimony	---	---	---	---	Whole Body; Hepatic	0.002	---	---	0.002
			Arsenic	3.E-08	3.E-09	---	3.E-08	Integumental	0.004	0.0004	---	0.004
			Vanadium	---	---	---	---	Renal	0.002	---	---	0.002
			Zinc	---	---	---	---	Hematological	0.002	---	---	0.002
	Exposure Medium Total			1.E-06	5.E-07	---	2.E-06		0.01	0.0008	---	0.01
	Dust	East of South Street On-Facility	Trichloroethylene (TCE)	---	---	1.E-12	1.E-12	Neurological; Hepatic; Endocrine	---	---	2E-09	0.000000002
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	2E-07	0.0000002
			Naphthalene	---	---	---	---	Respiratory	---	---	5E-07	0.0000005
			Benz(a)anthracene	---	---	3.E-12	3.E-12	Respiratory	---	---	7E-07	0.0000007
			Benzo(a)pyrene	---	---	2.E-11	2.E-11	Respiratory	---	---	6E-07	0.0000006
			Benzo(b)fluoranthene	---	---	3.E-12	3.E-12	Respiratory	---	---	7E-07	0.0000007
			Benzo(k)fluoranthene	---	---	2.E-13	2.E-13	Respiratory	---	---	4E-07	0.0000004
			Chrysene	---	---	2.E-14	2.E-14	Respiratory	---	---	6E-07	0.0000006
			Dibenz(ah)anthracene	---	---	2.E-12	2.E-12	Respiratory	---	---	6E-08	0.00000006
			Indeno(1,2,3-cd)pyrene	---	---	8.E-13	8.E-13	Respiratory	---	---	2E-07	0.0000002
			Antimony	---	---	---	---	Respiratory	---	---	3E-07	0.0000003
			Arsenic	---	---	2.E-11	2.E-11		---	---	---	---
	Exposure Medium Total			---	---	5.E-11	5.E-11		---	---	0.000004	0.000004
	Trench Vapor	East of South Street On-Facility (non-SB-09 area)	Benzene	---	---	4.E-07	4.E-07	Hematological; Immunological	---	---	0.05	0.05
			Carbon disulfide	---	---	---	---	Neurological	---	---	0.003	0.003
			Toluene	---	---	---	---	Neurological	---	---	0.0001	0.0001
			Trichloroethylene (TCE)	---	---	2.E-07	2.E-07	Neurological; Hepatic; Endocrine	---	---	0.0003	0.0003
			Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.0001	0.0001
			Xylenes (mixed isomers)	---	---	---	---	Neurological	---	---	0.01	0.01
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.2	0.2
			Naphthalene	---	---	---	---	Respiratory	---	---	0.5	0.5
	Exposure Medium Total			---	---	6.E-07	6.E-07		---	---	0.8	0.8
Soil Total				1.E-06	5.E-07	6.E-07	2.E-06		0.01	0.0008	0.8	0.8

Table 9.62 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Groundwater	East of South Street On-Facility	Chloroform	---	---	---	---	Hepatic	---	3E-06	---	0.000003
			Trichloroethylene (TCE)	---	3.E-10	---	3.E-10	Hepatic; Renal; Developmental; Immunological	---	7E-05	---	0.00007
			Naphthalene	---	---	---	---	Whole Body	---	7E-07	---	0.0000007
			Arsenic	---	3.E-10	---	3.E-10	Integumental	---	4E-05	---	0.00004
			Chromium VI	---	---	---	---	None observed	---	0.0002	---	0.0002
			Manganese	---	---	---	---	Neurological	---	0.0007	---	0.0007
			Thallium	---	---	---	---	None observed	---	2E-06	---	0.000002
Groundwater Total				---	6.E-10	---	6.E-10		---	0.001	---	0.001
							Total Risk Across All Media	2.E-06			Total Hazard Across All Media	0.8

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.63 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	West of South Street On-Facility	Benz(a)anthracene	7.E-08	3.E-08	---	9.E-08	Renal	0.00002	0.000008	---	0.00003
			Benzo(a)pyrene	8.E-07	3.E-07	---	1.E-06	Renal	0.00002	0.00001	---	0.00003
			Benzo(b)fluoranthene	8.E-08	3.E-08	---	1.E-07	Renal	0.00002	0.000009	---	0.00003
			Chrysene	8.E-10	3.E-10	---	1.E-09	Renal	0.00003	0.00001	---	0.00004
			Dibenz(ah)anthracene	9.E-08	3.E-08	---	1.E-07	Renal	0.000003	0.000001	---	0.000004
			Indeno(1,2,3-cd)pyrene	3.E-08	1.E-08	---	5.E-08	Renal	0.00001	0.000004	---	0.00001
			Arsenic	4.E-07	4.E-08	---	4.E-07	Integumental	0.06	0.006	---	0.07
	Exposure Medium Total			1.E-06	4.E-07	---	2.E-06		0.06	0.006	---	0.07
	Dust	West of South Street On-Facility	Benz(a)anthracene	---	---	8.E-13	8.E-13	Respiratory	---	---	0.0000002	0.0000002
			Benzo(a)pyrene	---	---	9.E-12	9.E-12	Respiratory	---	---	0.0000003	0.0000003
			Benzo(b)fluoranthene	---	---	9.E-13	9.E-13	Respiratory	---	---	0.0000002	0.0000002
			Chrysene	---	---	1.E-14	1.E-14	Respiratory	---	---	0.0000003	0.0000003
			Dibenz(ah)anthracene	---	---	1.E-12	1.E-12	Respiratory	---	---	0.00000003	0.00000003
			Indeno(1,2,3-cd)pyrene	---	---	4.E-13	4.E-13	Respiratory	---	---	0.0000001	0.0000001
			Arsenic	---	---	1.E-10	1.E-10		---	---	---	---
	Exposure Medium Total			---	---	1.E-10	1.E-10		---	---	0.000001	0.000001
	Trench Vapor	West of South Street On-Facility	Benzene	---	---	5.E-08	5.E-08	Hematological; Immunological	---	---	0.006	0.006
			Carbon disulfide	---	---	---	---	Neurological	---	---	0.04	0.04
			Chloroform	---	---	2.E-07	2.E-07	Renal; Hepatic; Neurological	---	---	0.01	0.01
			Toluene	---	---	---	---	Neurological	---	---	0.0001	0.0001
			Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.01	0.01
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.3	0.3
			Naphthalene	---	---	---	---	Respiratory	---	---	0.2	0.2
	Exposure Medium Total			---	---	2.E-07	2.E-07		---	---	0.5	0.5
Soil Total				1.E-06	4.E-07	2.E-07	2.E-06		0.06	0.006	0.5	0.6

Table 9.63 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Groundwater	West of South Street On-Facility	Benzene	---	9.E-09	---	9.E-09	Hematological; Immunological	---	0.001	---	0.001
			2-Hexanone	---	---	---	---	Neurological	---	0.000003	---	0.000003
			Trichloroethylene (TCE)	---	2.E-09	---	2.E-09	Hepatic; Renal; Developmental; Immunological	---	0.0004	---	0.0004
			Xylenes (mixed isomers)	---	---	---	---	Whole Body	---	0.0001	---	0.0001
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	0.06	---	0.06
			Naphthalene	---	---	---	---	Whole Body	---	0.002	---	0.002
			Bis(2-ethylhexyl)phthalate (DEHP)	---	3.E-08	---	3.E-08	Reproductive	---	0.009	---	0.009
			Antimony	---	---	---	---	Whole Body; Hepatic	---	0.001	---	0.001
			Arsenic	---	2.E-08	---	2.E-08	Integumental	---	0.003	---	0.003
			Barium	---	---	---	---	Renal	---	0.0002	---	0.0002
			Chromium VI	---	---	---	---	None observed	---	0.02	---	0.02
			Manganese	---	---	---	---	Neurological	---	0.03	---	0.03
			Nickel	---	---	---	---	Integumental; Respiratory	---	0.0003	---	0.0003
			Vanadium	---	---	---	---	Renal	---	0.009	---	0.009
Groundwater Total				---	6.E-08	---	6.E-08		---	0.1	---	0.1
							Total Risk Across All Media	2.E-06			Total Hazard Across All Media	0.7

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.63 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	West of South Street On-Facility	Benz(a)anthracene	1.E-08	4.E-09	---	1.E-08	Renal	0.000003	0.000001	---	0.000005
			Benzo(a)pyrene	1.E-07	5.E-08	---	2.E-07	Renal	0.000004	0.000002	---	0.000005
			Benzo(b)fluoranthene	1.E-08	5.E-09	---	2.E-08	Renal	0.000004	0.000002	---	0.000005
			Chrysene	1.E-10	5.E-11	---	2.E-10	Renal	0.000004	0.000002	---	0.000006
			Dibenz(ah)anthracene	1.E-08	6.E-09	---	2.E-08	Renal	0.0000004	0.0000002	---	0.0000006
			Indeno(1,2,3-cd)pyrene	5.E-09	2.E-09	---	7.E-09	Renal	0.000002	0.0000007	---	0.000002
			Arsenic	6.E-08	6.E-09	---	7.E-08	Integumental	0.01	0.001	---	0.01
	Exposure Medium Total			2.E-07	7.E-08	---	3.E-07		0.01	0.001	---	0.01
	Dust	West of South Street On-Facility	Benz(a)anthracene	---	---	3.E-13	3.E-13	Respiratory	---	---	0.00000007	0.00000007
			Benzo(a)pyrene	---	---	3.E-12	3.E-12	Respiratory	---	---	0.00000008	0.00000008
			Benzo(b)fluoranthene	---	---	3.E-13	3.E-13	Respiratory	---	---	0.00000008	0.00000008
			Chrysene	---	---	3.E-15	3.E-15	Respiratory	---	---	0.00000009	0.00000009
			Dibenz(ah)anthracene	---	---	4.E-13	4.E-13	Respiratory	---	---	0.00000001	0.00000001
			Indeno(1,2,3-cd)pyrene	---	---	1.E-13	1.E-13	Respiratory	---	---	0.00000004	0.00000004
			Arsenic	---	---	4.E-11	4.E-11		---	---	---	---
	Exposure Medium Total			---	---	4.E-11	4.E-11		---	---	0.0000004	0.0000004
	Trench Vapor	West of South Street On-Facility	Benzene	---	---	2.E-08	2.E-08	Hematological; Immunological	---	---	0.002	0.002
			Carbon disulfide	---	---	---	---	Neurological	---	---	0.01	0.01
			Chloroform	---	---	7.E-08	7.E-08	Renal; Hepatic; Neurological	---	---	0.004	0.004
			Toluene	---	---	---	---	Neurological	---	---	0.00004	0.00004
			Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.005	0.005
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.08	0.08
			Naphthalene	---	---	---	---	Respiratory	---	---	0.07	0.07
	Exposure Medium Total			---	---	8.E-08	8.E-08		---	---	0.2	0.2
Soil Total				2.E-07	7.E-08	8.E-08	4.E-07		0.01	0.001	0.2	0.2

Table 9.63 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Groundwater	West of South Street On-Facility	Benzene	---	5.E-10	---	5.E-10	Hematological; Immunological	---	0.00007	---	0.00007
			2-Hexanone	---	---	---	---	Neurological	---	0.000001	---	0.000001
			Trichloroethylene (TCE)	---	6.E-10	---	6.E-10	Hepatic; Renal; Developmental; Immunological	---	0.0001	---	0.0001
			Xylenes (mixed isomers)	---	---	---	---	Whole Body	---	0.00005	---	0.00005
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	0.004	---	0.004
			Naphthalene	---	---	---	---	Whole Body	---	0.0001	---	0.0001
			Bis(2-ethylhexyl)phthalate (DEHP)	---	1.E-08	---	1.E-08	Reproductive	---	0.003	---	0.003
			Antimony	---	---	---	---	Whole Body; Hepatic	---	0.0003	---	0.0003
			Arsenic	---	1.E-09	---	1.E-09	Integumental	---	0.0002	---	0.0002
			Barium	---	---	---	---	Renal	---	0.00005	---	0.00005
			Chromium VI	---	---	---	---	None observed	---	0.004	---	0.004
			Manganese	---	---	---	---	Neurological	---	0.001	---	0.001
			Nickel	---	---	---	---	Integumental; Respiratory	---	0.00006	---	0.00006
			Vanadium	---	---	---	---	Renal	---	0.002	---	0.002
Groundwater Total				---	1.E-08	---	1.E-08		---	0.02	---	0.02
							Total Risk Across All Media	4.E-07				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.64 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Lot 122	Benzo(a)pyrene	8.E-08	3.E-08	---	1.E-07	Renal	0.000003	0.000001	---	0.000004
			Arsenic	6.E-07	5.E-08	---	6.E-07	Integumental	0.09	0.008	---	0.1
	Exposure Medium Total			6.E-07	8.E-08	---	7.E-07		0.09	0.008	---	0.1
	Dust	Gleason Court Lot 122	Benzo(a)pyrene	---	---	1.E-12	1.E-12	Respiratory	---	---	0.00000003	0.00000003
			Arsenic	---	---	2.E-10	2.E-10		---	---	---	---
	Exposure Medium Total			---	---	2.E-10	2.E-10		---	---	0.00000003	0.00000003
Soil Total				6.E-07	8.E-08	2.E-10	7.E-07		0.09	0.008	0.00000003	0.1
Total Risk Across All Media							7.E-07	Total Hazard Across All Media				0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
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Table 9.65 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Lot 124	Benzo(a)pyrene	1.E-07	5.E-08	---	2.E-07	Renal	0.000004	0.000001	---	0.000005
			Benzo(b)fluoranthene	2.E-08	6.E-09	---	2.E-08	Renal	0.000005	0.000002	---	0.000007
			Arsenic	2.E-07	1.E-08	---	2.E-07	Integumental	0.02	0.002	---	0.03
	Exposure Medium Total			3.E-07	7.E-08	---	4.E-07		0.02	0.002	---	0.03
	Dust	Gleason Court Lot 124	Benzo(a)pyrene	---	---	1.E-12	1.E-12	Respiratory	---	---	0.00000004	0.00000004
			Benzo(b)fluoranthene	---	---	2.E-13	2.E-13	Respiratory	---	---	0.00000005	0.00000005
			Arsenic	---	---	5.E-11	5.E-11		---	---	---	---
	Exposure Medium Total			---	---	5.E-11	5.E-11		---	---	0.00000009	0.00000009
Soil Total				3.E-07	7.E-08	5.E-11	4.E-07		0.02	0.002	0.00000009	0.03
							Total Risk Across All Media	4.E-07				Total Hazard Across All Media	0.03

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.66 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Lot 125	Benz(a)anthracene	2.E-08	9.E-09	---	3.E-08	Renal	0.000007	0.000003	---	0.00001
			Benzo(a)pyrene	3.E-07	1.E-07	---	4.E-07	Renal	0.000009	0.000004	---	0.00001
			Benzo(b)fluoranthene	4.E-08	1.E-08	---	5.E-08	Renal	0.00001	0.000004	---	0.00002
			Arsenic	4.E-07	3.E-08	---	4.E-07	Integumental	0.05	0.005	---	0.06
	Exposure Medium Total			7.E-07	2.E-07	---	9.E-07		0.05	0.005	---	0.06
	Dust	Gleason Court Lot 125	Benz(a)anthracene	---	---	3.E-13	3.E-13	Respiratory	---	---	0.00000007	0.00000007
			Benzo(a)pyrene	---	---	4.E-12	4.E-12	Respiratory	---	---	0.0000001	0.0000001
			Benzo(b)fluoranthene	---	---	4.E-13	4.E-13	Respiratory	---	---	0.0000001	0.0000001
			Arsenic	---	---	1.E-10	1.E-10		---	---	---	---
	Exposure Medium Total			---	---	1.E-10	1.E-10		---	---	0.0000003	0.0000003
Soil Total				7.E-07	2.E-07	1.E-10	9.E-07		0.05	0.005	0.0000003	0.06
						Total Risk Across All Media	9.E-07				Total Hazard Across All Media	0.06

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.67 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Gleason Court Vacant Lot	Benzo(a)pyrene	6.E-08	2.E-08	---	8.E-08	Renal	0.000002	0.0000008	---	0.000003
			Arsenic	7.E-07	6.E-08	---	8.E-07	Integumental	0.1	0.01	---	0.1
	Exposure Medium Total			8.E-07	9.E-08	---	9.E-07		0.1	0.01	---	0.1
	Dust	Gleason Court Vacant Lot	Benzo(a)pyrene	---	---	8.E-13	8.E-13	Respiratory	---	---	0.00000002	0.00000002
			Arsenic	---	---	2.E-10	2.E-10		---	---	---	---
	Exposure Medium Total			---	---	2.E-10	2.E-10		---	---	0.00000002	0.00000002
	Trench Vapor	Gleason Court Vacant Lot	Naphthalene	---	---	---	---	Respiratory	---	---	0.07	0.07
	Exposure Medium Total			---	---	---	---		---	---	0.07	0.07
Soil Total				8.E-07	9.E-08	2.E-10	9.E-07		0.1	0.01	0.07	0.2
						Total Risk Across All Media	9.E-07				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.68 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Benz(a)anthracene	4.E-07	2.E-07	---	6.E-07	Renal	0.0001	0.00005	---	0.0002
			Benzo(a)pyrene	2.E-06	7.E-07	---	3.E-06	Renal	0.00006	0.00002	---	0.00008
			Benzo(b)fluoranthene	3.E-07	1.E-07	---	4.E-07	Renal	0.0001	0.00004	---	0.0001
			Benzo(k)fluoranthene	1.E-08	5.E-09	---	2.E-08	Renal	0.00004	0.00002	---	0.00006
			Chrysene	2.E-09	9.E-10	---	3.E-09	Renal	0.00008	0.00003	---	0.0001
			Dibenz(ah)anthracene	4.E-07	2.E-07	---	6.E-07	Renal	0.00001	0.000006	---	0.00002
			Indeno(1,2,3-cd)pyrene	2.E-07	9.E-08	---	3.E-07	Renal	0.00007	0.00003	---	0.0001
			Arsenic	4.E-06	4.E-07	---	5.E-06	Integumental	0.6	0.06	---	0.7
	Exposure Medium Total			7.E-06	2.E-06	---	9.E-06		0.6	0.06	---	0.7
	Dust	Old Railroad and Former Lower Mill Pond Area	Benz(a)anthracene	---	---	5.E-12	5.E-12	Respiratory	---	---	0.000001	0.000001
			Benzo(a)pyrene	---	---	2.E-11	2.E-11	Respiratory	---	---	0.0000006	0.0000006
			Benzo(b)fluoranthene	---	---	4.E-12	4.E-12	Respiratory	---	---	0.000001	0.000001
			Benzo(k)fluoranthene	---	---	2.E-13	2.E-13	Respiratory	---	---	0.0000005	0.0000005
			Chrysene	---	---	3.E-14	3.E-14	Respiratory	---	---	0.0000008	0.0000008
			Dibenz(ah)anthracene	---	---	6.E-12	6.E-12	Respiratory	---	---	0.0000001	0.0000001
			Indeno(1,2,3-cd)pyrene	---	---	3.E-12	3.E-12	Respiratory	---	---	0.0000007	0.0000007
			Arsenic	---	---	1.E-09	1.E-09		---	---	---	---
	Exposure Medium Total			---	---	1.E-09	1.E-09		---	---	0.000005	0.000005
	Trench Vapor	Old Railroad and Former Lower Mill Pond Area	Methylene chloride (Dichloromethane)	---	---	5.E-07	5.E-07	Hepatic	---	---	0.02	0.02
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.3	0.3
			Naphthalene	---	---	---	---	Respiratory	---	---	0.6	0.6
	Exposure Medium Total			---	---	5.E-07	5.E-07		---	---	1	1
Soil Total				7.E-06	2.E-06	5.E-07	1.E-05		0.6	0.06	1	2
Groundwater	Groundwater	Old Railroad and Former Lower Mill Pond Area	Arsenic	---	4.E-10	---	4.E-10	Integumental	---	0.00006	---	0.00006
			Chromium VI	---	---	---	---	None observed	---	0.004	---	0.004
			Manganese	---	---	---	---	Neurological	---	0.005	---	0.005
Groundwater Total				---	4.E-10	---	4.E-10		---	0.01	---	0.01
							Total Risk Across All Media	1.E-05				Total Hazard Across All Media	2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.68 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Benz(a)anthracene	6.E-08	3.E-08	---	9.E-08	Renal	0.00002	0.000008	---	0.00003
			Benzo(a)pyrene	3.E-07	1.E-07	---	4.E-07	Renal	0.000009	0.000004	---	0.00001
			Benzo(b)fluoranthene	5.E-08	2.E-08	---	7.E-08	Renal	0.00002	0.000007	---	0.00002
			Benzo(k)fluoranthene	2.E-09	9.E-10	---	3.E-09	Renal	0.000007	0.000003	---	0.00001
			Chrysene	4.E-10	2.E-10	---	5.E-10	Renal	0.00001	0.000005	---	0.00002
			Dibenz(ah)anthracene	7.E-08	3.E-08	---	1.E-07	Renal	0.000002	0.0000009	---	0.000003
			Indeno(1,2,3-cd)pyrene	3.E-08	1.E-08	---	5.E-08	Renal	0.00001	0.000005	---	0.00002
			Arsenic	6.E-07	6.E-08	---	7.E-07	Integumental	0.1	0.01	---	0.1
	Exposure Medium Total			1.E-06	3.E-07	---	1.E-06		0.1	0.01	---	0.1
	Dust	Old Railroad and Former Lower Mill Pond Area	Benz(a)anthracene	---	---	2.E-12	2.E-12	Respiratory	---	---	0.0000004	0.0000004
			Benzo(a)pyrene	---	---	8.E-12	8.E-12	Respiratory	---	---	0.0000002	0.0000002
			Benzo(b)fluoranthene	---	---	1.E-12	1.E-12	Respiratory	---	---	0.0000004	0.0000004
			Benzo(k)fluoranthene	---	---	6.E-14	6.E-14	Respiratory	---	---	0.0000002	0.0000002
			Chrysene	---	---	1.E-14	1.E-14	Respiratory	---	---	0.0000003	0.0000003
			Dibenz(ah)anthracene	---	---	2.E-12	2.E-12	Respiratory	---	---	0.00000005	0.00000005
			Indeno(1,2,3-cd)pyrene	---	---	9.E-13	9.E-13	Respiratory	---	---	0.0000002	0.0000002
			Arsenic	---	---	4.E-10	4.E-10		---	---	---	---
	Exposure Medium Total			---	---	4.E-10	4.E-10		---	---	0.000002	0.000002
	Trench Vapor	Old Railroad and Former Lower Mill Pond Area	Methylene chloride (Dichloromethane)	---	---	6.E-08	6.E-08	Hepatic	---	---	0.003	0.003
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.1	0.1
			Naphthalene	---	---	---	---	Respiratory	---	---	0.2	0.2
	Exposure Medium Total			---	---	6.E-08	6.E-08		---	---	0.3	0.3
Soil Total				1.E-06	3.E-07	6.E-08	1.E-06		0.1	0.01	0.3	0.4
Groundwater	Groundwater	Old Railroad and Former Lower Mill Pond Area	Arsenic	---	1.E-10	---	1.E-10	Integumental	---	0.00002	---	0.00002
			Chromium VI	---	---	---	---	None observed	---	0.001	---	0.001
			Manganese	---	---	---	---	Neurological	---	0.001	---	0.001
Groundwater Total				---	1.E-10	---	1.E-10		---	0.002	---	0.002
						Total Risk Across All Media	1.E-06				Total Hazard Across All Media	0.4

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.69 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Orlando Property	Benz(a)anthracene	3.E-08	1.E-08	---	5.E-08	Renal	0.00001	0.000004	---	0.00001
			Benzo(a)pyrene	3.E-07	1.E-07	---	4.E-07	Renal	0.000009	0.000003	---	0.00001
			Benzo(b)fluoranthene	3.E-08	1.E-08	---	4.E-08	Renal	0.00001	0.000004	---	0.00001
			Indeno(1,2,3-cd)pyrene	5.E-09	2.E-09	---	7.E-09	Renal	0.000002	0.0000006	---	0.000002
			Arsenic	1.E-07	1.E-08	---	1.E-07	Integumental	0.02	0.002	---	0.02
	Exposure Medium Total			5.E-07	1.E-07	---	6.E-07		0.02	0.002	---	0.02
	Dust	Orlando Property	Benz(a)anthracene	---	---	4.E-13	4.E-13	Respiratory	---	---	0.0000001	0.0000001
			Benzo(a)pyrene	---	---	3.E-12	3.E-12	Respiratory	---	---	0.00000009	0.00000009
			Benzo(b)fluoranthene	---	---	4.E-13	4.E-13	Respiratory	---	---	0.0000001	0.0000001
			Indeno(1,2,3-cd)pyrene	---	---	6.E-14	6.E-14	Respiratory	---	---	0.00000002	0.00000002
			Arsenic	---	---	4.E-11	4.E-11		---	---	---	---
	Exposure Medium Total			---	---	4.E-11	4.E-11		---	---	0.0000003	0.0000003
	Trench Vapor	Orlando Property	2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.09	0.09
			Naphthalene	---	---	---	---	Respiratory	---	---	0.4	0.4
	Exposure Medium Total			---	---	---	---		---	---	0.4	0.4
Soil Total				5.E-07	1.E-07	4.E-11	6.E-07		0.02	0.002	0.4	0.5
							Total Risk Across All Media	6.E-07				Total Hazard Across All Media	0.5

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.70 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 208	Arsenic	1.E-07	1.E-08	---	2.E-07	Integumental	0.02	0.002	---	0.02
	Exposure Medium Total			1.E-07	1.E-08	---	2.E-07		0.02	0.002	---	0.02
	Dust	Lot 208	Arsenic	---	---	4.E-11	4.E-11		---	---	---	---
	Exposure Medium Total			---	---	4.E-11	4.E-11		---	---	---	---
	Trench Vapor	Lot 208	Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.006	0.006
			Naphthalene	---	---	---	---	Respiratory	---	---	0.1	0.1
	Exposure Medium Total			---	---	---	---		---	---	0.1	0.1
Soil Total				1.E-07	1.E-08	4.E-11	2.E-07		0.02	0.002	0.1	0.2
							Total Risk Across All Media	2.E-07				Total Hazard Across All Media	0.2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.71 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Vacant Lot 209	Arsenic	1.E-07	1.E-08	---	2.E-07	Integumental	0.02	0.002	---	0.02
	Exposure Medium Total			1.E-07	1.E-08	---	2.E-07		0.02	0.002	---	0.02
	Dust	Vacant Lot 209	Arsenic	---	---	4.E-11	4.E-11		---	---	---	---
	Exposure Medium Total			---	---	4.E-11	4.E-11		---	---	---	---
Soil Total				1.E-07	1.E-08	4.E-11	2.E-07		0.02	0.002	---	0.02
						Total Risk Across All Media	2.E-07				Total Hazard Across All Media	0.02

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.72 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 210	Benzo(a)pyrene	1.E-07	5.E-08	---	2.E-07	Renal	0.000004	0.000002	---	0.000006
			Benzo(b)fluoranthene	2.E-08	7.E-09	---	2.E-08	Renal	0.000005	0.000002	---	0.000007
			Arsenic	2.E-07	1.E-08	---	2.E-07	Integumental	0.02	0.002	---	0.03
	Exposure Medium Total			3.E-07	7.E-08	---	4.E-07		0.02	0.002	---	0.03
	Dust	Lot 210	Benzo(a)pyrene	---	---	2.E-12	2.E-12	Respiratory	---	---	0.00000004	0.00000004
			Benzo(b)fluoranthene	---	---	2.E-13	2.E-13	Respiratory	---	---	0.00000006	0.00000006
			Arsenic	---	---	5.E-11	5.E-11		---	---	---	---
	Exposure Medium Total			---	---	5.E-11	5.E-11		---	---	0.0000001	0.0000001
	Trench Vapor	Lot 210	Naphthalene	---	---	---	---	Respiratory	---	---	0.1	0.1
	Exposure Medium Total			---	---	---	---		---	---	0.1	0.1
Soil Total				3.E-07	7.E-08	5.E-11	4.E-07		0.02	0.002	0.1	0.1
						Total Risk Across All Media	4.E-07				Total Hazard Across All Media	0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.73 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 230	Benzo(a)pyrene	9.E-08	3.E-08	---	1.E-07	Renal	0.000003	0.000001	---	0.000004
			Arsenic	3.E-07	3.E-08	---	3.E-07	Integumental	0.05	0.004	---	0.05
	Exposure Medium Total			4.E-07	6.E-08	---	4.E-07		0.05	0.004	---	0.05
	Dust	Lot 230	Benzo(a)pyrene	---	---	1.E-12	1.E-12	Respiratory	---	---	0.00000003	0.00000003
			Arsenic	---	---	9.E-11	9.E-11		---	---	---	---
	Exposure Medium Total			---	---	9.E-11	9.E-11		---	---	0.00000003	0.00000003
	Trench Vapor	Lot 230	Naphthalene	---	---	---	---	Respiratory	---	---	0.09	0.09
	Exposure Medium Total			---	---	---	---		---	---	0.09	0.09
Soil Total				4.E-07	6.E-08	9.E-11	4.E-07		0.05	0.004	0.09	0.1
							Total Risk Across All Media	4.E-07				Total Hazard Across All Media	0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.74 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 257	Benz(a)anthracene	2.E-08	6.E-09	---	2.E-08	Renal	0.000005	0.000002	---	0.000007
			Benzo(a)pyrene	2.E-07	6.E-08	---	2.E-07	Renal	0.000005	0.000002	---	0.000007
			Benzo(b)fluoranthene	2.E-08	9.E-09	---	3.E-08	Renal	0.000007	0.000003	---	0.00001
			Indeno(1,2,3-cd)pyrene	2.E-08	6.E-09	---	2.E-08	Renal	0.000005	0.000002	---	0.000007
			Arsenic	5.E-07	4.E-08	---	5.E-07	Integumental	0.07	0.006	---	0.08
	Exposure Medium Total			7.E-07	1.E-07	---	8.E-07		0.07	0.006	---	0.08
	Dust	Lot 257	Benz(a)anthracene	---	---	2.E-13	2.E-13	Respiratory	---	---	0.00000005	0.00000005
			Benzo(a)pyrene	---	---	2.E-12	2.E-12	Respiratory	---	---	0.00000005	0.00000005
			Benzo(b)fluoranthene	---	---	3.E-13	3.E-13	Respiratory	---	---	0.00000007	0.00000007
			Indeno(1,2,3-cd)pyrene	---	---	2.E-13	2.E-13	Respiratory	---	---	0.00000005	0.00000005
			Arsenic	---	---	1.E-10	1.E-10		---	---	---	---
	Exposure Medium Total			---	---	1.E-10	1.E-10		---	---	0.0000002	0.0000002
	Trench Vapor	Lot 257	2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.009	0.009
			Naphthalene	---	---	---	---	Respiratory	---	---	0.02	0.02
	Exposure Medium Total			---	---	---	---		---	---	0.03	0.03
Soil Total				7.E-07	1.E-07	1.E-10	8.E-07		0.07	0.006	0.03	0.1
							Total Risk Across All Media	8.E-07				Total Hazard Across All Media	0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.75 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 282	Arsenic	4.E-07	3.E-08	---	4.E-07	Integumental	0.06	0.005	---	0.07
	Exposure Medium Total			4.E-07	3.E-08	---	4.E-07		0.06	0.005	---	0.07
	Dust	Lot 282	Arsenic	---	---	1.E-10	1.E-10		---	---	---	---
	Exposure Medium Total			---	---	1.E-10	1.E-10		---	---	---	---
	Trench Vapor	Lot 282	Naphthalene	---	---	---	---	Respiratory	---	---	0.05	0.05
	Exposure Medium Total			---	---	---	---		---	---	0.05	0.05
Soil Total				4.E-07	3.E-08	1.E-10	4.E-07		0.06	0.005	0.05	0.1
							Total Risk Across All Media	4.E-07				Total Hazard Across All Media	0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.76 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 283	Benz(a)anthracene	2.E-08	6.E-09	---	2.E-08	Renal	0.000005	0.000002	---	0.000007
			Benzo(a)pyrene	2.E-07	6.E-08	---	2.E-07	Renal	0.000005	0.000002	---	0.000007
			Arsenic	2.E-07	2.E-08	---	2.E-07	Integumental	0.03	0.003	---	0.04
	Exposure Medium Total			4.E-07	8.E-08	---	5.E-07		0.03	0.003	---	0.04
	Dust	Lot 283	Benz(a)anthracene	---	---	2.E-13	2.E-13	Respiratory	---	---	0.00000005	0.00000005
			Benzo(a)pyrene	---	---	2.E-12	2.E-12	Respiratory	---	---	0.00000005	0.00000005
			Arsenic	---	---	6.E-11	6.E-11		---	---	---	---
	Exposure Medium Total			---	---	6.E-11	6.E-11		---	---	0.0000001	0.0000001
	Trench Vapor	Lot 283	Chloroform	---	---	2.E-06	2.E-06	Renal; Hepatic; Neurological	---	---	0.1	0.1
			Naphthalene	---	---	---	---	Respiratory	---	---	0.2	0.2
	Exposure Medium Total			---	---	2.E-06	2.E-06		---	---	0.3	0.3
Soil Total				4.E-07	8.E-08	2.E-06	2.E-06		0.03	0.003	0.3	0.3
							Total Risk Across All Media	2.E-06				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.77 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Lot 342	Arsenic	2.E-07	2.E-08	---	3.E-07	Integumental	0.04	0.003	---	0.04
	Exposure Medium Total			2.E-07	2.E-08	---	3.E-07		0.04	0.003	---	0.04
	Dust	Lot 342	Arsenic	---	---	7.E-11	7.E-11		---	---	---	---
	Exposure Medium Total			---	---	7.E-11	7.E-11		---	---	---	---
	Trench Vapor	Lot 342	Naphthalene	---	---	---	---	Respiratory	---	---	0.1	0.1
	Exposure Medium Total			---	---	---	---		---	---	0.1	0.1
Soil Total				2.E-07	2.E-08	7.E-11	3.E-07		0.04	0.003	0.1	0.1
							Total Risk Across All Media	3.E-07				Total Hazard Across All Media	0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.78 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Trench Vapor	Lot 350	Naphthalene	---	---	---	---	Respiratory	---	---	0.1	0.1
Soil Total				---	---	---	---		---	---	0.1	0.1
			Total Risk Across All Media				---	Total Hazard Across All Media				0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.79 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Trench Vapor	Lot 360	2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.03	0.03
			Naphthalene	---	---	---	---	Respiratory	---	---	0.08	0.08
Soil Total				---	---	---	---		---	---	0.1	0.1
							Total Risk Across All Media	---			Total Hazard Across All Media	0.1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.80 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Trench Vapor	Lots South of the AOC	Benzene	---	---	1.E-07	1.E-07	Hematological; Immunological	---	---	0.01	0.01
			Carbon disulfide	---	---	---	---	Neurological	---	---	0.2	0.2
			Chloroform	---	---	2.E-07	2.E-07	Renal; Hepatic; Neurological	---	---	0.01	0.01
			Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.02	0.02
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.01	0.01
			Naphthalene	---	---	---	---	Respiratory	---	---	0.06	0.06
Soil Total				---	---	3.E-07	3.E-07		---	---	0.3	0.3
							Total Risk Across All Media	3.E-07				Total Hazard Across All Media	0.3

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.80 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Trench Vapor	Lots South of the AOC	Benzene	---	---	4.E-08	4.E-08	Hematological; Immunological	---	---	0.004	0.004
			Carbon disulfide	---	---	---	---	Neurological	---	---	0.01	0.01
			Chloroform	---	---	7.E-08	7.E-08	Renal; Hepatic; Neurological	---	---	0.004	0.004
			Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.008	0.008
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.004	0.004
			Naphthalene	---	---	---	---	Respiratory	---	---	0.02	0.02
Soil Total				---	---	1.E-07	1.E-07		---	---	0.05	0.05
							Total Risk Across All Media	1.E-07				Total Hazard Across All Media	0.05

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 9.81 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Groundwater	West of South Street Off-Facility/Off-Site Groundwater Exposure Area	Benzene	---	2.E-09	---	2.E-09	Hematological; Immunological	---	0.0002	---	0.0002
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	0.01	---	0.01
			Naphthalene	---	---	---	---	Whole Body	---	0.0003	---	0.0003
			Arsenic	---	2.E-08	---	2.E-08	Integumental	---	0.003	---	0.003
			Chromium VI	---	---	---	---	None observed	---	0.004	---	0.004
			Manganese	---	---	---	---	Neurological	---	0.005	---	0.005
			Vanadium	---	---	---	---	Renal	---	0.03	---	0.03
Groundwater Total				---	2.E-08	---	2.E-08		---	0.05	---	0.05
							Total Risk Across All Media	2.E-08				Total Hazard Across All Media	0.05

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

APPENDIX M
RAGS Table 10 Series (Summary of Receptor Risks and Hazards for COPCs)

Table 10.1 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	2.E-06	---	---	2.E-06	---	---	---	---	---
			Benz(a)anthracene	1.E-05	6.E-06	---	2.E-05	---	---	---	---	---
			Benzo(a)pyrene	1.E-04	6.E-05	---	2.E-04	---	---	---	---	---
			Benzo(b)fluoranthene	2.E-05	7.E-06	---	2.E-05	---	---	---	---	---
			Dibenz(ah)anthracene	1.E-05	5.E-06	---	2.E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.E-06	2.E-06	---	6.E-06	---	---	---	---	---
			Arsenic	4.E-06	4.E-07	---	4.E-06	---	---	---	---	---
	Exposure Medium Total			2.E-04	8.E-05	---	3.E-04		---	---	---	---
	Plant tissue	East of South Street On-Facility	Arsenic	1.E-05	---	---	1.E-05	---	---	---	---	---
	Exposure Medium Total			1.E-05	---	---	1.E-05		---	---	---	---
Soil Total				2.E-04	8.E-05	---	3.E-04		---	---	---	---
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Trichloroethylene (TCE)	---	---	6.E-04	6.E-04	---	---	---	---	---
Soil Gas Total				---	---	6.E-04	6.E-04		---	---	---	---
Total Risk Across All Media							8.E-04	Total Hazard Across All Media				---

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 10.2 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	2.E-06	---	---	2.E-06	---	---	---	---	---
			Benz(a)anthracene	1.E-05	6.E-06	---	2.E-05	---	---	---	---	---
			Benzo(a)pyrene	1.E-04	6.E-05	---	2.E-04	---	---	---	---	---
			Benzo(b)fluoranthene	2.E-05	7.E-06	---	2.E-05	---	---	---	---	---
			Dibenz(ah)anthracene	1.E-05	5.E-06	---	2.E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.E-06	2.E-06	---	6.E-06	---	---	---	---	---
			Arsenic	4.E-06	4.E-07	---	4.E-06	---	---	---	---	---
	Exposure Medium Total			2.E-04	8.E-05	---	3.E-04		---	---	---	---
	Plant tissue	East of South Street On-Facility	Arsenic	1.E-05	---	---	1.E-05	---	---	---	---	---
	Exposure Medium Total			1.E-05	---	---	1.E-05		---	---	---	---
Soil Total				2.E-04	8.E-05	---	3.E-04		---	---	---	---
							Total Risk Across All Media	3.E-04				Total Hazard Across All Media	---

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 10.3 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Benz(a)anthracene	1.E-05	4.E-06	---	1.E-05	---	---	---	---	---
			Benzo(a)pyrene	4.E-05	2.E-05	---	6.E-05	---	---	---	---	---
			Benzo(b)fluoranthene	8.E-06	3.E-06	---	1.E-05	---	---	---	---	---
			Dibenz(ah)anthracene	1.E-05	4.E-06	---	1.E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	5.E-06	2.E-06	---	7.E-06	---	---	---	---	---
			Arsenic	1.E-04	9.E-06	---	1.E-04	Integumental; Cardiovascular	2	0.1	---	2
	Exposure Medium Total			2.E-04	4.E-05	---	2.E-04		2	0.1	---	2
	Plant tissue	Old Railroad and Former Lower Mill Pond Area	Arsenic	3.E-04	---	---	3.E-04	Integumental; Cardiovascular	2	---	---	2
	Exposure Medium Total			3.E-04	---	---	3.E-04		2	---	---	2
Soil Total				4.E-04	4.E-05	---	5.E-04		4	0.1	---	4
							Total Risk Across All Media	5.E-04				Total Hazard Across All Media	4

Total Cardiovascular HI Across All Media	4
Total Integumental HI Across All Media	4

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 10.4 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk				Non-Cancer Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Benz(a)anthracene	5.E-06	4.E-06	---	8.E-06	---	---	---	---	---
			Benzo(a)pyrene	4.E-05	4.E-05	---	8.E-05	---	---	---	---	---
			Benzo(b)fluoranthene	5.E-06	4.E-06	---	9.E-06	---	---	---	---	---
			Dibenz(ah)anthracene	4.E-06	3.E-06	---	7.E-06	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	1.E-06	1.E-06	---	3.E-06	---	---	---	---	---
Soil Total				6.E-05	5.E-05	---	1.E-04		---	---	---	---
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Trichloroethylene (TCE)	---	---	2.E-04	2.E-04	---	---	---	---	---
Soil Gas Total				---	---	2.E-04	2.E-04		---	---	---	---
			Total Risk Across All Media				3.E-04	Total Hazard Across All Media				---

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 10.5 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-27)	Trichloroethylene (TCE)	---	---	---	---	Hepatic; Renal; Developmental; Immunological	2	0.2	---	2
			Manganese	---	---	---	---	Neurological	2	---	---	2
Groundwater Total				---	---	---	---		3	0.2	---	3
							Total Risk Across All Media	---			Total Hazard Across All Media	3

Total Developmental HI Across All Media	2
Total Hepatic HI Across All Media	2
Total Immunological HI Across All Media	2
Total Neurological HI Across All Media	2
Total Renal HI Across All Media	2

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 10.6 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-site groundwater east of Neponset River (SH-28)	Manganese	---	---	---	---	Neurological	3	---	---	3
Groundwater Total				---	---	---	---		3	---	---	3
							Total Risk Across All Media					Total Hazard Across All Media
							---					3

Total Neurological HI Across All Media: 3

Table 10.7 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Benzene	4.E-06	6.E-07	---	5.E-06	---	---	---	---	---
			Benzo(a)pyrene	1.E-05	---	---	1.E-05	---	---	---	---	---
			Dibenz(ah)anthracene	3.E-06	---	---	3.E-06	---	---	---	---	---
			Arsenic	2.E-03	---	---	2.E-03	Integumental; Cardiovascular	20	---	---	20
			Manganese	---	---	---	---	Neurological	2	---	---	2
			Vanadium	---	---	---	---	Renal	4	0.7	---	5
	Exposure Medium Total			2.E-03	6.E-07	---	2.E-03		30	0.7	---	30
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Benzene	---	---	2.E-06	2.E-06	---	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory	---	---	2	2
	Exposure Medium Total			---	---	2.E-06	2.E-06		---	---	2	2
Groundwater Total				2.E-03	6.E-07	2.E-06	2.E-03		30	0.7	2	30
							Total Risk Across All Media	2.E-03				Total Hazard Across All Media	30

Total Cardiovascular HI Across All Media	20
Total Integumental HI Across All Media	20
Total Neurological HI Across All Media	2
Total Renal HI Across All Media	5
Total Respiratory HI Across All Media	2

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 10.7 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Arsenic	---	---	---	---	Integumental; Cardiovascular	4	---	---	4
Groundwater Total				---	---	---	---		4	---	---	4
							Total Risk Across All Media	---				Total Hazard Across All Media	4

Total Cardiovascular HI Across All Media	4
Total Integumental HI Across All Media	4

Table 10.8 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	On-Site Groundwater	Benzene	6.E-04	7.E-05	---	6.E-04	Hematological; Immunological	10	1	---	20
			Methylene chloride (Dichloromethane)	4.E-06	---	---	4.E-06	---	---	---	---	---
			Trichloroethylene (TCE)	2.E-05	3.E-06	---	2.E-05	Hepatic; Renal; Developmental; Immunological	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	Respiratory	10	10	---	20
			Naphthalene	---	---	---	---	Whole Body	20	6	---	20
			Benz(a)anthracene	1.E-05	---	---	1.E-05	---	---	---	---	---
			Benzo(a)pyrene	2.E-04	---	---	2.E-04	---	---	---	---	---
			Benzo(b)fluoranthene	5.E-06	---	---	5.E-06	---	---	---	---	---
			Dibenz(ah)anthracene	8.E-05	---	---	8.E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	4.E-06	---	---	4.E-06	---	---	---	---	---
			Bis(2-ethylhexyl)phthalate (DEHP)	9.E-06	1.E-05	---	2.E-05	Hepatic	---	---	---	---
			4-Methylphenol	---	---	---	---	Neurological; Respiratory; Developmental; Whole Body	2	0.1	---	2
			Carbazole	2.E-05	1.E-05	---	4.E-05	---	---	---	---	---
			Antimony	---	---	---	---	Whole Body; Hepatic	8	---	---	8
			Arsenic	2.E-02	---	---	2.E-02	Integumental; Cardiovascular	200	---	---	200
			Chromium VI	---	---	---	---	None observed	4	1	---	6
			Manganese	---	---	---	---	Neurological	20	---	---	20
			Nickel	---	---	---	---	Whole Body; Hepatic	3	---	---	3
			Vanadium	---	---	---	---	Renal	60	10	---	80
			Zinc	---	---	---	---	Hematological	2	0.004	---	2
	Exposure Medium Total			2.E-02	1.E-04	---	2.E-02		300	30	---	400
	Shower Vapor (1)	On-Site Groundwater	Benzene	---	---	2.E-04	2.E-04	Hematological; Immunological	---	---	3	3
			Ethylbenzene	---	---	2.E-05	2.E-05	---	---	---	---	---
			Trichloroethylene (TCE)	---	---	1.E-05	1.E-05	---	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	30	30
			Naphthalene	---	---	---	---	Respiratory	---	---	200	200
	Exposure Medium Total			---	---	3.E-04	3.E-04		---	---	200	200
Groundwater Total				2.E-02	1.E-04	3.E-04	2.E-02		300	30	200	600
							Total Risk Across All Media	2.E-02				Total Hazard Across All Media	600

Table 10.8 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
											Total Cardiovascular HI Across All Media	200
											Total Developmental HI Across All Media	40
											Total Hematological HI Across All Media	60
											Total Hepatic HI Across All Media	40
											Total Immunological HI Across All Media	50
											Total Integumental HI Across All Media	200
											Total Neurological HI Across All Media	50
											Total Renal HI Across All Media	100
											Total Respiratory HI Across All Media	300
											Total None observed HI Across All Media	40
											Total Whole Body HI Across All Media	30

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table 10.8 CT
Summary of Receptor Risks and Hazards for COPCs
Central Tendency
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	On-Site Groundwater	Benzene	5.E-06	6.E-07	---	6.E-06	---	---	---	---	---
			Trichloroethylene (TCE)	2.E-06	2.E-07	---	2.E-06	---	---	---	---	---
			Benzo(a)pyrene	2.E-06	---	---	2.E-06	---	---	---	---	---
			Arsenic	3.E-04	---	---	3.E-04	Integumental; Cardiovascular	10	---	---	10
			Manganese	---	---	---	---	Neurological	2	---	---	2
			Vanadium	---	---	---	---	Renal	3	0.3	---	3
	Exposure Medium Total			3.E-04	8.E-07	---	3.E-04		10	0.7	---	20
	Shower Vapor (1)	On-Site Groundwater	Benzene	---	---	2.E-06	2.E-06	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory	---	---	5	5
	Exposure Medium Total			---	---	2.E-06	2.E-06		---	---	6	6
Groundwater Total				3.E-04	8.E-07	2.E-06	3.E-04		10	0.7	6	20
							Total Risk Across All Media	3.E-04				Total Hazard Across All Media	20

Total Cardiovascular HI Across All Media	10
Total Integumental HI Across All Media	10
Total Neurological HI Across All Media	2
Total Renal HI Across All Media	3
Total Respiratory HI Across All Media	7

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

APPENDIX N
Early Life Exposure Evaluation

Table N1.1
Comparison of Early Life Evaluation to Baseline Exposure Assumptions
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Variable	Baseline Evaluation		Early Life Evaluation					Units	Source
	Child	Adult	Child			Adult			
GENERAL INFO:									
Age	1<7	7<31	0<1	1<2	2<7	7<16	16< 31[a]	years	Early Life: EPA, 2005
Early Life Adjustment Factor (ELAF)	1	1	10	10	3	3	1	unitless	EPA, 2005
Bodyweight	15	70	7.5	11.4	17.2	43.3	70	kg	Baseline: EPA, 1994; Early Life: EPA, 2004a. (0<1), EPA 2002; Mean body weight estimates for each age group
Exposure Duration (ED)	6	24	0 or 1[a]	1	5	9	15 or 14[a]	years	EPA, 1994 (30-year total exposure duration)
Averaging Time (AT)	25550	25550	25550	25550	25550	25550	25550	days	EPA, 1989
INGESTION OF SOIL									
Ingestion Rate (IR)	200	100	a	200	200	100	100	mg soil/day	EPA, 1994
Exposure Frequency (EF)	150	150	a	150	150	150	150	days/year	EPA, 1994
DERMAL CONTACT WITH SOIL									
Skin Surface Area Available for Contact (SA)	2800	5700	a	2260	3060	4240	5640	cm2/event	EPA, 2004b; 50th percentile skin exposure: head, forearms, hands, lower legs, feet (child only) weighted for each age group
Soil Adherence Factor (SAF)	0.2	0.07	a	0.2	0.2	0.07	0.07	mg/cm2	EPA, 2004b (weighted using body part surface areas for each age group)
Exposure Frequency (EF)	150	150	a	150	150	150	150	events/year	EPA, 1994
INGESTION OF TAP WATER									
Ingestion Rate (IR)	1.5	2	0.98	0.72	0.86	1.3	2	liters/day	EPA, 2004a. 90th percentiles for each age group
Exposure Frequency (EF)	350	350	350	350	350	350	350	days/year	EPA, 1994
DERMAL ABSORPTION OF TAP WATER									
Skin Surface Area Available for Contact (SA)	6600	18000	4120	5200	7200	12800	18000	cm2	Baseline: EPA, 2004b (Exhibit 3-2); Early Life: EPA, 2004b (Exhibit C-1) and USDHH, 1996; 50th percentile skin surface area for whole body
Exposure Time (ET)	1	0.58	0.17	1	1	0.58	0.58	hours/day	EPA, 2004b (Exhibit 3-2)
Exposure Frequency (EF)	350	350	350	350	350	350	350	days/year	EPA, 1994
DERMAL CONTACT WITH SURFACE WATER:									
Skin Surface Area Available for Contact (SA)		6074				4360	6050	cm2	EPA, 2004b; 50th percentile skin exposure: face, forearms, hands, lower legs, and feet, weighted for each age group
Exposure Time (ET)		1				1	1	hours/day	Professional judgment
Exposure Frequency (EF)		65				65	65	days/year	3 days/week, 5 months/year; Professional judgment
INGESTION OF SEDIMENTS:									
Ingestion Rate (IR)		100				100	100	mg/day	EPA, 1994 (adult resident soil)
Exposure Frequency (EF)		65				65	65	days/year	3 days/week, 5 months/year; Professional judgment
DERMAL CONTACT WITH SEDIMENTS:									
Skin Surface Area (SA)		6074				4360	6050	cm2/event	EPA, 2004b; 50th percentile skin exposure: face, forearms, hands, lower legs, and feet, weighted for each age group
Soil Adherence Factor (SAF)		0.07				0.2	0.07	mg/cm2	EPA, 2004b (weighted using body part surface areas for each age group)
Exposure Frequency (EF)		65				65	65	events/year	3 days/week, 5 months/year; Professional judgment
INGESTION OF FISH									
Ingestion Rate (IR)	0.0065	0.013	a	0.005	0.0068	0.013	0.013	kg/meal	Adult: Ebert et al. (1992) as referenced in EPA, 1997 (Vol II: Table 10-84); Child: 0<1, 1<2 and 2<7 rates are weighted (see text)
Exposure Frequency (EF)	365	365	a	365	365	365	365	meals/year	EPA, 1997 (Vol II)

Notes:

[a] For the 0<1 age group with an exposure duration of 1 year, sufficient data is available for the tap water pathway only. A 30 year exposure for a 0<30 year old may be calculated for these pathways only. For all other pathways, a 1<31 year old represents the 30 year exposure.

Sources:

EPA, 2005: Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens. Risk Assessment Forum. EPA/630/R-03/003F.

EPA, 2004a: Estimated Per Capita Water Ingestion and Body Weight in the United States–An Update. Office of Water, Office of Science and Technology. EPA/822/R/00/001. Table 5.2.A1

EPA, 2004b: Risk Assessment Guidance for Superfund Vol. 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). OSWER. EPA/540/R/99/005.

EPA, 2002: Child-Specific Exposure Factors Handbook. ORD. EPA/600/P/00/002B.

EPA, 1997: Exposure Factors Handbook, Volume I, Volume II, and Volume III. ORD. EPA/600/P-95/002Fa,b,c.

EPA, 1994: EPA Region 1, Waste Management Division, Risk Updates. August 1994, Number 2, Attachment 2 and Attachment 3.

EPA, 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part A. OERR. EPA/540/189/002.

USDHH, 1996: National Center for Health Statistics. Third National Health and Nutrition Examination Survey, 1988-1994, NHANES III Laboratory Data File. Hyattsville, MD.: Centers for Disease Control and Prevention.

Table N2.1 - Baseline Receptors 1-31 yrs old
Current Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk
Gleason Court Lot 122	Soil	Soil	Ingestion and Dermal	Child	2.E-05
				Adult	7.E-06
				Total Resident	3.E-05
		Plant tissue	Ingestion	Child	1.E-05
				Adult	3.E-05
				Total Resident	4.E-05
	All	All	All	Child	3.E-05
				Adult	3.E-05
				Total Resident	6.E-05
Gleason Court Lot 124	Soil	Soil	Ingestion and Dermal	Child	2.E-05
				Adult	5.E-06
				Total Resident	2.E-05
	Soil Gas	Indoor Air	Inhalation	Child	1.E-07
				Adult	5.E-07
				Total Resident	6.E-07
	All	All	All	Child	2.E-05
				Adult	5.E-06
				Total Resident	2.E-05
Gleason Court Lot 125	Soil	Soil	Ingestion and Dermal	Child	4.E-05
				Adult	1.E-05
				Total Resident	5.E-05
		Plant tissue	Ingestion	Child	2.E-06
				Adult	4.E-06
				Total Resident	5.E-06
	Soil Gas	Indoor Air	Inhalation	Child	8.E-08
				Adult	3.E-07
				Total Resident	4.E-07
	All	All	All	Child	4.E-05
				Adult	2.E-05
				Total Resident	5.E-05
Gleason Court Vacant Lot	Soil	Soil	Ingestion and Dermal	Child	2.E-05
				Adult	8.E-06
				Total Resident	3.E-05
Orlando Property	Soil	Soil	Ingestion and Dermal	Child	4.E-05
				Adult	1.E-05
				Total Resident	5.E-05
		Indoor Air	Inhalation	Child	---
				Adult	---
				Total Resident	---
		Plant tissue	Ingestion	Child	3.E-06
				Adult	6.E-06
				Total Resident	9.E-06
	All	All	All	Child	4.E-05
				Adult	2.E-05
				Total Resident	6.E-05

Table N2.1 - Baseline Receptors 1-31 yrs old
Current Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk
Lot 208	Soil	Soil	Ingestion and Dermal	Child	4.E-06
				Adult	2.E-06
				Total Resident	5.E-06
		Plant tissue	Ingestion	Child	3.E-06
				Adult	6.E-06
				Total Resident	9.E-06
	All	All	All	Child	6.E-06
				Adult	8.E-06
				Total Resident	1.E-05
Lot 210	Soil	Soil	Ingestion and Dermal	Child	2.E-05
				Adult	5.E-06
				Total Resident	2.E-05
		Plant tissue	Ingestion	Child	3.E-06
				Adult	7.E-06
				Total Resident	1.E-05
	All	All	All	Child	2.E-05
				Adult	1.E-05
				Total Resident	3.E-05
Lot 230	Soil	Soil	Ingestion and Dermal	Child	1.E-05
				Adult	5.E-06
				Total Resident	2.E-05
		Plant tissue	Ingestion	Child	5.E-06
				Adult	1.E-05
				Total Resident	2.E-05
	All	All	All	Child	2.E-05
				Adult	2.E-05
				Total Resident	4.E-05
Lot 257	Soil	Soil	Ingestion and Dermal	Child	3.E-05
				Adult	1.E-05
				Total Resident	4.E-05
		Plant tissue	Ingestion	Child	8.E-06
				Adult	2.E-05
				Total Resident	3.E-05
	All	All	All	Child	4.E-05
				Adult	3.E-05
				Total Resident	7.E-05
Lot 282	Soil	Soil	Ingestion and Dermal	Child	1.E-05
				Adult	4.E-06
				Total Resident	1.E-05
		Plant tissue	Ingestion	Child	7.E-06
				Adult	2.E-05
				Total Resident	2.E-05
	All	All	All	Child	2.E-05
				Adult	2.E-05
				Total Resident	4.E-05

Table N2.1 - Baseline Receptors 1-31 yrs old
Current Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk
Lot 283	Soil	Soil	Ingestion and Dermal	Child	2.E-05
				Adult	7.E-06
				Total Resident	3.E-05
		Indoor Air	Inhalation	Child	8.E-09
				Adult	3.E-08
				Total Resident	4.E-08
		Plant tissue	Ingestion	Child	4.E-06
				Adult	9.E-06
				Total Resident	1.E-05
	All	All	All	Child	3.E-05
				Adult	2.E-05
				Total Resident	4.E-05
Lot 342	Soil	Soil	Ingestion and Dermal	Child	6.E-06
				Adult	3.E-06
				Total Resident	9.E-06
		Plant tissue	Ingestion	Child	4.E-06
				Adult	1.E-05
				Total Resident	2.E-05
	All	All	All	Child	1.E-05
				Adult	1.E-05
				Total Resident	2.E-05
Lot 360	Soil	Soil	Ingestion and Dermal	Child	3.E-05
				Adult	1.E-05
				Total Resident	4.E-05
		Plant tissue	Ingestion	Child	1.E-05
				Adult	3.E-05
				Total Resident	5.E-05
	All	All	All	Child	4.E-05
				Adult	4.E-05
				Total Resident	8.E-05
Off-Site Res Building 1	Soil	Indoor Air	Inhalation	Child	---
				Adult	---
				Total Resident	---
Off-Site Res Building 2	Soil	Indoor Air	Inhalation	Child	---
				Adult	---
				Total Resident	---
Off-Site Res Building 3	Soil	Indoor Air	Inhalation	Child	1.E-07
				Adult	5.E-07
				Total Resident	6.E-07

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4

Table N2.2 - Baseline Receptors 1-31 yrs old
Current Trespasser Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Cancer Risk
West of South Street On-Facility and Vacant Lot 209	Soil	Soil	Ingestion and Dermal	2.E-05
Old Railroad and Former Lower Mill Pond Area	Soil	Soil	Ingestion and Dermal	8.E-05
Lot 350	Soil	Soil	Ingestion and Dermal	1.E-06

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4

Table N2.3 - Baseline Receptors 1-31 yrs old
Current/Future Wader Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Cancer Risk
Lewis Pond	Sediment	Sediment	Ingestion and Dermal	8.E-06
Neponset River East of South Street	Surface Water	Surface Water	Dermal	---
	Sediment	Sediment	Ingestion and Dermal	6.E-07
	All	All	All	6.E-07
Neponset River West of South Street	Surface Water	Surface Water	Dermal	---
	Sediment	Sediment	Ingestion and Dermal	4.E-06
	All	All	All	4.E-06
Former Mill Tailrace	Surface Water	Surface Water	Dermal	7.E-08
	Sediment	Sediment	Ingestion and Dermal	8.E-06
	All	All	All	8.E-06

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4

Table N2.4 - Baseline Receptors 1-31 yrs old
Current/Future Fisher Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk
Lewis Pond	Sediment	Sediment	Ingestion and Dermal	Child	---
				Adult	2.E-05
				Total Fisher	2.E-05
	Fish	Fish tissue	Ingestion	Child	2.E-05
				Adult	3.E-05
				Total Fisher	5.E-05
	All	All	All	Child	2.E-05
				Adult	4.E-05
				Total Fisher	6.E-05
Neponset River East of South Street	Surface Water	Surface Water	Dermal	Child	---
				Adult	---
				Total Fisher	---
	Sediment	Sediment	Ingestion and Dermal	Child	---
				Adult	1.E-06
				Total Fisher	1.E-06
	Fish	Fish tissue	Ingestion	Child	3.E-05
				Adult	6.E-05
				Total Fisher	9.E-05
	All	All	All	Child	3.E-05
				Adult	6.E-05
				Total Fisher	9.E-05
Neponset River West of South Street	Surface Water	Surface Water	Dermal	Child	---
				Adult	---
				Total Fisher	---
	Sediment	Sediment	Ingestion and Dermal	Child	---
				Adult	8.E-06
				Total Fisher	8.E-06
	Fish	Fish tissue	Ingestion	Child	3.E-05
				Adult	6.E-05
				Total Fisher	9.E-05
	All	All	All	Child	3.E-05
				Adult	6.E-05
				Total Fisher	1.E-04

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4

Table N2.5 - Baseline Receptors 1-31 yrs old
Future Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk
East of South Street On-Facility (SB-09 area)	Soil	Soil	Ingestion and Dermal	Child	**7.E-04**
				Adult	**2.E-04**
				Total Resident	**1.E-03**
		Plant tissue	Ingestion	Child	3.E-06
				Adult	7.E-06
				Total Resident	1.E-05
	Soil Gas	Indoor Air	Inhalation	Child	1.E-04
				Adult	**5.E-04**
				Total Resident	**6.E-04**
	All	All	All	Child	**8.E-04**
				Adult	**7.E-04**
				Total Resident	**2.E-03**
East of South Street On-Facility (non-SB-09 area)	Soil	Soil	Ingestion and Dermal	Child	**7.E-04**
				Adult	**2.E-04**
				Total Resident	**1.E-03**
		Indoor Air	Inhalation	Child	3.E-07
				Adult	1.E-06
				Total Resident	2.E-06
		Plant tissue	Ingestion	Child	3.E-06
				Adult	7.E-06
				Total Resident	1.E-05
	All	All	All	Child	**7.E-04**
				Adult	**2.E-04**
				Total Resident	**1.E-03**
West of South Street On-Facility	Soil	Soil	Ingestion and Dermal	Child	1.E-04
				Adult	3.E-05
				Total Resident	1.E-04
		Plant tissue	Ingestion	Child	7.E-06
				Adult	2.E-05
				Total Resident	3.E-05
	Soil/Groundwater	Indoor Air	Inhalation	Child	2.E-06
				Adult	8.E-06
				Total Resident	1.E-05
	All	All	All	Child	1.E-04
				Adult	6.E-05
				Total Resident	**2.E-04**
Gleason Court Lot 122	Soil	Soil	Ingestion and Dermal	Child	2.E-05
				Adult	7.E-06
				Total Resident	2.E-05
		Plant tissue	Ingestion	Child	1.E-05
				Adult	2.E-05
				Total Resident	3.E-05
	All	All	All	Child	3.E-05
				Adult	3.E-05
				Total Resident	6.E-05
Gleason Court Lot 124	Soil	Soil	Ingestion and Dermal	Child	2.E-05
				Adult	5.E-06
				Total Resident	2.E-05
		Plant tissue	Ingestion	Child	3.E-06
				Adult	7.E-06
				Total Resident	1.E-05
	Soil Gas	Indoor Air	Inhalation	Child	1.E-07
				Adult	5.E-07
				Total Resident	6.E-07
	All	All	All	Child	2.E-05
				Adult	1.E-05
				Total Resident	3.E-05
Gleason Court Lot 125	Soil	Soil	Ingestion and Dermal	Child	4.E-05
				Adult	1.E-05
				Total Resident	5.E-05
		Plant tissue	Ingestion	Child	6.E-06
				Adult	2.E-05
				Total Resident	2.E-05
	Soil Gas	Indoor Air	Inhalation	Child	8.E-08
				Adult	3.E-07
				Total Resident	4.E-07
	All	All	All	Child	5.E-05
				Adult	3.E-05
				Total Resident	8.E-05

Table N2.5 - Baseline Receptors 1-31 yrs old
Future Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk
Gleason Court Vacant Lot	Soil	Soil	Ingestion and Dermal	Child	2.E-05
				Adult	7.E-06
				Total Resident	3.E-05
		Plant tissue	Ingestion	Child	1.E-05
				Adult	3.E-05
				Total Resident	4.E-05
	All	All	All	Child	3.E-05
				Adult	4.E-05
				Total Resident	7.E-05
Old Railroad and Former Lower Mill Pond Area	Soil	Soil	Ingestion and Dermal	Child	**4.E-04**
				Adult	1.E-04
				Total Resident	**5.E-04**
		Indoor Air	Inhalation	Child	7.E-09
				Adult	3.E-08
				Total Resident	4.E-08
		Plant tissue	Ingestion	Child	7.E-05
				Adult	**2.E-04**
				Total Resident	**3.E-04**
	All	All	All	Child	**4.E-04**
				Adult	**3.E-04**
				Total Resident	**8.E-04**
Orlando Property	Soil	Soil	Ingestion and Dermal	Child	3.E-05
				Adult	1.E-05
				Total Resident	4.E-05
		Indoor Air	Inhalation	Child	---
				Adult	---
				Total Resident	---
		Plant tissue	Ingestion	Child	2.E-06
				Adult	5.E-06
				Total Resident	8.E-06
	All	All	All	Child	4.E-05
				Adult	2.E-05
				Total Resident	5.E-05
Lot 208	Soil	Soil	Ingestion and Dermal	Child	4.E-06
				Adult	2.E-06
				Total Resident	5.E-06
		Indoor Air	Inhalation	Child	---
				Adult	---
				Total Resident	---
		Plant tissue	Ingestion	Child	3.E-06
				Adult	6.E-06
				Total Resident	9.E-06
	All	All	All	Child	6.E-06
				Adult	8.E-06
				Total Resident	1.E-05

Table N2.5 - Baseline Receptors 1-31 yrs old
Future Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk
Vacant Lot 209	Soil	Soil	Ingestion and Dermal	Child	3.E-06
				Adult	1.E-06
				Total Resident	4.E-06
		Plant tissue	Ingestion	Child	3.E-06
				Adult	6.E-06
				Total Resident	9.E-06
	All	All	All	Child	5.E-06
				Adult	8.E-06
				Total Resident	1.E-05
Lot 210	Soil	Soil	Ingestion and Dermal	Child	2.E-05
				Adult	5.E-06
				Total Resident	2.E-05
		Plant tissue	Ingestion	Child	3.E-06
				Adult	7.E-06
				Total Resident	1.E-05
	All	All	All	Child	2.E-05
				Adult	1.E-05
				Total Resident	3.E-05
Lot 230	Soil	Soil	Ingestion and Dermal	Child	1.E-05
				Adult	5.E-06
				Total Resident	2.E-05
		Plant tissue	Ingestion	Child	5.E-06
				Adult	1.E-05
				Total Resident	2.E-05
	All	All	All	Child	2.E-05
				Adult	2.E-05
				Total Resident	4.E-05
Lot 257	Soil	Soil	Ingestion and Dermal	Child	3.E-05
				Adult	1.E-05
				Total Resident	4.E-05
		Indoor Air	Inhalation	Child	---
				Adult	---
				Total Resident	---
		Plant tissue	Ingestion	Child	8.E-06
				Adult	2.E-05
				Total Resident	3.E-05
	All	All	All	Child	4.E-05
				Adult	3.E-05
				Total Resident	7.E-05
Lot 282	Soil	Soil	Ingestion and Dermal	Child	1.E-05
				Adult	4.E-06
				Total Resident	1.E-05
		Plant tissue	Ingestion	Child	7.E-06
				Adult	2.E-05
				Total Resident	2.E-05
	All	All	All	Child	2.E-05
				Adult	2.E-05
				Total Resident	4.E-05

Table N2.5 - Baseline Receptors 1-31 yrs old
Future Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk
Lot 283	Soil	Soil	Ingestion and Dermal	Child	2.E-05
				Adult	7.E-06
				Total Resident	3.E-05
		Indoor Air	Inhalation	Child	8.E-09
				Adult	3.E-08
				Total Resident	4.E-08
		Plant tissue	Ingestion	Child	4.E-06
				Adult	9.E-06
				Total Resident	1.E-05
	All	All	All	Child	3.E-05
				Adult	2.E-05
				Total Resident	4.E-05
Lot 342	Soil	Soil	Ingestion and Dermal	Child	6.E-06
				Adult	3.E-06
				Total Resident	9.E-06
		Plant tissue	Ingestion	Child	4.E-06
				Adult	1.E-05
				Total Resident	2.E-05
	All	All	All	Child	1.E-05
				Adult	1.E-05
				Total Resident	2.E-05
Lot 350	Soil	Soil	Ingestion and Dermal	Child	9.E-06
				Adult	3.E-06
				Total Resident	1.E-05
		Indoor Air	Inhalation	Child	---
				Adult	---
				Total Resident	---
		Plant tissue	Ingestion	Child	6.E-06
				Adult	1.E-05
				Total Resident	2.E-05
	All	All	All	Child	1.E-05
				Adult	2.E-05
				Total Resident	3.E-05
Lot 360	Soil	Soil	Ingestion and Dermal	Child	3.E-05
				Adult	1.E-05
				Total Resident	4.E-05
		Indoor Air	Inhalation	Child	---
				Adult	---
				Total Resident	---
		Plant tissue	Ingestion	Child	1.E-05
				Adult	3.E-05
				Total Resident	5.E-05
	All	All	All	Child	4.E-05
				Adult	4.E-05
				Total Resident	8.E-05
Lots South of the AOC	Soil	Indoor Air	Inhalation	Child	1.E-07
				Adult	4.E-07
				Total Resident	6.E-07

Table N2.5 - Baseline Receptors 1-31 yrs old
Future Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk
West of South Street Off-Facility/Off-Site Groundwater Exposure	Groundwater	Indoor Air	Inhalation	Child	5.E-07
				Adult	2.E-06
				Total Resident	2.E-06
Off-site groundwater west of Neponset River	Groundwater	Tap Water	Ingestion	Child	8.E-06
				Adult	9.E-06
				Total Resident	2.E-05
Off-site groundwater east of Neponset River (SH-27)	Groundwater	Tap Water	Ingestion and Dermal	Child	4.E-05
				Adult	5.E-05
				Total Resident	9.E-05
		Shower Vapor (1)	Inhalation	Child	9.E-06
				Adult	2.E-05
				Total Resident	3.E-05
	All	All	All	Child	5.E-05
				Adult	7.E-05
				Total Resident	1.E-04
Off-site groundwater east of Neponset River (SH-28)	Groundwater	Tap Water	Ingestion and Dermal	Child	1.E-05
				Adult	1.E-05
				Total Resident	3.E-05
		Shower Vapor (1)	Inhalation	Child	7.E-07
				Adult	2.E-06
				Total Resident	2.E-06
	All	All	All	Child	1.E-05
				Adult	2.E-05
				Total Resident	3.E-05
Off-facility groundwater Lot 208 / Lot 209	Groundwater	Tap Water	Ingestion and Dermal	Child	**7.E-04**
				Adult	**8.E-04**
				Total Resident	**2.E-03**
		Shower Vapor (1)	Inhalation	Child	5.E-07
				Adult	1.E-06
				Total Resident	2.E-06
	All	All	All	Child	**7.E-04**
				Adult	**8.E-04**
				Total Resident	**2.E-03**
On-Site Groundwater	Groundwater	Tap Water	Ingestion and Dermal	Child	**8.E-03**
				Adult	**1.E-02**
				Total Resident	**2.E-02**
		Shower Vapor (1)	Inhalation	Child	8.E-05
				Adult	**2.E-04**
				Total Resident	**3.E-04**
	All	All	All	Child	**8.E-03**
				Adult	**1.E-02**
				Total Resident	**2.E-02**

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 10-4

Sensitivity Analysis – Future Resident 0-30 years old

Table N3.1
Sensitivity Analysis - Receptors 0 - 30 years old
Future Resident Risk Summary
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Exposure Point	Medium	Exposure Medium	Pathways	Receptor Age	Cancer Risk
West of South Street Off-Facility/Off-Site Groundwater Exposure	Groundwater	Indoor Air	Inhalation	Child	5.E-07
				Adult	2.E-06
				Total Resident	2.E-06
Off-site groundwater west of Neponset River	Groundwater	Tap Water	Ingestion	Child	8.E-06
				Adult	9.E-06
				Total Resident	2.E-05
Off-site groundwater east of Neponset River (SH-27)	Groundwater	Tap Water	Ingestion and Dermal	Child	4.E-05
				Adult	5.E-05
				Total Resident	9.E-05
		Shower Vapor (1)	Inhalation	Child	9.E-06
				Adult	2.E-05
				Total Resident	3.E-05
	All	All	All	Child	5.E-05
				Adult	7.E-05
				Total Resident	1.E-04
Off-site groundwater east of Neponset River (SH-28)	Groundwater	Tap Water	Ingestion and Dermal	Child	1.E-05
				Adult	1.E-05
				Total Resident	3.E-05
		Shower Vapor (1)	Inhalation	Child	7.E-07
				Adult	2.E-06
				Total Resident	2.E-06
	All	All	All	Child	1.E-05
				Adult	2.E-05
				Total Resident	3.E-05
Off-facility groundwater Lot 208 / Lot 209	Groundwater	Tap Water	Ingestion and Dermal	Child	**7.E-04**
				Adult	**8.E-04**
				Total Resident	**2.E-03**
		Shower Vapor (1)	Inhalation	Child	5.E-07
				Adult	1.E-06
				Total Resident	2.E-06
	All	All	All	Child	**8.E-04**
				Adult	**8.E-04**
				Total Resident	**2.E-03**
On-Site Groundwater	Groundwater	Tap Water	Ingestion and Dermal	Child	**9.E-03**
				Adult	**1.E-02**
				Total Resident	**2.E-02**
		Shower Vapor (1)	Inhalation	Child	8.E-05
				Adult	**2.E-04**
				Total Resident	**3.E-04**
	All	All	All	Child	**9.E-03**
				Adult	**1.E-02**
				Total Resident	**2.E-02**

Note: Bolded values indicate a total hazard index greater than 1 or a cancer risk greater than 1E-04

RAGS Table 7, 9 & 10 Series
for Exposure Points and Scenarios with Cancer Risks In Excess of 10^{-4}

Table N7.32 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	2.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	7.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	4.E-03	mg/kg-day	0.001
				Naphthalene	21.8	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	2.E-02	mg/kg-day	0.0006
				Benz(a)anthracene	29.5	mg/kg	7.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(a)pyrene	27.6	mg/kg	7.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-04	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(b)fluoranthene	32.4	mg/kg	8.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(k)fluoranthene	18.3	mg/kg	5.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	8.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Chrysene	27.4	mg/kg	7.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	1.E-07	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Dibenz(ah)anthracene	2.45	mg/kg	6.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-05	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenzofuran	10.9	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	2.E-03	mg/kg-day	0.003
				Antimony	2.55	mg/kg	5.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-04	mg/kg-day	0.004
				Arsenic	3.92	mg/kg	8.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.008
				Chromium VI	15.7	mg/kg	3.E-06	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	3.E-03	mg/kg-day	0.003
				Manganese	219	mg/kg	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Mercury	5.36	mg/kg	1.E-06	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Vanadium	34.5	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
				Zinc	1750	mg/kg	4.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	3.E-01	mg/kg-day	0.003
			Exp. Route Total								2.E-04					0.06
			Dermal	2-Methylnaphthalene	9.52	mg/kg	1.E-06	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	4.E-03	mg/kg-day	0.0007
				Naphthalene	21.8	mg/kg	2.E-06	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0003
				Benz(a)anthracene	29.5	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	27.6	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	32.4	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	18.3	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	3.E-07	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	27.4	mg/kg	3.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-08	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	2.45	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-06	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Dibenzofuran	10.9	mg/kg	9.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	2.E-03	mg/kg-day	0.001
				Arsenic	3.92	mg/kg	9.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0009
			Exp. Route Total								6.E-05					0.005
	Exposure Medium Total										2.E-04					0.06
	Plant tissue	East of South Street On-Facility	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Chromium VI	NA	NA	6.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.06
				Mercury	NA	NA	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Zinc	NA	NA	2.E-02	mg/kg/day	NA	NA	---	4.E-02	mg/kg/day	3.E-01	mg/kg-day	0.1
	Exposure Medium Total										7.E-06					0.3
Soil Total											2.E-04					0.3

Table N7.32 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Inhalation	Benzene	0.000024	mg/m3	8.E-06	mg/m3	8.E-06	1/(ug/m3)	6.E-08	2.E-05	mg/m3	3.E-02	mg/m3	0.0008
				Carbon tetrachloride	1.14E-05	mg/m3	4.E-06	mg/m3	2.E-05	1/(ug/m3)	6.E-08	1.E-05	mg/m3	2.E-03	mg/m3	0.005
				Chloroform	2.37E-05	mg/m3	8.E-06	mg/m3	2.E-05	1/(ug/m3)	2.E-07	2.E-05	mg/m3	5.E-02	mg/m3	0.0005
				1,2-Dichloroethylene (cis)	9.44E-05	mg/m3	3.E-05	mg/m3	NA	NA	---	9.E-05	mg/m3	2.E-01	mg/m3	0.0005
				Ethylbenzene	3.92E-05	mg/m3	1.E-05	mg/m3	1.E-06	1/(ug/m3)	1.E-08	4.E-05	mg/m3	1.E+00	mg/m3	0.00004
				Methylene chloride (Dichloromethane)	0.00014	mg/m3	5.E-05	mg/m3	5.E-07	1/(ug/m3)	2.E-08	1.E-04	mg/m3	1.E+00	mg/m3	0.0001
				Tetrachloroethylene (PCE)	7.15E-05	mg/m3	2.E-05	mg/m3	6.E-06	1/(ug/m3)	1.E-07	7.E-05	mg/m3	3.E-01	mg/m3	0.0002
				Trichloroethylene (TCE)	0.0126	mg/m3	4.E-03	mg/m3	1.E-04	1/(ug/m3)	5.E-04	1.E-02	mg/m3	4.E-02	mg/m3	0.3
				1,2,4-Trimethylbenzene	9.76E-05	mg/m3	3.E-05	mg/m3	NA	NA	---	9.E-05	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	4.27E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	4.E-05	mg/m3	6.E-03	mg/m3	0.007
				Naphthalene	3.07E-05	mg/m3	1.E-05	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											5.E-04					0.3
										Total of Receptor Risks Across All Media	7.E-04			Total of Receptor Hazards Across All Media		0.7

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N7.32 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	4.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				2-Methylnaphthalene	9.52	mg/kg	4.E-06	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	4.E-03	mg/kg-day	0.01
				Naphthalene	21.8	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	2.E-02	mg/kg-day	0.006
				Benz(a)anthracene	29.5	mg/kg	1.E-05	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-05	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Benzo(a)pyrene	27.6	mg/kg	1.E-05	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-04	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Benzo(b)fluoranthene	32.4	mg/kg	1.E-05	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-05	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.006
				Benzo(k)fluoranthene	18.3	mg/kg	8.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	3.E-06	1.E-04	mg/kg/day	3.E-02	mg/kg-day	0.003
				Chrysene	27.4	mg/kg	1.E-05	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-07	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Dibenz(ah)anthracene	2.45	mg/kg	1.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-05	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Dibenzofuran	10.9	mg/kg	5.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	2.E-03	mg/kg-day	0.03
				Antimony	2.55	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	4.E-04	mg/kg-day	0.03
				Arsenic	3.92	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Chromium VI	15.7	mg/kg	7.E-06	mg/kg/day	NA	NA	---	9.E-05	mg/kg/day	3.E-03	mg/kg-day	0.03
				Manganese	219	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Mercury	5.36	mg/kg	3.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Vanadium	34.5	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
				Zinc	1750	mg/kg	8.E-04	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	3.E-01	mg/kg-day	0.03
			Exp. Route Total								5.E-04					0.6
			Dermal	2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	4.E-03	mg/kg-day	0.005
				Naphthalene	21.8	mg/kg	4.E-06	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	2.E-02	mg/kg-day	0.002
				Benz(a)anthracene	29.5	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(a)pyrene	27.6	mg/kg	5.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-04	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(b)fluoranthene	32.4	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-05	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(k)fluoranthene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	9.E-07	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Chrysene	27.4	mg/kg	5.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	1.E-07	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Dibenz(ah)anthracene	2.45	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-05	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Dibenzofuran	10.9	mg/kg	1.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	2.E-03	mg/kg-day	0.008
				Arsenic	3.92	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								2.E-04					0.03
	Exposure Medium Total										7.E-04					0.6
	Plant tissue	East of South Street On-Facility	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
				Chromium VI	NA	NA	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
				Mercury	NA	NA	9.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.03
				Zinc	NA	NA	6.E-03	mg/kg/day	NA	NA	---	7.E-02	mg/kg/day	3.E-01	mg/kg-day	0.2
	Exposure Medium Total										3.E-06					0.5
Soil Total											7.E-04					1

Table N7.32 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Inhalation	Benzene	0.000024	mg/m3	2.E-06	mg/m3	8.E-06	1/(ug/m3)	2.E-08	2.E-05	mg/m3	3.E-02	mg/m3	0.0008
				Carbon tetrachloride	1.14E-05	mg/m3	9.E-07	mg/m3	2.E-05	1/(ug/m3)	1.E-08	1.E-05	mg/m3	2.E-03	mg/m3	0.005
				Chloroform	2.37E-05	mg/m3	2.E-06	mg/m3	2.E-05	1/(ug/m3)	4.E-08	2.E-05	mg/m3	5.E-02	mg/m3	0.0005
				1,2-Dichloroethylene (cis)	9.44E-05	mg/m3	8.E-06	mg/m3	NA	NA	---	9.E-05	mg/m3	2.E-01	mg/m3	0.0005
				Ethylbenzene	3.92E-05	mg/m3	3.E-06	mg/m3	1.E-06	1/(ug/m3)	4.E-09	4.E-05	mg/m3	1.E+00	mg/m3	0.00004
				Methylene chloride (Dichloromethane)	0.00014	mg/m3	1.E-05	mg/m3	5.E-07	1/(ug/m3)	5.E-09	1.E-04	mg/m3	1.E+00	mg/m3	0.0001
				Tetrachloroethylene (PCE)	7.15E-05	mg/m3	6.E-06	mg/m3	6.E-06	1/(ug/m3)	3.E-08	7.E-05	mg/m3	3.E-01	mg/m3	0.0002
				Trichloroethylene (TCE)	0.0126	mg/m3	1.E-03	mg/m3	1.E-04	1/(ug/m3)	1.E-04	1.E-02	mg/m3	4.E-02	mg/m3	0.3
				1,2,4-Trimethylbenzene	9.76E-05	mg/m3	8.E-06	mg/m3	NA	NA	---	9.E-05	mg/m3	6.E-03	mg/m3	0.02
				1,3,5-Trimethylbenzene	4.27E-05	mg/m3	4.E-06	mg/m3	NA	NA	---	4.E-05	mg/m3	6.E-03	mg/m3	0.007
				Naphthalene	3.07E-05	mg/m3	3.E-06	mg/m3	NA	NA	---	3.E-05	mg/m3	3.E-03	mg/m3	0.01
Soil Gas Total											1.E-04					0.3
										Total of Receptor Risks Across All Media	8.E-04				Total of Receptor Hazards Across All Media	1

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N7.33 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	2.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	7.E-07	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	4.E-03	mg/kg-day	0.001
				Naphthalene	21.8	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	2.E-02	mg/kg-day	0.0006
				Benz(a)anthracene	29.5	mg/kg	7.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(a)pyrene	27.6	mg/kg	7.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-04	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Benzo(b)fluoranthene	32.4	mg/kg	8.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(k)fluoranthene	18.3	mg/kg	5.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	8.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Chrysene	27.4	mg/kg	7.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	1.E-07	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0005
				Dibenz(ah)anthracene	2.45	mg/kg	6.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-05	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00005
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenzofuran	10.9	mg/kg	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	2.E-03	mg/kg-day	0.003
				Antimony	2.55	mg/kg	5.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	4.E-04	mg/kg-day	0.004
				Arsenic	3.92	mg/kg	8.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.008
				Chromium VI	15.7	mg/kg	3.E-06	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	3.E-03	mg/kg-day	0.003
				Manganese	219	mg/kg	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Mercury	5.36	mg/kg	1.E-06	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
				Vanadium	34.5	mg/kg	7.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	5.E-03	mg/kg-day	0.004
				Zinc	1750	mg/kg	4.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	3.E-01	mg/kg-day	0.003
			Exp. Route Total								2.E-04					0.06
			Dermal	2-Methylnaphthalene	9.52	mg/kg	1.E-06	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	4.E-03	mg/kg-day	0.0007
				Naphthalene	21.8	mg/kg	2.E-06	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0003
				Benz(a)anthracene	29.5	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(a)pyrene	27.6	mg/kg	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(b)fluoranthene	32.4	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	18.3	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	3.E-07	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	27.4	mg/kg	3.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-08	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	2.45	mg/kg	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-06	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Dibenzofuran	10.9	mg/kg	9.E-07	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	2.E-03	mg/kg-day	0.001
				Arsenic	3.92	mg/kg	9.E-08	mg/kg/day	2.E+00	1/(mg/kg-day)	1.E-07	3.E-07	mg/kg/day	3.E-04	mg/kg-day	0.0009
			Exp. Route Total								6.E-05					0.005
	Exposure Medium Total										2.E-04					0.06
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Inhalation	Benzene	0.00019	mg/m3	6.E-05	mg/m3	8.E-06	1/(ug/m3)	5.E-07	2.E-04	mg/m3	3.E-02	mg/m3	0.006
				Ethylbenzene	4.41E-05	mg/m3	1.E-05	mg/m3	1.E-06	1/(ug/m3)	2.E-08	4.E-05	mg/m3	1.E+00	mg/m3	0.00004
				Trichloroethylene (TCE)	1.09E-05	mg/m3	4.E-06	mg/m3	1.E-04	1/(ug/m3)	4.E-07	1.E-05	mg/m3	4.E-02	mg/m3	0.0003
				2-Methylnaphthalene	0.00193	mg/m3	6.E-04	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.6
				Naphthalene	0.00355	mg/m3	1.E-03	mg/m3	NA	NA	---	3.E-03	mg/m3	3.E-03	mg/m3	1
				Heptachlor	1.03E-06	mg/m3	3.E-07	mg/m3	1.E-03	1/(ug/m3)	4.E-07	1.E-06	mg/m3	NA	NA	---
	Exposure Medium Total										1.E-06					2

Table N7.33 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
	Plant tissue	East of South Street On-Facility	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.05
				Chromium VI	NA	NA	6.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.06
				Mercury	NA	NA	2.E-06	mg/kg/day	NA	NA	---	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Zinc	NA	NA	2.E-02	mg/kg/day	NA	NA	---	4.E-02	mg/kg/day	3.E-01	mg/kg-day	0.1
	Exposure Medium Total										7.E-06					0.3
Soil Total											2.E-04					2
							Total of Receptor Risks Across All Media				2.E-04	Total of Receptor Hazards Across All Media				2

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N7.33 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	East of South Street On-Facility	Ingestion	Trichloroethylene (TCE)	9	mg/kg	4.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				2-Methylnaphthalene	9.52	mg/kg	4.E-06	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	4.E-03	mg/kg-day	0.01
				Naphthalene	21.8	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	2.E-02	mg/kg-day	0.006
				Benz(a)anthracene	29.5	mg/kg	1.E-05	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-05	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Benzo(a)pyrene	27.6	mg/kg	1.E-05	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-04	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Benzo(b)fluoranthene	32.4	mg/kg	1.E-05	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-05	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.006
				Benzo(k)fluoranthene	18.3	mg/kg	8.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	3.E-06	1.E-04	mg/kg/day	3.E-02	mg/kg-day	0.003
				Chrysene	27.4	mg/kg	1.E-05	mg/kg/day	7.E-03	1/(mg/kg-day)	4.E-07	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Dibenz(ah)anthracene	2.45	mg/kg	1.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-05	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Dibenzofuran	10.9	mg/kg	5.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	2.E-03	mg/kg-day	0.03
				Antimony	2.55	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	4.E-04	mg/kg-day	0.03
				Arsenic	3.92	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.07
				Chromium VI	15.7	mg/kg	7.E-06	mg/kg/day	NA	NA	---	9.E-05	mg/kg/day	3.E-03	mg/kg-day	0.03
				Manganese	219	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Mercury	5.36	mg/kg	3.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Vanadium	34.5	mg/kg	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.04
				Zinc	1750	mg/kg	8.E-04	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	3.E-01	mg/kg-day	0.03
			Exp. Route Total								5.E-04					0.6
			Dermal	2-Methylnaphthalene	9.52	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	4.E-03	mg/kg-day	0.005
				Naphthalene	21.8	mg/kg	4.E-06	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	2.E-02	mg/kg-day	0.002
				Benz(a)anthracene	29.5	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(a)pyrene	27.6	mg/kg	5.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-04	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(b)fluoranthene	32.4	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-05	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(k)fluoranthene	18.3	mg/kg	3.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	9.E-07	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Chrysene	27.4	mg/kg	5.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	1.E-07	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Dibenz(ah)anthracene	2.45	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-05	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Indeno(1,2,3-cd)pyrene	9.17	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Dibenzofuran	10.9	mg/kg	1.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	2.E-03	mg/kg-day	0.008
				Arsenic	3.92	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-07	2.E-06	mg/kg/day	3.E-04	mg/kg-day	0.006
			Exp. Route Total								2.E-04					0.03
	Exposure Medium Total										7.E-04					0.6
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Inhalation	Benzene	0.00019	mg/m3	2.E-05	mg/m3	8.E-06	1/(ug/m3)	1.E-07	2.E-04	mg/m3	3.E-02	mg/m3	0.006
				Ethylbenzene	4.41E-05	mg/m3	4.E-06	mg/m3	1.E-06	1/(ug/m3)	4.E-09	4.E-05	mg/m3	1.E+00	mg/m3	0.00004
				Trichloroethylene (TCE)	1.09E-05	mg/m3	9.E-07	mg/m3	1.E-04	1/(ug/m3)	1.E-07	1.E-05	mg/m3	4.E-02	mg/m3	0.0003
				2-Methylnaphthalene	0.00193	mg/m3	2.E-04	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.6
				Naphthalene	0.00355	mg/m3	3.E-04	mg/m3	NA	NA	---	3.E-03	mg/m3	3.E-03	mg/m3	1
				Heptachlor	1.03E-06	mg/m3	8.E-08	mg/m3	1.E-03	1/(ug/m3)	1.E-07	1.E-06	mg/m3	NA	NA	---
	Exposure Medium Total										3.E-07					2

Table N7.33 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
	Plant tissue	East of South Street On-Facility	Ingestion	Arsenic	NA	NA	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	2.E-05	mg/kg/day	3.E-04	mg/kg-day	0.08
				Chromium VI	NA	NA	3.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
				Mercury	NA	NA	9.E-07	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.03
				Zinc	NA	NA	6.E-03	mg/kg/day	NA	NA	---	7.E-02	mg/kg/day	3.E-01	mg/kg-day	0.2
	Exposure Medium Total										3.E-06					0.5
Soil Total											7.E-04					3
							Total of Receptor Risks Across All Media				7.E-04	Total of Receptor Hazards Across All Media				3

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N7.34 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	West of South Street On-Facility	Ingestion	Benz(a)anthracene	3.24	mg/kg	8.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00006
				Benzo(a)pyrene	3.65	mg/kg	9.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Benzo(b)fluoranthene	3.57	mg/kg	9.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Chrysene	3.98	mg/kg	1.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Dibenz(ah)anthracene	0.421	mg/kg	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	2.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000008
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-07	9.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Arsenic	9.48	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	6.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
				Chromium VI	11.4	mg/kg	2.E-06	mg/kg/day	NA	NA	---	7.E-06	mg/kg/day	3.E-03	mg/kg-day	0.002
				Manganese	178	mg/kg	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.001
				Mercury	2.41	mg/kg	5.E-07	mg/kg/day	NA	NA	---	1.E-06	mg/kg/day	3.E-04	mg/kg-day	0.005
				Vanadium	21	mg/kg	4.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.002
			Exp. Route Total								2.E-05					0.03
			Dermal	Benz(a)anthracene	3.24	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Benzo(a)pyrene	3.65	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Benzo(b)fluoranthene	3.57	mg/kg	4.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-07	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Chrysene	3.98	mg/kg	4.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	6.E-09	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Dibenz(ah)anthracene	0.421	mg/kg	5.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	7.E-07	1.E-07	mg/kg/day	3.E-02	mg/kg-day	0.000004
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	2.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-07	5.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	9.48	mg/kg	2.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-07	7.E-07	mg/kg/day	3.E-04	mg/kg-day	0.002
			Exp. Route Total								8.E-06					0.002
	Exposure Medium Total										3.E-05					0.03
	Plant tissue	West of South Street On-Facility	Ingestion	Arsenic	NA	NA	1.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-05	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Chromium VI	NA	NA	5.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-03	mg/kg-day	0.05
				Mercury	NA	NA	1.E-06	mg/kg/day	NA	NA	---	3.E-06	mg/kg/day	3.E-04	mg/kg-day	0.009
	Exposure Medium Total										2.E-05					0.2
Soil Total											5.E-05					0.2
Soil/Groundwater	Indoor Air	West of South Street On-Facility	Inhalation	Benzene	0.00303	mg/m3	1.E-03	mg/m3	8.E-06	1/(ug/m3)	8.E-06	3.E-03	mg/m3	3.E-02	mg/m3	0.1
				Carbon disulfide	0.000071	mg/m3	2.E-05	mg/m3	NA	NA	---	7.E-05	mg/m3	7.E-01	mg/m3	0.0001
				Chloroform	1.18E-05	mg/m3	4.E-06	mg/m3	2.E-05	1/(ug/m3)	9.E-08	1.E-05	mg/m3	5.E-02	mg/m3	0.0002
				2-Hexanone	1.96E-05	mg/m3	6.E-06	mg/m3	NA	NA	---	2.E-05	mg/m3	5.E-03	mg/m3	0.004
				Trichlorofluoromethane	0.00099	mg/m3	3.E-04	mg/m3	NA	NA	---	9.E-04	mg/m3	7.E-01	mg/m3	0.001
				2-Methylnaphthalene	0.000699	mg/m3	2.E-04	mg/m3	NA	NA	---	7.E-04	mg/m3	3.E-03	mg/m3	0.2
				Naphthalene	0.00108	mg/m3	4.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.3
Soil/Groundwater Total											8.E-06					0.7
										Total of Receptor Risks Across All Media	6.E-05				Total of Receptor Hazards Across All Media	0.9

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table N7.34 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	West of South Street On-Facility	Ingestion	Benz(a)anthracene	3.24	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(a)pyrene	3.65	mg/kg	2.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0007
				Benzo(b)fluoranthene	3.57	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0007
				Chrysene	3.98	mg/kg	2.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	6.E-08	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0007
				Dibenz(ah)anthracene	0.421	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	7.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Arsenic	9.48	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	5.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	11.4	mg/kg	5.E-06	mg/kg/day	NA	NA	---	6.E-05	mg/kg/day	3.E-03	mg/kg-day	0.02
				Manganese	178	mg/kg	8.E-05	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.01
				Mercury	2.41	mg/kg	1.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Vanadium	21	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.02
			Exp. Route Total								8.E-05					0.3
			Dermal	Benz(a)anthracene	3.24	mg/kg	5.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(a)pyrene	3.65	mg/kg	6.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-05	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	3.57	mg/kg	6.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Chrysene	3.98	mg/kg	7.E-07	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Dibenz(ah)anthracene	0.421	mg/kg	7.E-08	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	8.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00003
				Indeno(1,2,3-cd)pyrene	1.58	mg/kg	3.E-07	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-07	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Arsenic	9.48	mg/kg	4.E-07	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-07	4.E-06	mg/kg/day	3.E-04	mg/kg-day	0.01
			Exp. Route Total								3.E-05					0.02
	Exposure Medium Total										1.E-04					0.3
	Plant tissue	West of South Street On-Facility	Ingestion	Arsenic	NA	NA	5.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-06	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	NA	NA	2.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	3.E-03	mg/kg-day	0.07
				Mercury	NA	NA	4.E-07	mg/kg/day	NA	NA	---	5.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
	Exposure Medium Total										7.E-06					0.3
Soil Total											1.E-04					0.6
Soil/Groundwater	Indoor Air	West of South Street On-Facility	Inhalation	Benzene	0.00303	mg/m3	2.E-04	mg/m3	8.E-06	1/(ug/m3)	2.E-06	3.E-03	mg/m3	3.E-02	mg/m3	0.1
				Carbon disulfide	0.000071	mg/m3	6.E-06	mg/m3	NA	NA	---	7.E-05	mg/m3	7.E-01	mg/m3	0.0001
				Chloroform	1.18E-05	mg/m3	1.E-06	mg/m3	2.E-05	1/(ug/m3)	2.E-08	1.E-05	mg/m3	5.E-02	mg/m3	0.0002
				2-Hexanone	1.96E-05	mg/m3	2.E-06	mg/m3	NA	NA	---	2.E-05	mg/m3	5.E-03	mg/m3	0.004
				Trichlorofluoromethane	0.00099	mg/m3	8.E-05	mg/m3	NA	NA	---	9.E-04	mg/m3	7.E-01	mg/m3	0.001
				2-Methylnaphthalene	0.000699	mg/m3	6.E-05	mg/m3	NA	NA	---	7.E-04	mg/m3	3.E-03	mg/m3	0.2
				Naphthalene	0.00108	mg/m3	9.E-05	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.3
Soil/Groundwater Total											2.E-06					0.7
										Total of Receptor Risks Across All Media	1.E-04				Total of Receptor Hazards Across All Media	1

Note: NA = not available/not applicable
Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table N7.39 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Ingestion	Benz(a)anthracene	19.4	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	9.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Benzo(a)pyrene	8.75	mg/kg	2.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(b)fluoranthene	15.4	mg/kg	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	7.E-06	9.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Benzo(k)fluoranthene	6.65	mg/kg	2.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	3.E-07	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Chrysene	11.3	mg/kg	3.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	5.E-08	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenz(ah)anthracene	2.14	mg/kg	5.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	9.E-06	1.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00004
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Antimony	3.85	mg/kg	8.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	4.E-04	mg/kg-day	0.006
				Arsenic	96.1	mg/kg	2.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-05	6.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Chromium VI	22.5	mg/kg	5.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	3.E-03	mg/kg-day	0.004
				Manganese	254	mg/kg	5.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	7.E-02	mg/kg-day	0.002
				Vanadium	23.5	mg/kg	5.E-06	mg/kg/day	NA	NA	---	1.E-05	mg/kg/day	5.E-03	mg/kg-day	0.003
			Exp. Route Total								1.E-04					0.2
			Dermal	Benz(a)anthracene	19.4	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	6.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(a)pyrene	8.75	mg/kg	1.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-05	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00009
				Benzo(b)fluoranthene	15.4	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	5.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Benzo(k)fluoranthene	6.65	mg/kg	7.E-07	mg/kg/day	7.E-02	1/(mg/kg-day)	1.E-07	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Chrysene	11.3	mg/kg	1.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-08	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Dibenz(ah)anthracene	2.14	mg/kg	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	3.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Arsenic	96.1	mg/kg	2.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	3.E-06	7.E-06	mg/kg/day	3.E-04	mg/kg-day	0.02
			Exp. Route Total								3.E-05					0.02
	Exposure Medium Total										1.E-04					0.2
	Indoor Air	Old Railroad and Former Lower Mill Pond Area	Inhalation	Methylene chloride (Dichloromethane)	0.000191	mg/m3	6.E-05	mg/m3	5.E-07	1/(ug/m3)	3.E-08	2.E-04	mg/m3	1.E+00	mg/m3	0.0002
				Naphthalene	0.00153	mg/m3	5.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.5
	Exposure Medium Total										3.E-08					0.5
	Plant tissue	Old Railroad and Former Lower Mill Pond Area	Ingestion	Arsenic	NA	NA	1.E-04	mg/kg/day	2.E+00	1/(mg/kg-day)	2.E-04	4.E-04	mg/kg/day	3.E-04	mg/kg-day	1
				Chromium VI	NA	NA	9.E-05	mg/kg/day	NA	NA	---	3.E-04	mg/kg/day	3.E-03	mg/kg-day	0.09
	Exposure Medium Total										2.E-04					1
Soil Total											3.E-04					2
										Total of Receptor Risks Across All Media	3.E-04			Total of Receptor Hazards Across All Media		2

Note: NA = not available/not applicable

Table N7.39 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Ingestion	Benz(a)anthracene	19.4	mg/kg	9.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-05	1.E-04	mg/kg/day	3.E-02	mg/kg-day	0.004
				Benzo(a)pyrene	8.75	mg/kg	4.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-04	5.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(b)fluoranthene	15.4	mg/kg	7.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-05	8.E-05	mg/kg/day	3.E-02	mg/kg-day	0.003
				Benzo(k)fluoranthene	6.65	mg/kg	3.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	9.E-07	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Chrysene	11.3	mg/kg	5.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	2.E-07	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Dibenz(ah)anthracene	2.14	mg/kg	1.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-05	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	5.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-05	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Antimony	3.85	mg/kg	2.E-06	mg/kg/day	NA	NA	---	2.E-05	mg/kg/day	4.E-04	mg/kg-day	0.05
				Arsenic	96.1	mg/kg	5.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-05	5.E-04	mg/kg/day	3.E-04	mg/kg-day	2
				Chromium VI	22.5	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-03	mg/kg-day	0.04
				Manganese	254	mg/kg	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	7.E-02	mg/kg-day	0.02
				Vanadium	23.5	mg/kg	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	5.E-03	mg/kg-day	0.03
			Exp. Route Total								3.E-04					2
			Dermal	Benz(a)anthracene	19.4	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Benzo(a)pyrene	8.75	mg/kg	1.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	4.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Benzo(b)fluoranthene	15.4	mg/kg	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	8.E-06	3.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Benzo(k)fluoranthene	6.65	mg/kg	1.E-06	mg/kg/day	7.E-02	1/(mg/kg-day)	3.E-07	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Chrysene	11.3	mg/kg	2.E-06	mg/kg/day	7.E-03	1/(mg/kg-day)	6.E-08	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0008
				Dibenz(ah)anthracene	2.14	mg/kg	4.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-05	4.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0001
				Indeno(1,2,3-cd)pyrene	10.8	mg/kg	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0007
				Arsenic	96.1	mg/kg	4.E-06	mg/kg/day	2.E+00	1/(mg/kg-day)	6.E-06	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
			Exp. Route Total								8.E-05					0.2
	Exposure Medium Total										4.E-04					2
	Indoor Air	Old Railroad and Former Lower Mill Pond Area	Inhalation	Methylene chloride (Dichloromethane)	0.000191	mg/m3	2.E-05	mg/m3	5.E-07	1/(ug/m3)	7.E-09	2.E-04	mg/m3	1.E+00	mg/m3	0.0002
				Naphthalene	0.00153	mg/m3	1.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.5
	Exposure Medium Total										7.E-09					0.5
	Plant tissue	Old Railroad and Former Lower Mill Pond Area	Ingestion	Arsenic	NA	NA	5.E-05	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-05	6.E-04	mg/kg/day	3.E-04	mg/kg-day	2
				Chromium VI	NA	NA	4.E-05	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	3.E-03	mg/kg-day	0.1
	Exposure Medium Total										7.E-05					2
Soil Total											4.E-04					5
										Total of Receptor Risks Across All Media	4.E-04			Total of Receptor Hazards Across All Media		5

Note: NA = not available/not applicable

Table N7.56 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Ingestion	Benzene	0.00457	mg/L	4.E-05	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-06	1.E-04	mg/kg/day	4.E-03	mg/kg-day	0.03
				2-Methylnaphthalene	0.0138	mg/L	1.E-04	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	4.E-03	mg/kg-day	0.09
				Naphthalene	0.0413	mg/L	4.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	2.E-02	mg/kg-day	0.06
				Benzo(a)pyrene	0.000077	mg/L	7.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-05	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00007
				Dibenz(ah)anthracene	0.000025	mg/L	2.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	3.E-06	7.E-07	mg/kg/day	3.E-02	mg/kg-day	0.00002
				Arsenic	0.059	mg/L	6.E-04	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-04	2.E-03	mg/kg/day	3.E-04	mg/kg-day	5
				Chromium VI	0.03	mg/L	3.E-04	mg/kg/day	NA	NA	---	8.E-04	mg/kg/day	3.E-03	mg/kg-day	0.3
				Manganese (water ingestion pathways only)	0.62	mg/L	6.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	2.E-02	mg/kg-day	0.7
				Vanadium	0.22	mg/L	2.E-03	mg/kg/day	NA	NA	---	6.E-03	mg/kg/day	5.E-03	mg/kg-day	1
			Exp. Route Total								8.E-04					8
			Dermal	Benzene	0.00457	mg/L	7.E-06	mg/kg/day	6.E-02	1/(mg/kg-day)	4.E-07	2.E-05	mg/kg/day	4.E-03	mg/kg-day	0.005
				2-Methylnaphthalene	0.0138	mg/L	2.E-04	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	4.E-03	mg/kg-day	0.1
				Naphthalene	0.0413	mg/L	3.E-04	mg/kg/day	NA	NA	---	8.E-04	mg/kg/day	2.E-02	mg/kg-day	0.04
				Chromium VI	0.03	mg/L	3.E-06	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	8.E-05	mg/kg-day	0.1
				Vanadium	0.22	mg/L	1.E-05	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	1.E-04	mg/kg-day	0.2
			Exp. Route Total								4.E-07					0.5
	Exposure Medium Total										8.E-04					8
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Inhalation	Benzene	NA	NA	2.E-04	mg/m3	8.E-06	1/(ug/m3)	1.E-06	4.E-04	mg/m3	3.E-02	mg/m3	0.01
				2-Methylnaphthalene	NA	NA	5.E-04	mg/m3	NA	NA	---	1.E-03	mg/m3	3.E-03	mg/m3	0.4
				Naphthalene	NA	NA	1.E-03	mg/m3	NA	NA	---	4.E-03	mg/m3	3.E-03	mg/m3	1
	Exposure Medium Total										1.E-06					2
Groundwater Total											8.E-04					10
											Total of Receptor Risks Across All Media 8.E-04					Total of Receptor Hazards Across All Media 10

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table N7.56 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Ingestion	Benzene	0.00457	mg/L	4.E-05	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-06	4.E-04	mg/kg/day	4.E-03	mg/kg-day	0.1
				2-Methylnaphthalene	0.0138	mg/L	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	4.E-03	mg/kg-day	0.3
				Naphthalene	0.0413	mg/L	3.E-04	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	2.E-02	mg/kg-day	0.2
				Benzo(a)pyrene	0.000077	mg/L	3.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	6.E-06	7.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0002
				Dibenz(ah)anthracene	0.000025	mg/L	1.E-07	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-06	2.E-06	mg/kg/day	3.E-02	mg/kg-day	0.00008
				Arsenic	0.059	mg/L	5.E-04	mg/kg/day	2.E+00	1/(mg/kg-day)	7.E-04	6.E-03	mg/kg/day	3.E-04	mg/kg-day	20
				Chromium VI	0.03	mg/L	2.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	3.E-03	mg/kg-day	1
				Manganese (water ingestion pathways only)	0.62	mg/L	5.E-03	mg/kg/day	NA	NA	---	6.E-02	mg/kg/day	2.E-02	mg/kg-day	2
				Vanadium	0.22	mg/L	2.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	5.E-03	mg/kg-day	4
			Exp. Route Total								7.E-04					30
			Dermal	Benzene	0.00457	mg/L	4.E-06	mg/kg/day	6.E-02	1/(mg/kg-day)	2.E-07	4.E-05	mg/kg/day	4.E-03	mg/kg-day	0.01
				2-Methylnaphthalene	0.0138	mg/L	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	4.E-03	mg/kg-day	0.3
				Naphthalene	0.0413	mg/L	1.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	2.E-02	mg/kg-day	0.08
				Chromium VI	0.03	mg/L	2.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	8.E-05	mg/kg-day	0.3
				Vanadium	0.22	mg/L	8.E-06	mg/kg/day	NA	NA	---	9.E-05	mg/kg/day	1.E-04	mg/kg-day	0.7
			Exp. Route Total								2.E-07					1
	Exposure Medium Total										7.E-04					30
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Inhalation	Benzene	NA	NA	7.E-05	mg/m3	8.E-06	1/(ug/m3)	5.E-07	8.E-04	mg/m3	3.E-02	mg/m3	0.03
				2-Methylnaphthalene	NA	NA	2.E-04	mg/m3	NA	NA	---	2.E-03	mg/m3	3.E-03	mg/m3	0.8
				Naphthalene	NA	NA	6.E-04	mg/m3	NA	NA	---	7.E-03	mg/m3	3.E-03	mg/m3	2
	Exposure Medium Total										5.E-07					3
Groundwater Total											7.E-04					30
											Total of Receptor Risks Across All Media 7.E-04					Total of Receptor Hazards Across All Media 30

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table N7.57 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	On-Site Groundwater	Ingestion	Benzene	0.58	mg/L	5.E-03	mg/kg/day	6.E-02	1/(mg/kg-day)	3.E-04	2.E-02	mg/kg/day	4.E-03	mg/kg-day	4
				Chloroform	0.00032	mg/L	3.E-06	mg/kg/day	NA	NA	---	9.E-06	mg/kg/day	1.E-02	mg/kg-day	0.0009
				Ethylbenzene	0.353	mg/L	3.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	1.E-01	mg/kg-day	0.1
				Methylene chloride (Dichloromethane)	0.034	mg/L	3.E-04	mg/kg/day	8.E-03	1/(mg/kg-day)	2.E-06	9.E-04	mg/kg/day	6.E-02	mg/kg-day	0.02
				Methyl tert-butyl ether (MTBE)	0.024	mg/L	2.E-04	mg/kg/day	2.E-03	1/(mg/kg-day)	4.E-07	7.E-04	mg/kg/day	3.E-01	mg/kg-day	0.002
				Styrene	0.267	mg/L	3.E-03	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	2.E-01	mg/kg-day	0.04
				Toluene	0.897	mg/L	8.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	8.E-02	mg/kg-day	0.3
				Trichloroethylene (TCE)	0.00253	mg/L	2.E-05	mg/kg/day	4.E-01	1/(mg/kg-day)	1.E-05	7.E-05	mg/kg/day	3.E-04	mg/kg-day	0.2
				Xylenes (mixed isomers)	0.677	mg/L	6.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	2.E-01	mg/kg-day	0.09
				Acenaphthene	0.0763	mg/L	7.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	6.E-02	mg/kg-day	0.03
				Acenaphthylene	0.0787	mg/L	7.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	3.E-02	mg/kg-day	0.07
				Fluorene	0.0487	mg/L	5.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	4.E-02	mg/kg-day	0.03
				2-Methylnaphthalene	0.503	mg/L	5.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	4.E-03	mg/kg-day	3
				Naphthalene	3.13	mg/L	3.E-02	mg/kg/day	NA	NA	---	9.E-02	mg/kg/day	2.E-02	mg/kg-day	4
				Pyrene	0.0158	mg/L	1.E-04	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	3.E-02	mg/kg-day	0.01
				Benz(a)anthracene	0.00078	mg/L	7.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	1.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0007
				Benzo(a)pyrene	0.0016	mg/L	2.E-05	mg/kg/day	7.E+00	1/(mg/kg-day)	2.E-04	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Benzo(b)fluoranthene	0.000405	mg/L	4.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	5.E-06	1.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0004
				Dibenz(ah)anthracene	0.000627	mg/L	6.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	8.E-05	2.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0006
				Indeno(1,2,3-cd)pyrene	0.000285	mg/L	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	4.E-06	8.E-06	mg/kg/day	3.E-02	mg/kg-day	0.0003
				Bis(2-ethylhexyl)phthalate (DEHP)	0.0372	mg/L	3.E-04	mg/kg/day	1.E-02	1/(mg/kg-day)	5.E-06	1.E-03	mg/kg/day	2.E-02	mg/kg-day	0.05
				4-Methylphenol	0.092	mg/L	9.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	5.E-03	mg/kg-day	0.5
				Carbazole	0.0627	mg/L	6.E-04	mg/kg/day	2.E-02	1/(mg/kg-day)	1.E-05	2.E-03	mg/kg/day	NA	NA	---
				Antimony	0.034	mg/L	3.E-04	mg/kg/day	NA	NA	---	9.E-04	mg/kg/day	4.E-04	mg/kg-day	2
				Arsenic	0.631	mg/L	6.E-03	mg/kg/day	2.E+00	1/(mg/kg-day)	9.E-03	2.E-02	mg/kg/day	3.E-04	mg/kg-day	60
				Barium	0.27	mg/L	3.E-03	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	2.E-01	mg/kg-day	0.04
				Cadmium (in groundwater or suface water)	0.00182	mg/L	2.E-05	mg/kg/day	NA	NA	---	5.E-05	mg/kg/day	5.E-04	mg/kg-day	0.1
				Chromium VI	0.13	mg/L	1.E-03	mg/kg/day	NA	NA	---	4.E-03	mg/kg/day	3.E-03	mg/kg-day	1
				Manganese (water ingestion pathways only)	3.9	mg/L	4.E-02	mg/kg/day	NA	NA	---	1.E-01	mg/kg/day	2.E-02	mg/kg-day	4
				Mercury	0.0014	mg/L	1.E-05	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	3.E-04	mg/kg-day	0.1
				Nickel	0.629	mg/L	6.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	2.E-02	mg/kg-day	0.9
				Selenium	0.0196	mg/L	2.E-04	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	5.E-03	mg/kg-day	0.1
				Thallium	0.000305	mg/L	3.E-06	mg/kg/day	NA	NA	---	8.E-06	mg/kg/day	7.E-05	mg/kg-day	0.1
				Vanadium	3.35	mg/L	3.E-02	mg/kg/day	NA	NA	---	9.E-02	mg/kg/day	5.E-03	mg/kg-day	20
				Zinc	4.84	mg/L	5.E-02	mg/kg/day	NA	NA	---	1.E-01	mg/kg/day	3.E-01	mg/kg-day	0.4
				Cyanide (free)	0.00465	mg/L	4.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	2.E-02	mg/kg-day	0.006
			Exp. Route Total								1.E-02					100

Table N7.57 Adult RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal	Benzene	0.58	mg/L	8.E-04	mg/kg/day	6.E-02	1/(mg/kg-day)	5.E-05	2.E-03	mg/kg/day	4.E-03	mg/kg-day	0.6
				Ethylbenzene	0.353	mg/L	2.E-03	mg/kg/day	NA	NA	---	6.E-03	mg/kg/day	1.E-01	mg/kg-day	0.06
				Methyl tert-butyl ether (MTBE)	0.024	mg/L	8.E-06	mg/kg/day	2.E-03	1/(mg/kg-day)	1.E-08	2.E-05	mg/kg/day	3.E-01	mg/kg-day	0.00008
				Styrene	0.267	mg/L	1.E-03	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	2.E-01	mg/kg-day	0.02
				Toluene	0.897	mg/L	3.E-03	mg/kg/day	NA	NA	---	9.E-03	mg/kg/day	8.E-02	mg/kg-day	0.1
				Trichloroethylene (TCE)	0.00253	mg/L	4.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	2.E-06	1.E-05	mg/kg/day	3.E-04	mg/kg-day	0.04
				Xylenes (mixed isomers)	0.677	mg/L	4.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	2.E-01	mg/kg-day	0.06
				2-Methylnaphthalene	0.503	mg/L	6.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	4.E-03	mg/kg-day	5
				Naphthalene	3.13	mg/L	2.E-02	mg/kg/day	NA	NA	---	6.E-02	mg/kg/day	2.E-02	mg/kg-day	3
				Bis(2-ethylhexyl)phthalate (DEHP)	0.0372	mg/L	6.E-04	mg/kg/day	1.E-02	1/(mg/kg-day)	9.E-06	2.E-03	mg/kg/day	2.E-02	mg/kg-day	0.09
				4-Methylphenol	0.092	mg/L	8.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-03	mg/kg-day	0.05
				Carbazole	0.0627	mg/L	5.E-04	mg/kg/day	2.E-02	1/(mg/kg-day)	9.E-06	1.E-03	mg/kg/day	NA	NA	---
				Cadmium (in groundwater or suface water)	0.00182	mg/L	9.E-08	mg/kg/day	NA	NA	---	3.E-07	mg/kg/day	3.E-05	mg/kg-day	0.01
				Chromium VI	0.13	mg/L	1.E-05	mg/kg/day	NA	NA	---	4.E-05	mg/kg/day	8.E-05	mg/kg-day	0.5
				Vanadium	3.35	mg/L	2.E-04	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	1.E-04	mg/kg-day	4
				Zinc	4.84	mg/L	1.E-04	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	3.E-01	mg/kg-day	0.001
				Cyanide (free)	0.00465	mg/L	2.E-07	mg/kg/day	NA	NA	---	7.E-07	mg/kg/day	2.E-02	mg/kg-day	0.00003
			Exp. Route Total								7.E-05					10
	Exposure Medium Total										1.E-02					100
	Shower Vapor (1)	On-Site Groundwater	Inhalation	Benzene	NA	NA	2.E-02	mg/m3	8.E-06	1/(ug/m3)	1.E-04	6.E-02	mg/m3	3.E-02	mg/m3	2
				Chloroform	NA	NA	1.E-05	mg/m3	2.E-05	1/(ug/m3)	2.E-07	3.E-05	mg/m3	5.E-02	mg/m3	0.0006
				Ethylbenzene	NA	NA	1.E-02	mg/m3	1.E-06	1/(ug/m3)	1.E-05	3.E-02	mg/m3	1.E+00	mg/m3	0.03
				Methylene chloride (Dichloromethane)	NA	NA	1.E-03	mg/m3	5.E-07	1/(ug/m3)	5.E-07	3.E-03	mg/m3	1.E+00	mg/m3	0.003
				Methyl tert-butyl ether (MTBE)	NA	NA	8.E-04	mg/m3	3.E-07	1/(ug/m3)	2.E-07	2.E-03	mg/m3	3.E+00	mg/m3	0.0008
				Styrene	NA	NA	9.E-03	mg/m3	NA	NA	---	3.E-02	mg/m3	1.E+00	mg/m3	0.03
				Toluene	NA	NA	3.E-02	mg/m3	NA	NA	---	9.E-02	mg/m3	5.E+00	mg/m3	0.02
				Trichloroethylene (TCE)	NA	NA	8.E-05	mg/m3	1.E-04	1/(ug/m3)	9.E-06	2.E-04	mg/m3	4.E-02	mg/m3	0.006
				Xylenes (mixed isomers)	NA	NA	2.E-02	mg/m3	NA	NA	---	6.E-02	mg/m3	1.E-01	mg/m3	0.6
				2-Methylnaphthalene	NA	NA	2.E-02	mg/m3	NA	NA	---	5.E-02	mg/m3	3.E-03	mg/m3	20
				Naphthalene	NA	NA	1.E-01	mg/m3	NA	NA	---	3.E-01	mg/m3	3.E-03	mg/m3	100
	Exposure Medium Total										2.E-04					100
Groundwater Total											1.E-02					200
										Total of Receptor Risks Across All Media	1.E-02			Total of Receptor Hazards Across All Media		200

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table N7.57 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Tap Water	On-Site Groundwater	Ingestion	Benzene	0.58	mg/L	5.E-03	mg/kg/day	6.E-02	1/(mg/kg-day)	3.E-04	6.E-02	mg/kg/day	4.E-03	mg/kg-day	10
				Chloroform	0.00032	mg/L	3.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	1.E-02	mg/kg-day	0.003
				Ethylbenzene	0.353	mg/L	3.E-03	mg/kg/day	NA	NA	---	3.E-02	mg/kg/day	1.E-01	mg/kg-day	0.3
				Methylene chloride (Dichloromethane)	0.034	mg/L	3.E-04	mg/kg/day	8.E-03	1/(mg/kg-day)	2.E-06	3.E-03	mg/kg/day	6.E-02	mg/kg-day	0.05
				Methyl tert-butyl ether (MTBE)	0.024	mg/L	2.E-04	mg/kg/day	2.E-03	1/(mg/kg-day)	4.E-07	2.E-03	mg/kg/day	3.E-01	mg/kg-day	0.008
				Styrene	0.267	mg/L	2.E-03	mg/kg/day	NA	NA	---	3.E-02	mg/kg/day	2.E-01	mg/kg-day	0.1
				Toluene	0.897	mg/L	7.E-03	mg/kg/day	NA	NA	---	9.E-02	mg/kg/day	8.E-02	mg/kg-day	1
				Trichloroethylene (TCE)	0.00253	mg/L	2.E-05	mg/kg/day	4.E-01	1/(mg/kg-day)	8.E-06	2.E-04	mg/kg/day	3.E-04	mg/kg-day	0.8
				Xylenes (mixed isomers)	0.677	mg/L	6.E-03	mg/kg/day	NA	NA	---	6.E-02	mg/kg/day	2.E-01	mg/kg-day	0.3
				Acenaphthene	0.0763	mg/L	6.E-04	mg/kg/day	NA	NA	---	7.E-03	mg/kg/day	6.E-02	mg/kg-day	0.1
				Acenaphthylene	0.0787	mg/L	6.E-04	mg/kg/day	NA	NA	---	8.E-03	mg/kg/day	3.E-02	mg/kg-day	0.3
				Fluorene	0.0487	mg/L	4.E-04	mg/kg/day	NA	NA	---	5.E-03	mg/kg/day	4.E-02	mg/kg-day	0.1
				2-Methylnaphthalene	0.503	mg/L	4.E-03	mg/kg/day	NA	NA	---	5.E-02	mg/kg/day	4.E-03	mg/kg-day	10
				Naphthalene	3.13	mg/L	3.E-02	mg/kg/day	NA	NA	---	3.E-01	mg/kg/day	2.E-02	mg/kg-day	20
				Pyrene	0.0158	mg/L	1.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	3.E-02	mg/kg-day	0.05
				Benz(a)anthracene	0.00078	mg/L	3.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	6.E-06	7.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Benzo(a)pyrene	0.0016	mg/L	7.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	1.E-04	2.E-04	mg/kg/day	3.E-02	mg/kg-day	0.005
				Benzo(b)fluoranthene	0.000405	mg/L	2.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	3.E-06	4.E-05	mg/kg/day	3.E-02	mg/kg-day	0.001
				Dibenz(ah)anthracene	0.000627	mg/L	3.E-06	mg/kg/day	7.E+00	1/(mg/kg-day)	5.E-05	6.E-05	mg/kg/day	3.E-02	mg/kg-day	0.002
				Indeno(1,2,3-cd)pyrene	0.000285	mg/L	1.E-06	mg/kg/day	7.E-01	1/(mg/kg-day)	2.E-06	3.E-05	mg/kg/day	3.E-02	mg/kg-day	0.0009
				Bis(2-ethylhexyl)phthalate (DEHP)	0.0372	mg/L	3.E-04	mg/kg/day	1.E-02	1/(mg/kg-day)	4.E-06	4.E-03	mg/kg/day	2.E-02	mg/kg-day	0.2
				4-Methylphenol	0.092	mg/L	8.E-04	mg/kg/day	NA	NA	---	9.E-03	mg/kg/day	5.E-03	mg/kg-day	2
				Carbazole	0.0627	mg/L	5.E-04	mg/kg/day	2.E-02	1/(mg/kg-day)	1.E-05	6.E-03	mg/kg/day	NA	NA	---
				Antimony	0.034	mg/L	3.E-04	mg/kg/day	NA	NA	---	3.E-03	mg/kg/day	4.E-04	mg/kg-day	8
				Arsenic	0.631	mg/L	5.E-03	mg/kg/day	2.E+00	1/(mg/kg-day)	8.E-03	6.E-02	mg/kg/day	3.E-04	mg/kg-day	200
				Barium	0.27	mg/L	2.E-03	mg/kg/day	NA	NA	---	3.E-02	mg/kg/day	2.E-01	mg/kg-day	0.1
				Cadmium (in groundwater or suface water)	0.00182	mg/L	1.E-05	mg/kg/day	NA	NA	---	2.E-04	mg/kg/day	5.E-04	mg/kg-day	0.3
				Chromium VI	0.13	mg/L	1.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	3.E-03	mg/kg-day	4
				Manganese (water ingestion pathways only)	3.9	mg/L	3.E-02	mg/kg/day	NA	NA	---	4.E-01	mg/kg/day	2.E-02	mg/kg-day	20
				Mercury	0.0014	mg/L	1.E-05	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	3.E-04	mg/kg-day	0.4
				Nickel	0.629	mg/L	5.E-03	mg/kg/day	NA	NA	---	6.E-02	mg/kg/day	2.E-02	mg/kg-day	3
				Selenium	0.0196	mg/L	2.E-04	mg/kg/day	NA	NA	---	2.E-03	mg/kg/day	5.E-03	mg/kg-day	0.4
				Thallium	0.000305	mg/L	3.E-06	mg/kg/day	NA	NA	---	3.E-05	mg/kg/day	7.E-05	mg/kg-day	0.4
				Vanadium	3.35	mg/L	3.E-02	mg/kg/day	NA	NA	---	3.E-01	mg/kg/day	5.E-03	mg/kg-day	60
				Zinc	4.84	mg/L	4.E-02	mg/kg/day	NA	NA	---	5.E-01	mg/kg/day	3.E-01	mg/kg-day	2
				Cyanide (free)	0.00465	mg/L	4.E-05	mg/kg/day	NA	NA	---	4.E-04	mg/kg/day	2.E-02	mg/kg-day	0.02
			Exp. Route Total								8.E-03					300

Table N7.57 Child RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal	Benzene	0.58	mg/L	5.E-04	mg/kg/day	6.E-02	1/(mg/kg-day)	3.E-05	6.E-03	mg/kg/day	4.E-03	mg/kg-day	1
				Ethylbenzene	0.353	mg/L	1.E-03	mg/kg/day	NA	NA	---	1.E-02	mg/kg/day	1.E-01	mg/kg-day	0.1
				Methyl tert-butyl ether (MTBE)	0.024	mg/L	5.E-06	mg/kg/day	2.E-03	1/(mg/kg-day)	9.E-09	6.E-05	mg/kg/day	3.E-01	mg/kg-day	0.0002
				Styrene	0.267	mg/L	6.E-04	mg/kg/day	NA	NA	---	8.E-03	mg/kg/day	2.E-01	mg/kg-day	0.04
				Toluene	0.897	mg/L	2.E-03	mg/kg/day	NA	NA	---	2.E-02	mg/kg/day	8.E-02	mg/kg-day	0.2
				Trichloroethylene (TCE)	0.00253	mg/L	2.E-06	mg/kg/day	4.E-01	1/(mg/kg-day)	9.E-07	3.E-05	mg/kg/day	3.E-04	mg/kg-day	0.09
				Xylenes (mixed isomers)	0.677	mg/L	2.E-03	mg/kg/day	NA	NA	---	3.E-02	mg/kg/day	2.E-01	mg/kg-day	0.1
				2-Methylnaphthalene	0.503	mg/L	4.E-03	mg/kg/day	NA	NA	---	4.E-02	mg/kg/day	4.E-03	mg/kg-day	10
				Naphthalene	3.13	mg/L	1.E-02	mg/kg/day	NA	NA	---	1.E-01	mg/kg/day	2.E-02	mg/kg-day	6
				Bis(2-ethylhexyl)phthalate (DEHP)	0.0372	mg/L	3.E-04	mg/kg/day	1.E-02	1/(mg/kg-day)	5.E-06	4.E-03	mg/kg/day	2.E-02	mg/kg-day	0.2
				4-Methylphenol	0.092	mg/L	5.E-05	mg/kg/day	NA	NA	---	5.E-04	mg/kg/day	5.E-03	mg/kg-day	0.1
				Carbazole	0.0627	mg/L	3.E-04	mg/kg/day	2.E-02	1/(mg/kg-day)	5.E-06	3.E-03	mg/kg/day	NA	NA	---
				Cadmium (in groundwater or suface water)	0.00182	mg/L	7.E-08	mg/kg/day	NA	NA	---	8.E-07	mg/kg/day	3.E-05	mg/kg-day	0.03
				Chromium VI	0.13	mg/L	9.E-06	mg/kg/day	NA	NA	---	1.E-04	mg/kg/day	8.E-05	mg/kg-day	1
				Vanadium	3.35	mg/L	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	1.E-04	mg/kg-day	10
				Zinc	4.84	mg/L	1.E-04	mg/kg/day	NA	NA	---	1.E-03	mg/kg/day	3.E-01	mg/kg-day	0.004
				Cyanide (free)	0.00465	mg/L	2.E-07	mg/kg/day	NA	NA	---	2.E-06	mg/kg/day	2.E-02	mg/kg-day	0.0001
			Exp. Route Total								4.E-05					30
	Exposure Medium Total										8.E-03					400
	Shower Vapor (1)	On-Site Groundwater	Inhalation	Benzene	NA	NA	9.E-03	mg/m3	8.E-06	1/(ug/m3)	7.E-05	1.E-01	mg/m3	3.E-02	mg/m3	3
				Chloroform	NA	NA	5.E-06	mg/m3	2.E-05	1/(ug/m3)	1.E-07	6.E-05	mg/m3	5.E-02	mg/m3	0.001
				Ethylbenzene	NA	NA	5.E-03	mg/m3	1.E-06	1/(ug/m3)	6.E-06	6.E-02	mg/m3	1.E+00	mg/m3	0.06
				Methylene chloride (Dichloromethane)	NA	NA	5.E-04	mg/m3	5.E-07	1/(ug/m3)	2.E-07	6.E-03	mg/m3	1.E+00	mg/m3	0.006
				Methyl tert-butyl ether (MTBE)	NA	NA	4.E-04	mg/m3	3.E-07	1/(ug/m3)	1.E-07	4.E-03	mg/m3	3.E+00	mg/m3	0.001
				Styrene	NA	NA	4.E-03	mg/m3	NA	NA	---	5.E-02	mg/m3	1.E+00	mg/m3	0.05
				Toluene	NA	NA	1.E-02	mg/m3	NA	NA	---	2.E-01	mg/m3	5.E+00	mg/m3	0.03
				Trichloroethylene (TCE)	NA	NA	4.E-05	mg/m3	1.E-04	1/(ug/m3)	4.E-06	5.E-04	mg/m3	4.E-02	mg/m3	0.01
				Xylenes (mixed isomers)	NA	NA	1.E-02	mg/m3	NA	NA	---	1.E-01	mg/m3	1.E-01	mg/m3	1
				2-Methylnaphthalene	NA	NA	8.E-03	mg/m3	NA	NA	---	9.E-02	mg/m3	3.E-03	mg/m3	30
				Naphthalene	NA	NA	5.E-02	mg/m3	NA	NA	---	6.E-01	mg/m3	3.E-03	mg/m3	200
	Exposure Medium Total										8.E-05					200
Groundwater Total											8.E-03					600
										Total of Receptor Risks Across All Media	8.E-03			Total of Receptor Hazards Across All Media		600

Note: NA = not available/not applicable

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Table N9.32 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	2.E-06	---	---	2.E-06	Hepatic; Renal; Developmental; Immunological	0.2	---	---	0.2
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.01	0.005	---	0.02
			Naphthalene	---	---	---	---	Whole Body	0.006	0.002	---	0.008
			Benz(a)anthracene	5.E-05	2.E-05	---	7.E-05	Renal	0.005	0.002	---	0.007
			Benzo(a)pyrene	5.E-04	2.E-04	---	7.E-04	Renal	0.005	0.002	---	0.007
			Benzo(b)fluoranthene	6.E-05	2.E-05	---	8.E-05	Renal	0.006	0.002	---	0.008
			Benzo(k)fluoranthene	3.E-06	1.E-06	---	5.E-06	Renal	0.003	0.001	---	0.005
			Chrysene	5.E-07	2.E-07	---	7.E-07	Renal	0.005	0.002	---	0.007
			Dibenz(ah)anthracene	5.E-05	2.E-05	---	6.E-05	Renal	0.0004	0.0002	---	0.0006
			Indeno(1,2,3-cd)pyrene	2.E-05	6.E-06	---	2.E-05	Renal	0.002	0.0006	---	0.002
			Dibenzofuran	---	---	---	---	Renal	0.03	0.008	---	0.04
			Antimony	---	---	---	---	Whole Body; Hepatic	0.03	---	---	0.03
			Arsenic	4.E-06	4.E-07	---	4.E-06	Integumental; Cardiovascular	0.07	0.006	---	0.08
			Chromium VI	---	---	---	---	None observed	0.03	---	---	0.03
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Mercury	---	---	---	---	Immunological	0.1	---	---	0.1
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
			Zinc	---	---	---	---	Hematological	0.03	---	---	0.03
	Exposure Medium Total			7.E-04	2.E-04	---	1.E-03		0.6	0.03	---	0.6
	Plant tissue	East of South Street On-Facility	Arsenic	1.E-05	---	---	1.E-05	Integumental; Cardiovascular	0.08	---	---	0.08
			Chromium VI	---	---	---	---	None observed	0.1	---	---	0.1
			Mercury	---	---	---	---	Immunological	0.03	---	---	0.03
			Zinc	---	---	---	---	Hematological	0.2	---	---	0.2
	Exposure Medium Total			1.E-05	---	---	1.E-05		0.5	---	---	0.5
Soil Total				7.E-04	2.E-04	---	1.E-03		1	0.03	---	1
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Benzene	---	---	8.E-08	8.E-08	Hematological; Immunological	---	---	0.0008	0.0008
			Carbon tetrachloride	---	---	7.E-08	7.E-08	Hepatic	---	---	0.005	0.005
			Chloroform	---	---	2.E-07	2.E-07	Renal; Hepatic; Neurological	---	---	0.0005	0.0005
			1,2-Dichloroethylene (cis)	---	---	---	---	Hepatic	---	---	0.0005	0.0005
			Ethylbenzene	---	---	2.E-08	2.E-08	Developmental	---	---	0.00004	0.00004
			Methylene chloride (Dichloromethane)	---	---	3.E-08	3.E-08	Hepatic	---	---	0.0001	0.0001
			Tetrachloroethylene (PCE)	---	---	2.E-07	2.E-07	Neurological	---	---	0.0002	0.0002
			Trichloroethylene (TCE)	---	---	6.E-04	6.E-04	Neurological; Hepatic; Endocrine	---	---	0.3	0.3
			1,2,4-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.02	0.02
			1,3,5-Trimethylbenzene	---	---	---	---	Neurological; Respiratory; Hematological	---	---	0.007	0.007
			Naphthalene	---	---	---	---	Respiratory	---	---	0.01	0.01
Soil Gas Total				---	---	6.E-04	6.E-04		---	---	0.3	0.3
							Total Risk Across All Media	2.E-03				Total Hazard Across All Media	1

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N9.33 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	2.E-06	---	---	2.E-06	Hepatic; Renal; Developmental; Immunological	0.2	---	---	0.2
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.01	0.005	---	0.02
			Naphthalene	---	---	---	---	Whole Body	0.006	0.002	---	0.008
			Benz(a)anthracene	5.E-05	2.E-05	---	7.E-05	Renal	0.005	0.002	---	0.007
			Benzo(a)pyrene	5.E-04	2.E-04	---	7.E-04	Renal	0.005	0.002	---	0.007
			Benzo(b)fluoranthene	6.E-05	2.E-05	---	8.E-05	Renal	0.006	0.002	---	0.008
			Benzo(k)fluoranthene	3.E-06	1.E-06	---	5.E-06	Renal	0.003	0.001	---	0.005
			Chrysene	5.E-07	2.E-07	---	7.E-07	Renal	0.005	0.002	---	0.007
			Dibenz(ah)anthracene	5.E-05	2.E-05	---	6.E-05	Renal	0.0004	0.0002	---	0.0006
			Indeno(1,2,3-cd)pyrene	2.E-05	6.E-06	---	2.E-05	Renal	0.002	0.0006	---	0.002
			Dibenzofuran	---	---	---	---	Renal	0.03	0.008	---	0.04
			Antimony	---	---	---	---	Whole Body; Hepatic	0.03	---	---	0.03
			Arsenic	4.E-06	4.E-07	---	4.E-06	Integumental; Cardiovascular	0.07	0.006	---	0.08
			Chromium VI	---	---	---	---	None observed	0.03	---	---	0.03
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Mercury	---	---	---	---	Immunological	0.1	---	---	0.1
			Vanadium	---	---	---	---	Renal	0.04	---	---	0.04
			Zinc	---	---	---	---	Hematological	0.03	---	---	0.03
	Exposure Medium Total			7.E-04	2.E-04	---	1.E-03		0.6	0.03	---	0.6
	Indoor Air	East of South Street On-Facility (non-SB-09 area)	Benzene	---	---	6.E-07	6.E-07	Hematological; Immunological	---	---	0.006	0.006
			Ethylbenzene	---	---	2.E-08	2.E-08	Developmental	---	---	0.00004	0.00004
			Trichloroethylene (TCE)	---	---	5.E-07	5.E-07	Neurological; Hepatic; Endocrine	---	---	0.0003	0.0003
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.6	0.6
			Naphthalene	---	---	---	---	Respiratory	---	---	1	1
			Heptachlor	---	---	5.E-07	5.E-07		---	---	---	---
	Exposure Medium Total			---	---	2.E-06	2.E-06		---	---	2	2
	Plant tissue	East of South Street On-Facility	Arsenic	1.E-05	---	---	1.E-05	Integumental; Cardiovascular	0.08	---	---	0.08
			Chromium VI	---	---	---	---	None observed	0.1	---	---	0.1
			Mercury	---	---	---	---	Immunological	0.03	---	---	0.03
			Zinc	---	---	---	---	Hematological	0.2	---	---	0.2
	Exposure Medium Total			1.E-05	---	---	1.E-05		0.5	---	---	0.5
Soil Total				7.E-04	2.E-04	2.E-06	1.E-03		1	0.03	2	3
							Total Risk Across All Media	1.E-03			Total Hazard Across All Media	3

Total Respiratory HI Across All Media: 2

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N9.34 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	West of South Street On-Facility	Benz(a)anthracene	6.E-06	2.E-06	---	8.E-06	Renal	0.0006	0.0002	---	0.0008
			Benzo(a)pyrene	7.E-05	2.E-05	---	9.E-05	Renal	0.0007	0.0002	---	0.0009
			Benzo(b)fluoranthene	7.E-06	2.E-06	---	9.E-06	Renal	0.0007	0.0002	---	0.0009
			Chrysene	7.E-08	3.E-08	---	1.E-07	Renal	0.0007	0.0003	---	0.001
			Dibenz(ah)anthracene	8.E-06	3.E-06	---	1.E-05	Renal	0.00008	3E-05	---	0.0001
			Indeno(1,2,3-cd)pyrene	3.E-06	1.E-06	---	4.E-06	Renal	0.0003	0.0001	---	0.0004
			Arsenic	1.E-05	9.E-07	---	1.E-05	Integumental; Cardiovascular	0.2	0.01	---	0.2
			Chromium VI	---	---	---	---	None observed	0.02	---	---	0.02
			Manganese	---	---	---	---	Neurological	0.01	---	---	0.01
			Mercury	---	---	---	---	Immunological	0.04	---	---	0.04
			Vanadium	---	---	---	---	Renal	0.02	---	---	0.02
	Exposure Medium Total			1.E-04	3.E-05	---	1.E-04		0.3	0.02	---	0.3
	Plant tissue	West of South Street On-Facility	Arsenic	3.E-05	---	---	3.E-05	Integumental; Cardiovascular	0.2	---	---	0.2
			Chromium VI	---	---	---	---	None observed	0.07	---	---	0.07
			Mercury	---	---	---	---	Immunological	0.02	---	---	0.02
	Exposure Medium Total			3.E-05	---	---	3.E-05		0.3	---	---	0.3
Soil Total				1.E-04	3.E-05	---	2.E-04		0.6	0.02	---	0.6
Soil/Groundwater	Indoor Air	West of South Street On-Facility	Benzene	---	---	1.E-05	1.E-05	Hematological; Immunological	---	---	0.1	0.1
			Carbon disulfide	---	---	---	---	Neurological	---	---	0.0001	0.0001
			Chloroform	---	---	1.E-07	1.E-07	Renal; Hepatic; Neurological	---	---	0.0002	0.0002
			2-Hexanone	---	---	---	---	Neurological; Reproductive	---	---	0.004	0.004
			Trichlorofluoromethane	---	---	---	---	Renal; Respiratory	---	---	0.001	0.001
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.2	0.2
			Naphthalene	---	---	---	---	Respiratory	---	---	0.3	0.3
Soil/Groundwater Total				---	---	1.E-05	1.E-05		---	---	0.7	0.7
							Total Risk Across All Media	2.E-04				Total Hazard Across All Media	1

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

Table N9.39 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Benz(a)anthracene	4.E-05	1.E-05	---	5.E-05	Renal	0.004	0.001	---	0.005
			Benzo(a)pyrene	2.E-04	6.E-05	---	2.E-04	Renal	0.002	0.0006	---	0.002
			Benzo(b)fluoranthene	3.E-05	1.E-05	---	4.E-05	Renal	0.003	0.001	---	0.004
			Benzo(k)fluoranthene	1.E-06	4.E-07	---	2.E-06	Renal	0.001	0.0004	---	0.002
			Chrysene	2.E-07	8.E-08	---	3.E-07	Renal	0.002	0.0008	---	0.003
			Dibenz(ah)anthracene	4.E-05	1.E-05	---	5.E-05	Renal	0.0004	0.0001	---	0.0005
			Indeno(1,2,3-cd)pyrene	2.E-05	7.E-06	---	3.E-05	Renal	0.002	0.0007	---	0.003
			Antimony	---	---	---	---	Whole Body; Hepatic	0.05	---	---	0.05
			Arsenic	1.E-04	9.E-06	---	1.E-04	Integumental; Cardiovascular	2	0.1	---	2
			Chromium VI	---	---	---	---	None observed	0.04	---	---	0.04
			Manganese	---	---	---	---	Neurological	0.02	---	---	0.02
			Vanadium	---	---	---	---	Renal	0.03	---	---	0.03
	Exposure Medium Total			4.E-04	1.E-04	---	5.E-04		2	0.2	---	2
	Indoor Air	Old Railroad and Former Lower Mill Pond Area	Methylene chloride (Dichloromethane)	---	---	4.E-08	4.E-08	Hepatic	---	---	0.0002	0.0002
			Naphthalene	---	---	---	---	Respiratory	---	---	0.5	0.5
	Exposure Medium Total			---	---	4.E-08	4.E-08		---	---	0.5	0.5
	Plant tissue	Old Railroad and Former Lower Mill Pond Area	Arsenic	3.E-04	---	---	3.E-04	Integumental; Cardiovascular	2	---	---	2
			Chromium VI	---	---	---	---	None observed	0.1	---	---	0.1
	Exposure Medium Total			3.E-04	---	---	3.E-04		2	---	---	2
Soil Total				6.E-04	1.E-04	4.E-08	8.E-04		4	0.2	0.5	5
							Total Risk Across All Media	8.E-04				Total Hazard Across All Media	5

Total Cardiovascular HI Across All Media	4
Total Integumental HI Across All Media	4

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N9.56 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Benzene	4.E-06	6.E-07	---	5.E-06	Hematological; Immunological	0.1	0.01	---	0.1
			2-Methylnaphthalene	---	---	---	---	Respiratory	0.3	0.3	---	0.6
			Naphthalene	---	---	---	---	Whole Body	0.2	0.08	---	0.3
			Benzo(a)pyrene	2.E-05	---	---	2.E-05	Renal	0.0002	---	---	0.0002
			Dibenz(ah)anthracene	5.E-06	---	---	5.E-06	Renal	0.00008	---	---	0.00008
			Arsenic	2.E-03	---	---	2.E-03	Integumental; Cardiovascular	20	---	---	20
			Chromium VI	---	---	---	---	None observed	1	0.3	---	1
			Manganese (water ingestion pathways only)	---	---	---	---	Neurological	2	---	---	2
			Vanadium	---	---	---	---	Renal	4	0.7	---	5
	Exposure Medium Total			2.E-03	6.E-07	---	2.E-03		30	1	---	30
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Benzene	---	---	2.E-06	2.E-06	Hematological; Immunological	---	---	0.03	0.03
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	0.8	0.8
			Naphthalene	---	---	---	---	Respiratory	---	---	2	2
	Exposure Medium Total			---	---	2.E-06	2.E-06		---	---	3	3
Groundwater Total				2.E-03	6.E-07	2.E-06	2.E-03		30	1	3	30
							Total Risk Across All Media	2.E-03				Total Hazard Across All Media	30

Total Cardiovascular HI Across All Media	20
Total Integumental HI Across All Media	20
Total Neurological HI Across All Media	3
Total Renal HI Across All Media	5
Total Respiratory HI Across All Media	4

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N9.57 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	On-Site Groundwater	Benzene	6.E-04	7.E-05	---	6.E-04	Hematological; Immunological	10	1	---	20
			Chloroform	---	---	---	---	Hepatic	0.003	---	---	0.003
			Ethylbenzene	---	---	---	---	Hepatic; Renal	0.3	0.1	---	0.5
			Methylene chloride (Dichloromethane)	4.E-06	---	---	4.E-06	Hepatic	0.05	---	---	0.05
			Methyl tert-butyl ether (MTBE)	8.E-07	2.E-08	---	8.E-07	Hepatic; Renal	0.008	0.0002	---	0.008
			Styrene	---	---	---	---	Hematological; Hepatic; Renal	0.1	0.04	---	0.2
			Toluene	---	---	---	---	Renal; Hepatic	1	0.2	---	1
			Trichloroethylene (TCE)	2.E-05	3.E-06	---	2.E-05	Hepatic; Renal; Developmental; Immunological	0.8	0.09	---	0.9
			Xylenes (mixed isomers)	---	---	---	---	Whole Body	0.3	0.1	---	0.5
			Acenaphthene	---	---	---	---	Hepatic	0.1	---	---	0.1
			Acenaphthylene	---	---	---	---	Renal	0.3	---	---	0.3
			Fluorene	---	---	---	---	Hematological	0.1	---	---	0.1
			2-Methylnaphthalene	---	---	---	---	Respiratory	10	10	---	20
			Naphthalene	---	---	---	---	Whole Body	20	6	---	20
			Pyrene	---	---	---	---	Renal	0.05	---	---	0.05
			Benz(a)anthracene	2.E-05	---	---	2.E-05	Renal	0.002	---	---	0.002
			Benzo(a)pyrene	3.E-04	---	---	3.E-04	Renal	0.005	---	---	0.005
			Benzo(b)fluoranthene	8.E-06	---	---	8.E-06	Renal	0.001	---	---	0.001
			Dibenz(ah)anthracene	1.E-04	---	---	1.E-04	Renal	0.002	---	---	0.002
			Indeno(1,2,3-cd)pyrene	6.E-06	---	---	6.E-06	Renal	0.0009	---	---	0.0009
			Bis(2-ethylhexyl)phthalate (DEHP)	9.E-06	1.E-05	---	2.E-05	Hepatic	0.2	0.2	---	0.4
			4-Methylphenol	---	---	---	---	Neurological; Respiratory; Developmental; Whole Body	2	0.1	---	2
			Carbazole	2.E-05	1.E-05	---	4.E-05		---	---	---	---
			Antimony	---	---	---	---	Whole Body; Hepatic	8	---	---	8
			Arsenic	2.E-02	---	---	2.E-02	Integumental; Cardiovascular	200	---	---	200
			Barium	---	---	---	---	Renal	0.1	---	---	0.1
			Cadmium (in groundwater or suface water)	---	---	---	---	Renal	0.3	0.03	---	0.4
			Chromium VI	---	---	---	---	None observed	4	1	---	6
			Manganese (water ingestion pathways only)	---	---	---	---	Neurological	20	---	---	20
			Mercury	---	---	---	---	Immunological	0.4	---	---	0.4
			Nickel	---	---	---	---	Whole Body; Hepatic	3	---	---	3
			Selenium	---	---	---	---	Neurological; Hepatic; Hematological; Integumental	0.4	---	---	0.4
			Thallium	---	---	---	---	None observed	0.4	---	---	0.4
			Vanadium	---	---	---	---	Renal	60	10	---	80
			Zinc	---	---	---	---	Hematological	2	0.004	---	2
			Cyanide (free)	---	---	---	---	Whole Body; Endocrine; Neurological	0.02	0.0001	---	0.02
	Exposure Medium Total			2.E-02	1.E-04	---	2.E-02		300	30	---	400

Table N9.57 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
	Shower Vapor (1)	On-Site Groundwater	Benzene	---	---	2.E-04	2.E-04	Hematological; Immunological	---	---	3	3
			Chloroform	---	---	4.E-07	4.E-07	Renal; Hepatic; Neurological	---	---	0.001	0.001
			Ethylbenzene	---	---	2.E-05	2.E-05	Developmental	---	---	0.06	0.06
			Methylene chloride (Dichloromethane)	---	---	8.E-07	8.E-07	Hepatic	---	---	0.006	0.006
			Methyl tert-butyl ether (MTBE)	---	---	3.E-07	3.E-07	Hepatic; Renal; Neurological	---	---	0.001	0.001
			Styrene	---	---	---	---	Neurological	---	---	0.05	0.05
			Toluene	---	---	---	---	Neurological	---	---	0.03	0.03
			Trichloroethylene (TCE)	---	---	1.E-05	1.E-05	Neurological; Hepatic; Endocrine	---	---	0.01	0.01
			Xylenes (mixed isomers)	---	---	---	---	Neurological	---	---	1	1
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	30	30
			Naphthalene	---	---	---	---	Respiratory	---	---	200	200
	Exposure Medium Total			---	---	3.E-04	3.E-04		---	---	200	200
Groundwater Total				2.E-02	1.E-04	3.E-04	2.E-02		300	30	200	600
							Total Risk Across All Media	2.E-02				Total Hazard Across All Media	600

Total Cardiovascular HI Across All Media	200
Total Developmental HI Across All Media	40
Total Hematological HI Across All Media	60
Total Hepatic HI Across All Media	40
Total Immunological HI Across All Media	60
Total Integumental HI Across All Media	200
Total Neurological HI Across All Media	50
Total Renal HI Across All Media	100
Total Respiratory HI Across All Media	300
Total None observed HI Across All Media	40
Total Whole Body HI Across All Media	30

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices
Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N10.1 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	2.E-06	---	---	2.E-06	---	---	---	---	---
			Benz(a)anthracene	5.E-05	2.E-05	---	7.E-05	---	---	---	---	---
			Benzo(a)pyrene	5.E-04	2.E-04	---	7.E-04	---	---	---	---	---
			Benzo(b)fluoranthene	6.E-05	2.E-05	---	8.E-05	---	---	---	---	---
			Benzo(k)fluoranthene	3.E-06	1.E-06	---	5.E-06	---	---	---	---	---
			Dibenz(ah)anthracene	5.E-05	2.E-05	---	6.E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.E-05	6.E-06	---	2.E-05	---	---	---	---	---
			Arsenic	4.E-06	4.E-07	---	4.E-06	---	---	---	---	---
	Exposure Medium Total			7.E-04	2.E-04	---	9.E-04		---	---	---	---
	Plant tissue	East of South Street On-Facility	Arsenic	1.E-05	---	---	1.E-05	---	---	---	---	---
	Exposure Medium Total			1.E-05	---	---	1.E-05		---	---	---	---
Soil Total				7.E-04	2.E-04	---	1.E-03		---	---	---	---
Soil Gas	Indoor Air	East of South Street On-Facility (SB-09 area)	Trichloroethylene (TCE)	---	---	6.E-04	6.E-04	---	---	---	---	---
Soil Gas Total				---	---	6.E-04	6.E-04		---	---	---	---
			Total Risk Across All Media				2.E-03	Total Hazard Across All Media				---

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N10.2 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	East of South Street On-Facility	Trichloroethylene (TCE)	2.E-06	---	---	2.E-06	---	---	---	---	---
			Benz(a)anthracene	5.E-05	2.E-05	---	7.E-05	---	---	---	---	---
			Benzo(a)pyrene	5.E-04	2.E-04	---	7.E-04	---	---	---	---	---
			Benzo(b)fluoranthene	6.E-05	2.E-05	---	8.E-05	---	---	---	---	---
			Benzo(k)fluoranthene	3.E-06	1.E-06	---	5.E-06	---	---	---	---	---
			Dibenz(ah)anthracene	5.E-05	2.E-05	---	6.E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.E-05	6.E-06	---	2.E-05	---	---	---	---	---
			Arsenic	4.E-06	4.E-07	---	4.E-06	---	---	---	---	---
	Exposure Medium Total			7.E-04	2.E-04	---	9.E-04		---	---	---	---
	Plant tissue	East of South Street On-Facility	Arsenic	1.E-05	---	---	1.E-05	---	---	---	---	---
	Exposure Medium Total			1.E-05	---	---	1.E-05		---	---	---	---
Soil Total				7.E-04	2.E-04	---	1.E-03		---	---	2	2
							Total Risk Across All Media	1.E-03			Total Hazard Across All Media	2

Total Respiratory HI Across All Media: 2

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N10.3 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	Old Railroad and Former Lower Mill Pond Area	Benz(a)anthracene	4.E-05	1.E-05	---	5.E-05	---	---	---	---	---
			Benzo(a)pyrene	2.E-04	6.E-05	---	2.E-04	---	---	---	---	---
			Benzo(b)fluoranthene	3.E-05	1.E-05	---	4.E-05	---	---	---	---	---
			Benzo(k)fluoranthene	1.E-06	4.E-07	---	2.E-06	---	---	---	---	---
			Dibenz(ah)anthracene	4.E-05	1.E-05	---	5.E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	2.E-05	7.E-06	---	3.E-05	---	---	---	---	---
			Arsenic	1.E-04	9.E-06	---	1.E-04	Integumental; Cardiovascular	2	0.1	---	2
	Exposure Medium Total			4.E-04	1.E-04	---	5.E-04		2	0.1	---	2
	Plant tissue	Old Railroad and Former Lower Mill Pond Area	Arsenic	3.E-04	---	---	3.E-04	Integumental; Cardiovascular	2	---	---	2
	Exposure Medium Total			3.E-04	---	---	3.E-04		2	---	---	2
Soil Total				6.E-04	1.E-04	---	8.E-04		4	0.1	---	4
							Total Risk Across All Media	8.E-04				Total Hazard Across All Media	4

Total Cardiovascular HI Across All Media	4
Total Integumental HI Across All Media	4

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N10.7 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	Off-facility groundwater Lot 208 / Lot 209	Benzene	4.E-06	6.E-07	---	5.E-06	---	---	---	---	---
			Benzo(a)pyrene	2.E-05	---	---	2.E-05	---	---	---	---	---
			Dibenz(ah)anthracene	5.E-06	---	---	5.E-06	---	---	---	---	---
			Arsenic	2.E-03	---	---	2.E-03	Integumental; Cardiovascular	20	---	---	20
			Manganese (water ingestion pathways only)	---	---	---	---	Neurological	2	---	---	2
			Vanadium	---	---	---	---	Renal	4	0.7	---	5
	Exposure Medium Total			2.E-03	6.E-07	---	2.E-03		30	0.7	---	30
	Shower Vapor (1)	Off-facility groundwater Lot 208 / Lot 209	Benzene	---	---	2.E-06	2.E-06	---	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	---	---	---	---	---
			Naphthalene	---	---	---	---	Respiratory	---	---	2	2
	Exposure Medium Total			---	---	2.E-06	2.E-06		---	---	2	2
Groundwater Total				2.E-03	6.E-07	2.E-06	2.E-03		30	0.7	2	30
							Total Risk Across All Media	2.E-03				Total Hazard Across All Media	30

Total Cardiovascular HI Across All Media	20
Total Integumental HI Across All Media	20
Total Neurological HI Across All Media	2
Total Renal HI Across All Media	5
Total Respiratory HI Across All Media	2

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day
Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N10.8 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Tap Water	On-Site Groundwater	Benzene	6.E-04	7.E-05	---	6.E-04	Hematological; Immunological	10	1	---	20
			Methylene chloride (Dichloromethane)	4.E-06	---	---	4.E-06	---	---	---	---	---
			Trichloroethylene (TCE)	2.E-05	3.E-06	---	2.E-05	Hepatic; Renal; Developmental; Immunological	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	Respiratory	10	10	---	20
			Naphthalene	---	---	---	---	Whole Body	20	6	---	20
			Benz(a)anthracene	2.E-05	---	---	2.E-05	---	---	---	---	---
			Benzo(a)pyrene	3.E-04	---	---	3.E-04	---	---	---	---	---
			Benzo(b)fluoranthene	8.E-06	---	---	8.E-06	---	---	---	---	---
			Dibenz(ah)anthracene	1.E-04	---	---	1.E-04	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	6.E-06	---	---	6.E-06	---	---	---	---	---
			Bis(2-ethylhexyl)phthalate (DEHP)	9.E-06	1.E-05	---	2.E-05	Hepatic	---	---	---	---
			4-Methylphenol	---	---	---	---	Neurological; Respiratory; Developmental; Whole Body	2	0.1	---	2
			Carbazole	2.E-05	1.E-05	---	4.E-05	---	---	---	---	---
			Antimony	---	---	---	---	Whole Body; Hepatic	8	---	---	8
			Arsenic	2.E-02	---	---	2.E-02	Integumental; Cardiovascular	200	---	---	200
			Chromium VI	---	---	---	---	None observed	4	1	---	6
			Manganese (water ingestion pathways only)	---	---	---	---	Neurological	20	---	---	20
			Nickel	---	---	---	---	Whole Body; Hepatic	3	---	---	3
			Vanadium	---	---	---	---	Renal	60	10	---	80
			Zinc	---	---	---	---	Hematological	2	0.004	---	2
	Exposure Medium Total			2.E-02	1.E-04	---	2.E-02		300	30	---	400
	Shower Vapor (1)	On-Site Groundwater	Benzene	---	---	2.E-04	2.E-04	Hematological; Immunological	---	---	3	3
			Ethylbenzene	---	---	2.E-05	2.E-05	---	---	---	---	---
			Trichloroethylene (TCE)	---	---	1.E-05	1.E-05	---	---	---	---	---
			2-Methylnaphthalene	---	---	---	---	Respiratory	---	---	30	30
			Naphthalene	---	---	---	---	Respiratory	---	---	200	200
	Exposure Medium Total			---	---	3.E-04	3.E-04		---	---	200	200
Groundwater Total				2.E-02	1.E-04	3.E-04	2.E-02		300	30	200	600
							Total Risk Across All Media	2.E-02				Total Hazard Across All Media	600

Table N10.8 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total

Total Cardiovascular HI Across All Media	200
Total Developmental HI Across All Media	40
Total Hematological HI Across All Media	60
Total Hepatic HI Across All Media	40
Total Immunological HI Across All Media	50
Total Integumental HI Across All Media	200
Total Neurological HI Across All Media	50
Total Renal HI Across All Media	100
Total Respiratory HI Across All Media	300
Total None observed HI Across All Media	40
Total Whole Body HI Across All Media	30

Note: 'Whole Body' is included in all Total Target Organ Hazard Indices

Note: (1) The shower vapor inhalation pathway was evaluated by assuming that the dose equals the tap water ingestion dose,
where ADE(shower vapor) = ADD(tap water ingestion)*BW/IR; BW = 70 kg; and IR = 20 m3/day

Note: If TCE or benzene are COPCs for this exposure point, then risk estimates shown are calculated using the upper end of the slope factor/unit risk range for both chemicals.

Table N10.9 RME
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Blackburn & Union Privileges Site
Walpole, Massachusetts

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child and Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Cancer Risk (combined child and adult)				Non-Cancer Hazard Quotient (only child HQs are listed because they are higher than corresponding adult HQs)				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Soil	West of South Street On-Facility	Benz(a)anthracene	6.E-06	2.E-06	---	8.E-06	---	---	---	---	---
			Benzo(a)pyrene	7.E-05	2.E-05	---	9.E-05	---	---	---	---	---
			Benzo(b)fluoranthene	7.E-06	2.E-06	---	9.E-06	---	---	---	---	---
			Dibenz(ah)anthracene	8.E-06	3.E-06	---	1.E-05	---	---	---	---	---
			Indeno(1,2,3-cd)pyrene	3.E-06	1.E-06	---	4.E-06	---	---	---	---	---
			Arsenic	1.E-05	9.E-07	---	1.E-05	---	---	---	---	---
	Exposure Medium Total			1.E-04	3.E-05	---	1.E-04		---	---	---	---
	Plant tissue	West of South Street On-Facility	Arsenic	3.E-05	---	---	3.E-05	---	---	---	---	---
	Exposure Medium Total			3.E-05	---	---	3.E-05		---	---	---	---
Soil Total				1.E-04	3.E-05	---	2.E-04		---	---	---	---
Soil/Groundwater	Indoor Air	West of South Street On-Facility	Benzene	---	---	1.E-05	1.E-05	---	---	---	---	---
Soil/Groundwater Total				---	---	1.E-05	1.E-05		---	---	---	---
							Total Risk Across All Media	2.E-04				Total Hazard Across All Media	---

Note: If TCE or benzene are COPCs for this exposure point, risk estimates shown are from the upper end of the slope factor/unit risk range for both chemicals.
See Main Report risk summary tables for how the lower end of the range affects the total risk estimate.

APPENDIX O
Toxicological Profiles

ARSENIC
CAS No. 7440-38-2

INTRODUCTION

Arsenic is a naturally occurring metal that has been widely used in rat and ant poisons, herbicides, some medicines, and in pressure treated wood. Some areas of the U.S. have unusually high natural levels of arsenic in rock, which can lead to high concentrations in soil and water. Most foods contain a low level of arsenic, however, seafood and freshwater fish contain elevated levels of organic arsenic. There are several forms of arsenic to which an individual might be exposed and the toxicity is dependent its chemical form and the route, dose, and duration of exposure. In general, of the inorganic forms of arsenic, arsenites (As^{+3}) are more toxic than arsenates, and soluble arsenic compounds are more toxic than insoluble compounds (ATSDR, 2000). Arsenic can change forms in the environment and within the body, moving between arsenite and arsenate. Arsenic is typically measured as total arsenic in site-related media. In the environment, inorganic arsenic is most likely to be present in water and soil; organic arsenic comprises over 90% of the total arsenic present in fish and aquatic animals.

TOXICOLOGICAL EFFECTS

Although a chemical may be present in the environment, it does not necessarily mean that people will be exposed to it. For exposure to occur, a person must eat, drink, breathe, or dermally contact contaminated soil, groundwater or other environmental media. The potential for experiencing adverse health effects from any substance increases as the amount of exposure (dose) and length of exposure (duration) increase. Most toxicological information available for chemicals comes from either laboratory animal studies or human occupational studies. In these studies, exposures are typically higher than those experienced by people at contaminated waste sites. Consequently, many of the adverse effects described in this toxicological profile are not expected to occur at the chemical concentrations detected at most contaminated sites.

Acute Effects (from exposures lasting 1 day to a few weeks)

Acute toxicity has not been observed after inhalation of arsenic. Ingestion of high concentrations (~2-20 mg/kg) of arsenic by people has resulted in vomiting, diarrhea, gastrointestinal bleeding, and serious effects in the liver, kidney and cardiovascular system. The reported oral dose that caused death in half of the tested animals (LD_{50}) ranges from 25 mg/kg in mice to 175 mg/kg in rats.

Signs and Symptoms of Poisoning

Arsenic is an irritant of the skin, mucous membranes, and gastrointestinal tract. Symptoms of acute toxicity include vomiting, diarrhea, convulsions, and a severe drop in blood pressure. Signs of chronic poisoning include hyperpigmentation of the skin.

Chronic Effects (from exposures lasting months to years)

Long-term exposure of humans to inorganic arsenic in drinking water and food can lead to hyperpigmentation and keratosis of the skin, particularly on the palms of the hands and soles of

the feet, peripheral vascular disease (Blackfoot disease, a progressive loss of circulation in fingers and toes), anemia, and alteration in peripheral nerve conduction velocity (USEPA, 1998).

Reproductive Effects
No studies were found that evaluated reproductive effects in humans following inhalation or ingestion exposure to arsenic (ATSDR, 2000). In animals, smaller litter sizes were observed in all generations of mice exposed to arsenic in drinking water for three generations. No effects on fertility were observed in animals, thus the smaller litter size may be due to effects on development and not reproductive function (ATSDR, 2000).

Developmental Effects
Several studies in humans have reported an association between inhalation and ingestion of arsenic and increased risk of birth defect, low birth weight, and spontaneous abortion. However, these results are considered suggestive because the people were exposed to other chemicals that could have contributed to the observed effects (ATSDR, 2000). Animal studies provide evidence of developmental effects after exposure to arsenic by inhalation and ingestion. However, the developmental effects, decreased body weight, birth defects, and increased fetal mortality were only observed in the presence of significant maternal toxicity (ATSDR, 2000).

Mutagenicity
Based on a large number of studies, arsenic appears to be either a weakly active or inactive mutagen (ATSDR, 2000). Chromosomal aberrations, changes in structure of a chromosome, have been observed in humans after inhalation and ingestion of arsenic. The reports of chromosomal aberrations in humans are supported by *in vitro* studies (ATSDR, 2000).

Carcinogenicity
The USEPA classifies arsenic as a Group A, known human, carcinogen based on epidemiological studies in which a causal association between oral exposure and skin cancer was observed in Taiwanese and Chilean populations exposed to arsenic in drinking water (USEPA, 1998). Inhalation exposure to arsenic is associated with increased lung cancer mortality observed in multiple human populations (USEPA, 1998). Increased mortality from multiple internal organ cancers (liver, kidney, lung, and bladder) were observed in populations consuming drinking water high in inorganic arsenic (USEPA, 1998).

Organ Toxicity
Adverse effects have been observed in the skin, peripheral vascular system, peripheral nervous system and central nervous system, liver, kidneys, and lungs (USEPA, 1998).

Fate in Mammals
Much is known about the absorption, metabolism, and excretion (toxicokinetics) of arsenic in animals and humans (ATSDR, 2000).

Soluble forms of arsenic (arsenate and arsenite) are well absorbed from the respiratory and gastrointestinal tracts. Limited data suggest nearly complete absorption of soluble forms of trivalent and pentavalent arsenic. Deposition of arsenic in the airway is dependent on particle size and chemical form. Absorbed arsenites are partially oxidized to arsenates, and arsenates are partially reduced to arsenites, resulting in a mixture of As^{+3} and As^{+5} in the blood. As^{+3}

undergoes methylation in the liver to form monomethyl arsenic (MMA) and dimethyl arsenic (DMA). Absorbed arsenic (as As^{+3} and As^{+5}), MMA, and DMA are primarily excreted in the urine. Arsenic accumulates in nails and hair.

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BENZENE

(Benzol, Coal Naphtha)
CAS No. 71-43-2

INTRODUCTION

Benzene is a colorless liquid with a sweet odor, which evaporates into the air quickly and is soluble in water. It is formed from both natural processes and human activities, and is highly flammable. In the U.S., benzene is widely distributed and is ranked among the top 20 chemicals for production volume (ATSDR, 1997). Industries that utilize benzene typically use it to make other chemicals for producing products such as plastics, resins, and nylon and synthetic fibers. Volcanoes and forest fires are natural sources of benzene. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke. Consumer products that contain benzene include gasoline, glues, adhesives, household cleaning products, paint strippers, and cigarette smoke. Outdoor ambient air contains benzene from sources such as tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions. The concentration of benzene in ambient air typically ranges from 2.8 to 20 parts per billion (ppb). Indoor air typically has higher levels of benzene than outdoor air from products used in the home such as glues, paints, furniture, and wax. Air around hazardous waste sites or gas stations tends to have high levels of benzene. Leakage from underground storage tanks or from hazardous waste sites can result in well-water contamination with benzene. In the environment, benzene is most likely to be present in air or in groundwater. Benzene can volatilize from water when used for showering or cooking.

TOXICOLOGICAL EFFECTS

Although a chemical may be present in the environment, it does not necessarily mean that people will be exposed to it. Exposure only occurs if a person comes in contact with the chemical by eating, drinking, breathing or touching it. The potential for experiencing adverse health effects from any substance increases as the amount of exposure (dose) and length of exposure (duration) increase. While studies in animals or occupational studies in workers generally report adverse effects occurring after long-term (chronic) exposure to high levels of a substance, exposure to substances that may be present in the environment are typically characterized as long-term low level exposures.

Acute Effects (from exposures lasting 1 day to a few weeks)

Acute inhalation exposure to benzene may result in drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness (ATSDR, 1997). Oral exposure to high levels of benzene can cause nausea and vomiting in addition to the central nervous system effects observed after inhalation of high levels of benzene (ATSDR, 1997). Direct contact with benzene can irritate skin and eyes.

Signs and Symptoms of Poisoning
Symptoms include dizziness, rapid heart rate, headaches, tremors, confusion, unconsciousness, vomiting, irritation of the stomach, sleepiness, convulsions, decrease in red blood cells, coma, and in some cases death (ATSDR, 1997).

Chronic Effects (from exposures lasting months to years)
Long-term inhalation or ingestion of high levels of benzene have been associated with adverse effects in humans, including decreased ability to make red blood cells and white blood cells and decreased function of the immune system. A cross-sectional study of 44 workers exposed to benzene and 44 age- and gender- matched unexposed controls evaluated the effects of benzene on hematological function. Occupational exposure lasted about an average of 6.3 years (standard deviation = 4.4 years), with a range of 0.7-16 years. Individual exposure monitoring estimated a median 8-hour time-weighted average (TWA) benzene exposure concentration for all exposed workers of 31 ppm (99 mg/m^3); with TWA of 13.6 ppm (43.4 mg/m^3) for the low-exposure group and 91.9 ppm (294 mg/m^3) for the high-exposure group. In the high benzene exposure group all hematological measurements (total white blood cell count, lymphocyte count, hematocrit, red blood cell count, platelet count) were significantly decreased compared to the control group except for mean corpuscular volume that was significantly increased (USEPA, 2003). Effects have not been reported in the respiratory tract after inhalation exposure or in the gastrointestinal tract after ingestion exposure (USEPA, 2003).

Reproductive Effects
No adequate studies have been conducted to evaluate the reproductive effects of benzene in humans (USEPA, 2003). Studies on the reproductive effects of occupational exposure to benzene suggest that benzene may impair fertility in women, but the findings are inconclusive because the study designs were limited (USEPA, 2003). Animal studies conducted at concentrations that were very toxic to the animals have found limited evidence of changes in reproductive organs (USEPA, 2003).

Developmental Effects
No adequate studies have been conducted to evaluate the developmental effects of benzene in humans (USEPA, 2003). A number of developmental studies in animals have shown effects following exposure to 150 mg/m^3 (47 ppm) benzene, including reductions in numbers of live fetuses, reductions in live weight, and minor skeletal variants; however, severe maternal toxicity was also noted (USEPA, 2003).

Mutagenicity
Benzene has been shown to induce chromosomal aberrations in a large number of *in vitro*, *in vivo*, and occupational studies (USEPA, 1998).

Carcinogenicity
Numerous epidemiological studies have found a clear association between occupational benzene exposures and increased incidence of acute nonlymphocytic leukemia (ANLL) (USEPA, 1998). USEPA considers benzene as a Group A, "known" human carcinogen, by all routes of exposure

(USEPA, 1998). There is suggestive evidence that human inhalation exposure to benzene is associated with chronic nonlymphocytic leukemia (CNLL), and chronic lymphocytic leukemia (CLL). Benzene exposure is also associated with other neoplastic conditions including, hematologic neoplasms, Hodgkin's lymphoma, myelodysplastic syndrome (MDS) and aplastic anemia (USEPA, 2003). Animal studies support the findings in the occupational studies (USEPA, 2003).

Organ Toxicity
Adverse health effects have been observed in the central nervous system, blood forming system, bone marrow, and white blood cells (USEPA, 2003).

Fate in Mammals
Studies of absorption, metabolism, and excretion (toxicokinetics) of benzene in humans and animals are available. Benzene is readily absorbed through ingestion (~100%), moderately absorbed through inhalation (~50%), and poorly absorbed through intact skin (less than 6%) (ATSDR, 1997). Once in the bloodstream, benzene is distributed throughout the body, including the brain, bone marrow, fat, liver, kidney, and spleen. The metabolites of benzene - phenol, catechol, hydroquinone, and conjugated phenolic compounds - are responsible for benzene's toxic effects. Benzene is metabolized by multiple pathways leading to different metabolites. While many of benzene's metabolites have been identified, the individual metabolites responsible for the toxic effects of benzene have not been conclusively identified. The pathways of metabolism of benzene are dependent upon the dose and dose rate of benzene exposure. The primary site of benzene metabolism is the liver via the cytochrome P450 mixed function oxidase system. However, cytochrome P450 enzymes are found in all tissues, thus benzene is metabolized in target tissues in addition to the liver. Absorbed benzene is excreted unchanged in the expired air or as metabolites in urine (ATSDR, 1997). The rate and route of excretion are dependent upon the dose (ATSDR, 1997).

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BENZO(a)PYRENE
(Benzo(d,e,f) chrysene, 3,4-Benzopyrene, 6,7-Benzopyrene)
CAS No. 50-32-8

INTRODUCTION

Benzo(a)pyrene, or B(a)P, is one of the more than 100 polycyclic aromatic hydrocarbon (PAH) chemicals. PAHs are formed during the incomplete combustion of coal, oil, gas, wood and other organic compounds including those in tobacco and charbroiled meat (ATSDR, 1995). Natural sources of PAHs include forest fires and volcanic eruptions. PAHs can be a major component of natural oil seeps, crude oil, and petroleum products. PAHs are ubiquitous in the environment. People are exposed to PAHs through inhalation of air, ingestion of food and water containing PAHs, incidental ingestion of soil, and dermal contact with water, soil, and sediment containing PAHs.

TOXICOLOGICAL EFFECTS

Although a chemical may be present in the environment, it does not necessarily mean that people will be exposed to it. For exposure to occur, a person must eat, drink, breath, or dermally contact contaminated soil, groundwater or other environmental media. The potential for experiencing adverse health effects from any substance increases as the amount of exposure (dose) and length of exposure (duration) increase. Most toxicological information available for chemicals comes from either laboratory animal studies or human occupational studies. In these studies, exposures are typically higher than those experienced by people at contaminated waste sites. Consequently, many of the adverse effects described in this toxicological profile are not expected to occur at the chemical concentrations detected at most contaminated sites.

Acute Effects (from exposures lasting 1 day to a few weeks)
No information was located regarding acute effects in humans from exposure to B(a)P.

Signs and Symptoms of Poisoning
No information was located regarding poisoning in humans from exposure to B(a)P.

Chronic Effects (from exposures lasting months to years)
No information was located regarding chronic effects in humans from exposure to B(a)P.

Reproductive Effects
No information was located regarding reproductive effects in humans from exposure to B(a)P. However, animal studies indicate that B(a)P causes reproductive effects (e.g., reduction in percentage of females reaching parturition, reduced incidence of pregnancy) (ATSDR, 1995).

Developmental Effects
No information was located regarding developmental effects in humans from exposure to B(a)P. Data from animal studies indicate that prenatal oral exposure to B(a)P reduced mean pup weight and caused a high incidence of sterility in the progeny of exposed rats and mice (ATSDR, 1995).

Mutagenicity
B(a)P has been found to be genotoxic in a range of prokaryotic and mammalian cell assays (USEPA, 1994).

Carcinogenicity
USEPA has classified B(a)P as a Group B2 probable human carcinogen (USEPA, 1994). Lung and skin tumors have been induced in humans by mixtures of PAHs known to contain B(a)P (cigarette smoke, roofing tar, and coke oven emissions). It is not possible, however, to conclude from this information that B(a)P is the responsible agent (USEPA, 1994).

Benzo(a)pyrene is a complete carcinogen when applied to the skin of mice, rats, and rabbits. Subcutaneous or intramuscular B(a)P injection has been shown to result in local tumors in mice, rats, guinea pigs, monkeys and hamsters (EPA, 1994). Oral exposure to B(a)P produces stomach tumors in rats and hamsters. Ingestion of B(a)P in the diets of male and female CFW-Swiss mice resulted in stomach tumors in those mice consuming 20 or more mg/kg B(a)P (USEPA, 1994).

Hamsters chronically exposed to B(a)P by inhalation were shown to develop respiratory tract tumors. Those hamsters in the highest dose group developed upper digestive tract tumors (USEPA, 1994).

USEPA is in the process of reevaluating the cancer potency of B(a)P. USEPA will use its final Cancer Guidelines (USEPA 2005a) that use mode of action (MOA) information to determine the quantitative approach for estimating cancer potency of B(a)P. USEPA also developed supplemental guidance for evaluating early life exposure to mutagens (USEPA, 2005b). Based on evidence of a mutagenic MOA of B(a)P and some evidence of increased early-life susceptibility to the carcinogenic effects of B(a)P, USEPA may apply this guidance to evaluations of BaP.

Fate in Mammals
There is evidence that B(a)P is absorbed by humans after inhalation and oral exposure, but no data regarding distribution of absorbed B(a)P in the body was available (ATSDR, 1995). Dermal absorption appears to be limited due to binding and/or metabolism of B(a)P in human skin (ATSDR, 1995).

PAHs, such as B(a)P, are lipophilic and thus can penetrate cellular membranes. However, B(a)P is also metabolized in the tissues of the body into more hydrophilic and reactive compounds by the cytochrome P-450 dependent mixed function oxidase system, often referred to as the aryl hydrocarbon hydroxylase (AHH) system. The products of metabolism of B(a)P include epoxide

intermediates that are capable of forming covalent bonds with cellular macromolecules such as DNA, RNA, and proteins. This covalent binding and subsequent alteration of structure and function may result in tumor formation. (ATSDR, 1995).

Animal data indicate that B(a)P is readily absorbed after exposure by inhalation or oral intake and distributes to many tissues in the body (ATSDR, 1995).

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MANGANESE
CAS No. 7439-96-5

INTRODUCTION

Manganese is a naturally-occurring metal found in many types of rock. It does not usually exist in the environment as a pure metal, but is found combined with sulfur, oxygen, and chlorine. Manganese is a component of some ceramics, pesticides, fertilizers, nutritional supplements, and fuel additives (ATSDR, 2000). It is an essential element and small amounts are required for human health. The typical dietary intake of manganese is about 4 mg/day by food, 0.008 mg/day by water, and 0.0046 mg/day by air (USEPA, 1984).

TOXICOLOGICAL EFFECTS

Although a chemical may be present in the environment, it does not necessarily mean that people will be exposed to it. For exposure to occur, a person must eat, drink, breathe, or dermally contact contaminated soil, groundwater, or other environmental media. The potential for experiencing adverse health effects from any substance increases as the amount of exposure (dose) and length of exposure (duration) increase. Most toxicological information available for chemicals comes from either laboratory animal studies or human occupational studies. In these studies, exposures are typically higher than those experienced by people at contaminated waste sites. Consequently, many of the adverse effects described in this toxicological profile are not expected to occur at the chemical concentrations detected at most contaminated sites.

Acute Effects (from exposures lasting 1 day to a few weeks)

Both human and animal studies indicate that inorganic manganese has a very low acute toxicity by any exposure pathway (ATSDR, 2000). However, the oxidant, potassium permanganate ($KMnO_4$), is an exception. $KMnO_4$ can cause severe corrosion upon contact with skin or mucosa (ATSDR, 2000). In animal studies involving rats exposed to methylcyclopentadienyl manganese tricarbonyl (MMT), an additive in gasoline that increases the octane level and improves the antiknock properties of the fuel, the inhalation concentration of manganese that resulted in the death of half of the animals (LD_{50}) for MMT was 62 mg/m^3 and the oral LD_{50} by gavage was 12.5 mg/kg (ATSDR, 2000). However, the concentrations of manganese inhaled or ingested by the rats are higher than the exposure levels allowed in occupational environments (ATSDR, 2000). No significant toxicity has been found by oral exposure from inorganic manganese in food or water (ATSDR, 2000). The acute exposure database is incomplete and further studies are needed in order to determine dose-response effects (ATSDR, 2000).

Signs and Symptoms of Poisoning

The systemic toxicity of manganese is low, due in part to its toxicokinetics, although large oral doses of manganese salts cause gastrointestinal irritation. Manganese poisoning (manganism) has been observed following long-term (greater than two years) inhalation exposure to high levels of manganese during mining or manufacturing. Manganism is a neuropsychiatric disorder that is evidenced by mental and emotional disturbances, and slow and clumsy body movements.

Chronic Effects (from exposures lasting months to years)
Chronic inhalation exposure to manganese dusts characteristically leads to nervous system toxicity, which commonly results in a disease called manganism. Individuals initially feel weak and lethargic and the symptoms usually progress to a slow/clumsy gait, speech disturbances, a masklike face, and tremors (ATSDR, 2000). Although there is no extensive dose-response data on inhalation levels of manganese dust leading to neurological damage, some reliable data suggests that 0.14-1.59 mg/m^3 manganese in the total dust of the occupational environment can lead to measurable neurological effects (ATSDR, 2000). A single study evaluating nervous system toxicity in humans from exposure to manganese in drinking water provides evidence of an association of neurological changes with drinking water containing elevated levels of manganese (USEPA, 1996). In children there is evidence of an association between excess manganese from oral exposure and learning deficits. However, further studies are needed to better evaluate this relationship (ATSDR, 2000).

Organ Toxicity
Adverse effects have been observed in the central nervous system and lungs (ATSDR, 2000).

Reproductive Effects
Human and animal studies suggest that manganese exposure via the inhalation pathway is damaging to the testes. Miners and welders exposed to manganese dusts or fumes reported increased semen liquefaction time and decreased sperm count and viability (ATSDR, 2000). There is limited information on the reproductive effects of manganese in females via the inhalation pathway. Evidence from animal studies found that dietary exposure of male and female rats to a maximum of 3500 mg manganese/kg/day resulted in fewer numbers of pregnancies, but there was no effect on litter size, ovulations, resorptions, or fetal deaths (ATSDR, 2000).

Developmental Effects
There is limited and inconclusive evidence in both humans and animals about the effects of excess manganese exposure on fetal development (ATSDR, 2000). In one study the offspring of rats exposed to 420 mg/kg/day manganese through drinking water prior to mating and throughout mating and gestation had increased levels of brain dopamine and norepinephrine and decreased levels of brain serotonin. This study also found that the offspring of rats exposed through drinking water to 240 mg/kg/day of manganese chloride had delayed air righting reflexes. However, another study did not observe any developmental effects in the offspring of dams exposed to 22 mg/kg/day manganese chloride by gavage during gestation (ATSDR, 2000).

Mutagenicity
Some *in vitro* studies show that some chemical forms of manganese have mutagenic potential, but *in vivo* studies in mammals are inconsistent. Consequently, no overall conclusion can be drawn about the mutagenicity of manganese (ATSDR, 2000).

Carcinogenicity
There is insufficient data to support the carcinogenicity of manganese found in animal studies. Manganese is categorized by USEPA as a Group D substance, which is "not classifiable" regarding human carcinogenicity (USEPA, 1996).

Fate in Mammals
Gastrointestinal absorption of manganese is less than five percent. Manganese is widely distributed throughout the body and concentrates in the mitochondria of cells. It readily crosses the blood-brain barrier, and its half-life in the brain is longer than in the rest of the body. Manganese is eliminated in the bile and is resorbed in the intestine, but is excreted in the feces (ATSDR, 2000).

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METHYLNAPHTHALENE (2-)

(Beta methylnaphthalene)
CAS No. 91-57-6

INTRODUCTION

2-Methylnaphthalene, is a solid that is contained in petroleum and in the combustion products of wood, fossil fuels, coal tar, cigarette smoke, and asphalt. 2-Methylnaphthalene is used to produce other chemicals such as dyes, resins, and especially vitamin K (ATSDR, 2003). 2-Methylnaphthalene has been detected in the environment, particularly in air, and at some hazardous sites. It can be detected at concentrations of 10 ppb in air and 10 ppb in water.

Most 2-methylnaphthalene enters the environment via combustion. Potential human exposure to 2-methylnaphthalene is mainly expected by inhalation from ambient or indoor air containing tobacco smoke or mothballs. Exposure to 2-methylnaphthalene may also occur from ingestion of drinking water or food, but these exposures are expected to be much less than inhalation (ATSDR, 2003).

TOXICOLOGICAL EFFECTS

Although a chemical may be present in the environment, it does not necessarily mean that people will be exposed to it. For exposure to occur, a person must eat, drink, breathe, or dermally contact contaminated soil, groundwater or other environmental media. The potential for experiencing adverse health effects from any substance increases as the amount of exposure (dose) and length of exposure (duration) increase. Most toxicological information available for chemicals comes from either laboratory animal studies or human occupational studies. In these studies, exposures are typically higher than those experienced by people at contaminated waste sites. Consequently, many of the adverse effects described in this toxicological profile are not expected to occur at the chemical concentrations detected at most contaminated sites.

Acute Effects (from exposures lasting 1 day to a few weeks)

No studies evaluating the acute effect of 2-methylnaphthalene exposure in humans or animals following inhalation, oral, or dermal exposure are available. Effects were observed in the lungs of animals exposed by injection (USEPA, 2003a).

Chronic Effects (from exposures lasting months to years)

No information was located regarding chronic effects in humans after inhalation or ingestion of 2-methylnaphthalene.

Studies of mice exposed to 2-methylnaphthalene through their food or through dermal absorption for most of their lives found that the gas-exchange part of the lungs of exposed mice became filled with an abnormal material. This type of lung injury is called pulmonary alveolar proteinosis (ATSDR, 2003).

Reproductive Effects
No studies were located that documented reproductive effects in humans after inhalation, ingestion or dermal exposure to 2-methylnaphthalene (ATSDR, 2003). One animal study found no lesions in the reproductive tracts of exposed mice. However, no studies have been conducted that evaluate the function of the reproductive system following exposure to 2-methylnaphthalene (ATSDR, 2003).

Developmental Effects
No studies were located that examined development endpoints in humans or animals after inhalation, ingestion or dermal exposure to 2-methylnaphthalene (ATSDR, 2003).

Mutagenicity
Limited information about mutagenicity following exposure to 2-methylnaphthalene is available. Studies using human lymphocytes and bacteria found no evidence of mutagenicity (ATSDR, 2003).

Carcinogenicity
No adequate studies have been conducted to evaluate the carcinogenicity of 2-methylnaphthalene in humans (USEPA, 2003a,b; ATSDR, 2003).

No studies were located that documented carcinogenic effects in animals after inhalation exposure to 2-methylnaphthalene (ATSDR, 2003). Mice ingesting 2-methylnaphthalene for 81 weeks developed lung tumors that were mostly benign. The results of this study are insufficient for evaluating carcinogenicity of 2-methylnaphthalene (USEPA, 2003b; ATSDR, 2003).

Organ Toxicity
Adverse effects have been observed in the lungs (ATSDR, 2003).

Fate in Mammals
Studies of absorption, metabolism, and excretion (toxicokinetics) of 2-methylnaphthalene in humans are not available and studies involving animals are limited. 2-Methylnaphthalene is well absorbed in the gastrointestinal tract; over 80% of an oral dose to guinea pigs was absorbed in 24 hours (ATSDR, 2003). Based on its similarity in structure to naphthalene, it is likely that 2-methylnaphthalene is absorbed by the lungs and across skin, although no studies of absorption of 2-methylnaphthalene were located (ATSDR, 2003). After absorption, 2-methylnaphthtalene is distributed to the body with the highest concentrations in the gall bladder, kidney, and liver. The concentration of 2-methylnaphthalene is the same in the lungs and the blood.
2-Methylnaphthalene is metabolized by cytochrome P450 oxygenases to metabolites that are thought to play a role in toxicity (ATSDR, 2003). Detoxification occurs through glutathione conjugation pathways. Most of the absorbed 2-methylnaphthalene is excreted in the urine (80%) and 10% is excreted in the feces (ATSDR, 2003).

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NAPHTHALENE
CAS No. 91-20-3

INTRODUCTION

Naphthalene is a polycyclic aromatic hydrocarbon (PAH). The reader should refer to the general profile on PAHs for exposure information. Naphthalene is found in mothballs, and toilet deodorizer blocks (ATSDR, 2005). People are most likely to be exposed to naphthalene by inhaling naphthalene in the air, although exposure can also occur through ingestion and dermal contact (ATSDR, 2005).

TOXICOLOGICAL EFFECTS

Although a chemical may be present in the environment, it does not necessarily mean that people will be exposed to it. For exposure to occur, a person must eat, drink, breath, or dermally contact contaminated soil, groundwater or other environmental media. The potential for experiencing adverse health effects from any substance increases as the amount of exposure (dose) and length of exposure (duration) increase. Most toxicological information available for chemicals comes from either laboratory animal studies or human occupational studies. In these studies, exposures are typically higher than those experienced by people at contaminated waste sites. Consequently, many of the adverse effects described in this toxicological profile are not expected to occur at the chemical concentrations detected at most contaminated sites.

Acute Effects (from exposures lasting 1 day to a few weeks)

Acute high level exposures in humans have been reported to result in hemolytic anemia (breakage of red blood cells) or cataracts (ATSDR, 2005). In severe cases hematological effects have included red cell fragmentation, icterus, severe anemia, leukocytosis and decreases in blood hemoglobin, hematocrit, and red cell counts. Hemolysis can also lead to renal disease from precipitated hemoglobin (USEPA, 1982). The exposure levels required for these effects to occur in people are not documented.

Cataracts developed in rats and rabbits following ingestion of more than 500 mg naphthalene/kg/day (ATSDR, 2005). Acute oral exposures of pregnant rats to 150 mg/kg/day or more resulted in maternal toxicity and decreases in maternal body weight gain. However, clear affects were not observed in the developing fetuses of rat exposed to 450 mg/kg/day, mice exposed to 300 mg/kg/day or rabbits exposed to 120 mg/kg/day (ATSDR, 2005).

Signs and Symptoms of Poisoning

Symptoms associated with high levels of exposure in humans include eye irritation, headache, confusion, tremors, nausea, vomiting, and abdominal pain (ATSDR, 2005). Poisonings have occurred in humans as a result of the inhalation of naphthalene vapors and ingestion of mothballs as well as from exposure of infants to diapers that had been stored in mothballs (ATSDR, 2005).

Chronic Effects (from exposures lasting months to years)
A study of workers exposed to naphthalene vapors through inhalation or dermally through splashes with liquid for a period of 5 years found corneal ulceration, cataracts, and some lenticular and general opacities in 8 of the 21 employees examined (ATSDR, 2005).

No chronic animal studies are available to evaluate effects from oral exposure to naphthalene. Subchronic studies in animals have found that decreased body weight is the most sensitive effect occurring following oral exposure to 200 mg/kg/day. Chronic inhalation animal studies have found increased adverse effects in the nose and lungs of rats and mice at exposure levels of 10 to 30 ppm.

Reproductive Effects
No information was located regarding reproductive effects in humans or animals from exposure to naphthalene.

Developmental Effects
Hemolytic anemia was reported in an infant exposed in utero to naphthalene following maternal ingestion of an unknown amount of naphthalene (ATSDR, 2005). Oral exposure of pregnant mice to 300 mg/kg/day naphthalene in coil oil reduced the number of mice per litter. However, in a similar experiment where pregnant rabbits were exposed to 400 mg/kg/day naphthalene in methylcellulose instead of corn oil no reduction in litter size was observed (ATSDR, 2005). The difference could be due species sensitivity or to different availability of naphthalene from the different vehicles.

Mutagenicity
Results of mutagenicity testing are predominantly negative (ATSDR, 2005).

Carcinogenicity
The National Toxicology Program has determined that naphthalene is carcinogenic in rats by the inhalation route (NTP, 2000). Inhalation of naphthalene by rats for 2 years increased the incidence of nasal tumors; however, the mode of action, i.e., genotoxic or regenerative cell proliferation to replace cells damaged by naphthalene, is not known (ATSDR, 2005).

Organ Toxicity
Exposure of people to high levels of naphthalene can affect the eyes and the blood. Chronic ingestion of naphthalene as studied in animals does not appear to induce toxicity to a specific organ system, since body weight changes were the most sensitive effects. Chronic inhalation of naphthalene appears to most affect the respiratory system (ATSDR, 2005).

Fate in Mammals
Studies of absorption, metabolism and excretion (toxicokinetics) of naphthalene in humans are

not available, but studies involving animals have been conducted. Based on reported poisonings in humans following naphthalene exposure, it appears that naphthalene in available by all routes of exposure. Naphthalene is metabolized, primarily in the liver but also in other cells, to more toxic chemical forms as well as metabolites that can be excretes. Differences across species and tissues in their sensitivity to naphthalene are thought to be related to differences in metabolism across species and tissues (ATSDR, 2005). People with a genetic glucose-6-phosphate dehydrogenase (G6PD) deficiency are more susceptible to the effects of naphthalene.

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PAHs
(polycyclic aromatic hydrocarbons)

INTRODUCTION

The polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 compounds. PAHs are formed during the incomplete combustion of coal, oil, gas, wood and other organic compounds including in tobacco and charbroiled meat (ATSDR, 1995). Natural sources of PAHs include forest fires and volcanic eruptions. PAHs can be a major component of natural oil seeps, crude oil and petroleum products. PAHs are ubiquitous in the environment. People are exposed to PAHs through inhalation air, ingestion of food and water containing PAHs, incidental ingestion of soil, and dermal contact with water, soil, and sediment containing PAHs.

PAHs are found in the environment as mixtures of multiple individually identifiable compounds. Although more than 100 PAHs have been identified (IPCS 1998), eighteen PAHs are commonly quantified in environmental media for purposes of evaluating potential health effects in humans. These PAHs include 1-methylnaphthalene, 2-methylnaphthalene, and sixteen priority pollutants under Section 304(a) the federal Clean Water Act, all of which are listed in Table 1.

Exposure to PAHs has been associated with the cancer and other health effects. PAHs that are evaluated in human health risk assessments for cancer risk include benzo[a]pyrene and coal tar. Other PAHs have insufficient evidence regarding their carcinogenic potential and are evaluated for their non-cancer health effects, e.g., 2-methylnaphthalene, pyrene, and anthracene.

Cancer potency estimates are not available for all PAHs that are considered to be carcinogenic, by USEPA; evidence of carcinogenicity is indicated in Table 1 by a weight-of-evidence (WOE) classification of A, B1 or B2. USEPA has developed a relative potency factor approach (RPF) for evaluating the cancer potency of individual carcinogenic PAHs that lack sufficient information for development of cancer slope factors (USEPA, 1993). Using the RPF approach, the cancer potency estimate for benzo(a)pyrene (BaP) is used to evaluate the cancer risk associated with exposure to benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene (USEPA, 1993). The RPF approach is based on the "estimated order of potential potency" of the individual PAHs in comparison to BaP, derived using skin tumorogenicity studies and is applied to a limited set of PAHs with the following characteristics: composed of three or more rings consisting of carbon and hydrogen only, no substituants on the rings, and classified as a B2 carcinogen (USEPA, 1993). A key assumption underlying the RPF approach is that these PAHs share a common mechanism of carcinogenicity (USEPA, 1993). Because the individual carcinogenic PAHs are evaluated based on their similarity to BaP, the reader is referred to the BaP toxicity profile for more information about the carcinogenic PAHs.

The toxicity associated with exposure to PAHs that are evaluated by USEPA for their noncancer effects, 2-methylnaphthalene, naphthalene, acenaphthene, anthracene, fluorene, fluoranthene,

pyrene, diesel exhaust, is summarized for each in separate toxicity profiles.

Table 1. PAHs Commonly Evaluated in Human Health Risk Assessment
Availability of Toxicity Values[1]

	CAS No.	Noncancer[2]	Cancer[3]	WOE[4]	Toxicity Profile
2-Ringed PAHs					
Naphthalene	91-20-3	RfC, RfD	---	C	Naphthalene
1-Methlynaphthalene	90-12-0	---	---	---	
2-Methlynaphthalene	91-57-6	RfD	---	---	2-Methlynaphthalene
3-Ringed PAHs					
Acenaphthene	83-32-9	RfD	---	---	Acenaphthene
Acenaphthylene	208-96-8	---	---	D	
Anthracene	120-12-7	RfD	---	D	Anthracene
Fluorene	86-73-7	RfD	---	D	Fluorene
Phenanthrene	85-01-8	---	---	D	
4-Ringed PAHs					
Benzo(a)anthracene	56-55-3	---	RPF	B2	Benzo(a)pyrene
Benzo(a)pyrene	50-32-8	---	CSF	B2	Benzo(a)pyrene
Chrysene	218-01-9	---	RPF	B2	Benzo(a)pyrene
Fluoranthene	206-44-0	RfD	---	D	Fluoranthene
Pyrene	129-00-0	RfD	---	D	Pyrene
> 4-Ringed PAHs					
Benzo(b)fluoranthene	205-99-2	---	RPF	B2	Benzo(a)pyrene
Benzo(k)fluoranthene	207-08-9	---	RPF	B2	Benzo(a)pyrene
Benzo(ghi)perylene	191-24-2	---	---	D	
Dibenz(a,h)anthracene	53-70-3	---	RPF	B2	Benzo(a)pyrene
Indeno(1,2,3-cd)pyrene	193-39-5	---	RPF	B2	Benzo(a)pyrene
Whole Mixtures					
Coke Oven Emissions	8007-45-2	---	IUR	A	
Creosote	8001-58-9	---	---	B1	
Diesel Engine Exhaust	---	RfC	---	---	Diesel Engine Exhaust

[1]U.S. Environmental Protection Agency Integrated Risk Information System Database, January 2006.
[2]RfD - oral reference dose; RfC - inhalation reference concentration
[3]RPF - relative potency factor; CSF - oral cancer slope factor; IUR - inhalation unit risk
[4]WOE - Weight of Evidence Classification: A - human carcinogen; B1 - probable human carcinogen; B2 - probable human carcinogen; C - possible human carcinogen; D - not classifiable as to human carcinogenicity; E - evidence of non-carcinogenicity for humans

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TRICHLOROETHENE

(Trichloroethylene, TCE)
CAS No. 79-01-6

INTRODUCTION

Trichloroethylene (TCE) is widely used as an industrial solvent, particularly in metal degreasing, which consumes about 90% of TCE produced annually in the U.S. TCE is also used for dry-cleaning, as a low-temperature heat exchange fluid, as a fumigant, as a diluent in paints and adhesives, in aerospace operations, and in textile processing. TCE has been used as a general anesthetic and as an extractant in food processing. These uses were discontinued due to evidence of possible carcinogenic activity. In the environment, TCE is most likely to be present in air or in groundwater. TCE can volatilize from water when used for showering or cooking.

TOXICOLOGICAL EFFECTS

Although a chemical may be present in the environment, it does not necessarily mean that people will be exposed to it. For exposure to occur, a person must eat, drink, breathe, or dermally contact contaminated soil, groundwater or other environmental media. The potential for experiencing adverse health effects from any substance increases as the amount of exposure (dose) and length of exposure (duration) increase. Most toxicological information available for chemicals comes from either laboratory animal studies or human occupational studies. In these studies, exposures are typically higher than those experienced by people at contaminated waste sites. Consequently, many of the adverse effects described in this toxicological profile are not expected to occur at the chemical concentrations detected at most contaminated sites.

Acute Effects (from exposures lasting 1 day to a few weeks)

Short-term inhalation of small amounts of TCE may cause headaches, lung irritation, dizziness, poor coordination, weakness, nausea and difficulty concentrating. Human volunteers exposed to 200 ppm TCE for 5 days, 7 hours/day reported mild subjective neurological effects of fatigue and drowsiness (ATSDR, 1997). A decrease in reaction time has been reported in people after 8 hours of exposure to 110 ppm TCE (ATSDR, 1997). Inhalation of large amounts of TCE may cause confusion, facial numbness, blurred vision, impaired heart function, unconsciousness, and death (ATSDR, 1997).

Signs and Symptoms of Poisoning

Signs and symptoms include dizziness, headache, nausea, confusion, facial numbness, blurred vision, and, at very high levels, unconsciousness (ATSDR, 1997).

Chronic Effects (from exposures lasting months to years)

Studies of long-term inhalation or ingestion exposure of humans to TCE have reported effects in the central nervous system, immune system, cardiovascular system, liver, and kidney (ATSDR, 1997). Studies evaluating neurological effects in worker and residential populations exposed to TCE have reported adverse effects on the cranial nerve, eye blinking reflex, tremors, intelligence

scores, and impaired balance (ATSDR, 1997). Impaired nerve function has been observed in adults after long-term inhalation exposure to an average concentration of 44 ppm TCE (USEPA, 2001). Based on the ATSDR TCE registry of residents exposed to TCE and other chemicals in their drinking water, there is evidence of impaired hearing in children age 9 years or younger (ATSDR, 1997); however, the exposure levels are not known. Animal studies on TCE and its metabolites support the neurological findings in humans.

Adverse effects on the immune system in humans exposed to TCE include allergic responses, symptoms of systemic lupus erythomatosis, and abnormal immune indicators (ATSDR, 1997). The ability to draw conclusions about TCE effects on the immune system is limited by the presence of other chemicals in the exposure media. One animal study reported that inhalation of TCE altered immune function and decreased resistance to infection (ATSDR, 1997).

Chronic cardiovascular effects have not been reported after long-term occupational exposure, although acute high-level exposures have resulted in cardiac arrhythmias. Animal studies report cardiac arrhythmias and cardiac sensitization to catecholamines in rats exposed to TCE.

Effects in the liver, including changes in liver functional indices and enlarged livers, have been reported in some, but not all, studies after occupational exposure to TCE. Animals exposed by inhalation and ingestion to TCE developed enlarged livers.

Minor changes in kidney function indicators have been reported in some workers occupationally exposed to TCE (ATSDR, 1997). No clear evidence of kidney effects has been reported in populations exposed to TCE in drinking water (ATSDR, 1997). Animal studies have reported treatment related effects on the kidneys following chronic exposure to TCE in drinking water. Rats are more sensitive than mice to the kidney effects of TCE (ATSDR, 1997).

Reproductive Effects

Information regarding the reproductive effects experienced by people inhaling or ingesting TCE is inconclusive. Two human studies with results suggesting an increased incidence of spontaneous abortion associated with TCE exposure are both limited by concurrent exposure to other solvents (ATSDR, 1997). Other studies evaluating adverse reproductive effects in humans from ingestion of TCE in drinking water found no evidence of reproductive effects (ATSDR, 1997). The only reproductive effects observed in animals were reduced testis and epididymis weights in rats exposed to dietary TCE. There were no effects of reproductive system histology, fertility, or other reproductive performance parameters in treated male or female rats in these studies (ATSDR, 1997).

Developmental Effects

Studies evaluating developmental effects in humans after exposure to TCE in drinking water suggest that there may be an association of TCE exposure with birth defects and decreased birth weights (ATSDR, 1997). The conclusions of these studies are limited by the presence of other solvents and absence of dose information. Other studies did not find an association, thus the available data on developmental effects are inconclusive. Birth defects were not observed in animals exposed to TCE by inhalation or ingestion. Decreased pup body weight and fetal death

were observed in animal studies at doses that were maternally toxic (ATSDR, 1997). Neurobehavioral effects, neurological effects, and more subtle developmental effects were altered in rats following prenatal oral exposure to TCE (ATSDR, 1997). Exposure of pregnant rats to the maternally toxic dose of 800 mg/kg/day trichloroacetic acid (TCA; a metabolite of TCE) increased the number of fetuses with abnormal heart development (ATSDR, 1997).

Mutagenicity
Results from a large number of studies suggest that if TCE is mutagenic, it is a very weak indirect mutagen (ATSDR, 1997; USEPA, 2001). Several metabolites of TCE, e.g., dichloroacetic acid (DCA) and trichloroacetic acid (TCA), are reactive and potentially genotoxic (ATSDR, 1997).

Carcinogenicity
Numerous studies of workers exposed to TCE in the air have not shown an increased incidence of cancer compared to controls. In studies of workers that did report an association of occupational exposure with specific cancers the interpretation is complicated by the presence in the workplace of other chemicals that are known human carcinogens. An association between exposure to more than 0.5 ppb TCE in drinking water and leukemia in people was reported by two studies, although a third study did not observe this relationship (ATSDR, 1997). TCE has been shown to be carcinogenic in animals. Inhalation and oral exposure produced liver and lung tumors in mice and kidney adenocarcinomas, testicular Leydig cell tumors, and possibly leukemia in rats.

In its 11th Report on Carcinogens, the National Toxicology Program (NTP) determined that trichloroethylene is "reasonably anticipated to be a human carcinogen (NTP, 2005)." The International Agency for Research on Cancer (IARC) has determined that trichloroethylene is "probably carcinogenic to humans" (ATSDR, 1997). USEPA has not officially published its cancer classification of TCE. In the USEPA proposed draft toxicological review of TCE, TCE is "considered highly likely to produce cancer in humans" (USEPA, 2001). The USEPA draft toxicological review of TCE is currently being reviewed by the National Academy of Sciences (NAS) due to the complexity of drawing conclusions and developing a quantitative estimate of cancer risk from the available data. The carcinogenic potency of TCE is dependent upon the exposure dose. Higher doses result in overloading some metabolic pathways leading to the use of other metabolic pathways that may produce a more toxic metabolite. The relative contribution of each pathway to the production of metabolite is dose- and species-dependent. Species differences in metabolism contribute to differences in susceptibility to cancer induction in rats, mice, and humans (ATSDR, 1997). The carcinogenic potential of TCE appears to be significantly influenced by concurrent exposure to other substances that use the same metabolic pathways or operate by similar modes of action (e.g., metabolites of TCE, TCA and DCE that are formed as the byproducts of drinking waster disinfection).

Organ Toxicity
Adverse effects have been observed in the central nervous system, immune system, liver, kidney, and developing fetus (ATSDR, 1997).

Fate in Mammals

Studies of absorption, metabolism and excretion (toxicokinetics) of TCE have been conducted in humans and animals. Absorption of TCE from the gastrointestinal and respiratory tracts is extensive. TCE is extensively metabolized in humans and animals to dichloroacetic acid (DCA), trichloroacetic acid (TCA), chloral hydrate, and 2-chloroacetaldehyde. Although the liver is the primary site of TCE metabolism, there is evidence for metabolism in the lungs and kidneys (ATSDR, 1997). TCE and its metabolites are excreted in the urine. TCE is not accumulated in the body (ATSDR, 1997).

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VANADIUM

(Vanadium pentoxide, Vanadyl sulfate)
CAS No. 7440-62-2

INTRODUCTION

Vanadium is a ubiquitous metal found in rocks, minerals, and soils. It co-occurs with uranium in uranium ores and is also found in coal and in crude oils. Vanadium (V) is a transition metal with possible valence states ranging from -3 to +5. Of these, the +3, +4, and +5 valence states can exist in natural aquatic systems such as groundwater or surface water. Ionic forms of the +3, +4, and +5 valence states may be present in solution under environmental conditions as oxygen or hydroxide anions. In oxygenated groundwater or surface water, oxygen-containing vanadate ions in the +5 valence state are the most likely forms of vanadium. Vanadyl ions (VO^{2+}) are anions composed of oxygen and the +4 valence state of vanadium. Vanadate and vanadyl ions are most likely to be found under environmental conditions. Vanadium pentoxide (V_2O_5) and vanadyl sulfate trihydrate ($VOSO_4$)($3H_2O$) are the forms of vanadium found in oil-fired fly ash (Henry and Knapp, 1980). Humans may be exposed to vanadium from soils and groundwater.

TOXICOLOGICAL EFFECTS

Although a chemical may be present in the environment, it does not necessarily mean that people will be exposed to it. For exposure to occur, a person must eat, drink, breath, or dermally contact contaminated soil, groundwater or other environmental media. The potential for experiencing adverse health effects from any substance increases as the amount of exposure (dose) and length of exposure (duration) increase. Most toxicological information available for chemicals comes from either laboratory animal studies or human occupational studies. In these studies, exposures are typically higher than those experienced by people at contaminated waste sites. Consequently, many of the adverse effects described in this toxicological profile are not expected to occur at the chemical concentrations detected at most contaminated sites.

Acute Effects (from exposures lasting 1 day to a few weeks)

Inhalation of vanadium irritates the lungs, eyes, and nose (ATSDR, 1992). Acute inhalation exposure to 114 mg/m^3 vanadium pentoxide caused death in half of the tested animals (rabbits). The acute oral dose that caused death in half of the tested animals (LD_{50} for mice and rats) ranges from 31-41 mg /kg vanadium (ATSDR, 1992).

Signs and Symptoms of Poisoning

Symptoms following inhalation exposure to vanadium include lung irritation, coughing, sore throat, and red irritated eyes (ATSDR, 1992). Ingestion of 0.47-1.3 mg/kg/day vanadium as ammonium vanadyl tartrate by human volunteers resulted in intestinal cramping and diarrhea. Workers exposed to vanadium dusts have reported nausea and vomiting (ATSDR, 1992).

Chronic Effects (from exposures lasting months to years)

Information regarding the adverse health effects experienced by people inhaling or ingesting vanadium is limited. Adverse effects observed in humans exposed for 6 to 22 weeks to up to 0.3

mg/kg per day vanadium as vanadium salts were limited to gastrointestinal symptoms of nausea, cramping, and diarrhea. No adverse effects were observed on blood pressure, hematology, cholesterol or markers of liver and kidney function (ATSDR, 1992).

Studies in animals exposed to vanadium salts provide evidence for kidney toxicity associated with less than life time exposure to 1.2 to 4.7 mg/kg/day vanadium. Hematological (blood-related) effects of vanadium have been studied by several researchers; however results are inconsistent across studies and thus inconclusive (ATSDR, 1992).

Vanadium is a trace element that is considered an essential element in chicks and rats, although it has not been established whether it is an essential element for humans. Its deficiency (in chicks and rats) can cause reduced growth, impairment of reproduction and disturbances in lipid metabolism. There are no known vanadium deficiency symptoms in humans.

Reproductive Effects
Fertility, as well as numbers of spermatozoa and spermatids, was decreased in male mice exposed to 25.1 mg/kg/day vanadium as sodium metavanadate for 64 days (one complete cycle of sperm development) (Llobet et al., 1993).

Developmental Effects
The developmental toxicity of vanadium has been reviewed by Domingo (1994) in several animal systems after publication of the ATSDR Toxicity Profile (1992). The oral administration of vanadyl sulfate pentahydrate (7.6, 15.1, 30.2 mg/kg/day vanadium) to pregnant mice during development of organs caused toxicity to the developing embryos, and birth defects (cleft palate) as well as maternal toxicity at all dose levels tested (Paternain et al., 1990).

Mutagenicity
Although vanadium compounds are not clastogenic (causing large alterations in DNA structure), they can be weakly mutagenic in certain systems (Leonard and Gerber, 1994).

Carcinogenicity
No information was located regarding carcinogenic effects in humans following inhalation or ingestion of vanadium and vanadium salts (ATSDR, 1992). The available oral studies in animals are limited in their ability to evaluate carcinogenicity, but do not provide evidence of carcinogenicity (ATSDR, 1992). Clear evidence of carcinogenic activity based on alveolar/bronchial neoplasms was found in both sexes of mice following inhalation of particulate aerosols of vanadium pentoxide for 2 years; while some evidence was found for carcinogenic activity in male rats and equivocal evidence was found for carcinogenic activity in female rats (NTP, 2002). Vanadium pentoxide was not mutagenic (NTP 2002).

Organ Toxicity
Several animal studies clearly demonstrate that target organs for soluble vanadium toxicity include the kidney and nervous system, and the respiratory tract for inhaled vanadium metal (ATSDR, 1992).

Fate in Mammals
As with many other trace metals, it is believed that vanadium is poorly absorbed from the

gastrointestinal tract, but that vanadium dusts are efficiently absorbed through the lungs (ATSDR, 1992). During exposure vanadium accumulates in a dose-dependent fashion in the kidneys, bone liver and muscle. Following cessation of exposure, tissue levels rapidly decline, with the bone declining more slowly than other tissues (ATSDR, 1992). Once absorbed in the tissues, two vanadium species (V^{5+} and V^{4+}) may be present under physiological conditions. In general, pentavalent vanadium is the more toxic form because it enters the cell more readily. However, once vanadium of either form enters cells it is reduced by intracellular glutathione and other agents to the trivalent species (V^{3+}), which binds readily to cellular macromolecules (ATSDR, 1992).

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APPENDIX H

CLIMATE DATA

APPENDIX TABLE H-1
Site-Specific Climate Data
Addendum to the RI Report
Blackburn & Union Privileges Superfund Site
Walpole, Massachusetts

Date & Time	Temperature (ºF)	Wind Speed (mph)	Wind Direction	Amount of Precipitation (in)	Barometric Pressure (in)	SHA Weather Observations
1/26/01 0700	26	0	S	0.00	30.11	NR
1/29/01 8:26	25	0	N	0.00	30.17	NR
1/30/01 7:15	34	2	SW	0.00	29.89	NR
1/31/01 9:28	39	2	W	0.00	29.43	NR
2/1/01 7:13	37	2	SW	0.00	29.80	NR
2/2/01 7:00	31	0	SW	0.00	29.97	NR
2/5/01 7:15	30	2	E	0.00	30.04	NR
2/6/01 8:00	36	5	N	3.41	29.63	NR
2/7/01 7:48	37	2	W	0.00	29.96	NR
2/8/01 8:02	29	0	N	0.00	30.35	NR
2/9/01 7:20	37	2	SW	4.27	30.16	NR
2/12/01 7:15	18	1	N	0.00	30.58	NR
2/27/01 17:03	38	3	SW	0.00	29.88	NR
2/28/01 6:51	22	0	NR	0.00	29.96	NR
3/1/01 8:43	22	5	SW	0.00	29.70	NR
3/2/01 7:38	19	3	NNE	0.00	29.60	NR
3/7/01 10:54	28	7	N	1.54	29.63	NR
3/8/01 16:00	35	3	SW	0.80	29.89	NR
3/9/01 7:09	31	0	SW	0.01	29.85	NR
3/12/01 7:12	28	7	NW	0.00	30.11	NR
3/13/01 8:19	33	1	N	0.51	29.61	NR
3/14/01 6:40	34	4	S	0.17	29.38	NR
3/15/01 7:23	38	3	SW	0.18	29.79	NR
3/16/01 6:50	31	0	SW	0.00	29.81	NR
3/19/01 8:11	39	6	NW	0.11	30.08	NR
3/20/01 7:34	35	0	SW	0.00	30.39	NR
3/21/01 7:35	35	4	NE	0.00	30.27	NR
3/22/01 8:40	44	0	NE	2.32	29.40	NR
3/23/01 7:46	37	0	NW	0.48	29.24	NR
3/26/01 8:00	29	0	NNW	0.04	29.88	NR
3/27/01 7:49	24	5	NW	0.00	29.96	NR
3/28/01 8:30	35	9	NW	0.31	30.06	NR
3/29/01 7:20	29	0	SW	0.03	30.33	NR
3/30/01 7:30	37	3	NE	0.43	29.98	Raining
4/2/01 7:45	32	3	NNW	1.75	29.73	Cloudy, Calm
4/3/01 8:28	36	0	NW	0.00	29.91	Clear, Calm
4/4/01 7:15	29	0	SE	0.00	30.16	Partly Cloudy, Calm
4/5/01 16:30	58	0	N	0.00	30.07	Clear, Calm
4/9/01 7:30	41	0	SW	0.62	29.72	Fog, Cloudy
4/10/01 7:00	44	0	N	0.05	29.83	Cloudy, Calm
4/11/01 7:20	42	0	S	0.00	30.20	Clear
4/12/01 7:24	44	0	NNE	0.08	30.13	Light Rain
4/13/01 7:00	42	0	NNW	0.21	29.73	Fog, Cloudy
4/16/01 6:45	39	0	NNE	0.00	29.64	Cloudy, Calm
4/17/01 6:50	34	0	S	0.00	29.64	Partly Cloudy, Calm
4/18/01 7:05	35	0	N	0.11	29.46	Snow/Rain
4/19/01 7:13	31	0	NW	0.08	29.98	Sunny
4/20/01 7:28	35	0	NW	0.00	30.28	Sunny
4/23/01 7:40	57	0	N	0.00	30.09	Partly Cloudy, Calm
4/24/01 7:50	57	0	S	0.00	29.75	Clear, Calm
4/25/01 7:05	46	0	NW	0.00	30.00	Cloudy, Calm

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Date & Time	Temperature (ºF)	Wind Speed (mph)	Wind Direction	Amount of Precipitation (in)	Barometric Pressure (in)	SHA Weather Observations
4/26/01 7:22	35	0	SSW	0.00	30.02	Clear, Calm
4/27/01 7:15	41	0	NNW	0.00	29.93	Cloudy, Calm
5/2/01 8:12	69	4	SSW	0.00	29.90	Clear, Calm
5/3/01 7:17	61	1	S	0.00	30.00	Clear, Calm
5/4/01 7:15	67	0	SW	0.00	29.92	Clear, Calm
5/8/01 14:30	70	5	SW	0.00	30.20	Clear
5/9/01 7:15	49	2	S	0.00	30.11	Clear, Calm
5/17/01 7:59	50	3	NNW	0.10	29.95	Cloudy, Calm
5/18/01 8:49	54	2	SSE	0.00	29.90	Cloudy, Calm
5/22/01 11:25	54	4	NNE	0.24	29.85	Rain
6/1/01 8:55	57	2	N	2.15	29.93	Clear, Calm
6/4/01 10:20	62	5	W	1.22	29.70	Sun and Clouds
6/5/01 7:24	57	1	NW	0.00	29.82	Clear, Calm
6/6/01 7:19	61	9	WNW	0.00	29.80	Sunny
6/7/01 7:13	57	0	WNW	0.00	29.79	Sunny
6/8/01 7:20	59	0	SSW	0.00	29.68	Sunny
6/11/01 7:15	60	0	ENE	0.00	29.78	Clear, Calm
6/12/01 7:15	63	2	NW	0.81	29.64	Cloudy, Humid
6/13/01 7:15	60	1	SSW	0.00	29.81	Fog, Cloudy
6/14/01 7:20	64	2	S	0.00	29.97	Cloudy, Humid
6/15/01 7:30	69	3	S	0.00	29.98	Foggy, Humid
6/19/01 8:40	75	4	SW	4.33	30.10	Clear, Humid
6/20/01 8:00	69	2	W	0.00	29.99	Clear
6/21/01 7:10	66	3	ENE	0.01	30.06	Clear
6/22/01 7:20	62	1	NE	0.00	30.02	Partly Cloudy
6/25/01 6:45	65	2	W	0.28	30.02	Partly Cloudy
6/26/01 6:50	67	0	S	0.00	30.15	Clear, Calm
6/27/01 7:30	74	2	WNW	0.00	30.11	Clear, Humid
6/28/01 7:32	74	1	WNW	0.00	29.92	Clear
6/29/01 7:31	66	1	ENE	0.00	30.02	Clear
7/2/01 7:45	64	0	NE	3.92	29.80	Clear, Dry, Calm
7/3/01 7:40	52	0	NNE	0.00	30.13	Clear, Cool, Calm
7/5/01 8:20	68	0	NE	0.19	29.65	Partly Cloudy, Calm
7/9/01 7:42	71	0	SSW	0.40	29.67	Cloudy, Chance of rain
7/10/01 7:25	65	2	WNW	0.00	29.57	Fog, Cloudy
7/11/01 7:20	63	0	WNW	0.64	29.51	Clear, Humid
7/12/01 8:30	56	2	WNW	0.03	29.62	Clear, Dry, Calm
7/13/01 7:30	61	2	WNW	0.00	29.72	Clear, Dry, Calm
7/16/01 7:15	62	1	N	0.03	29.87	Clear, Calm
7/17/01 7:30	59	0	W	0.06	29.87	Clouds, Rainy
7/18/01 7:15	61	2	E	0.08	0.14	Clear
7/19/01 7:25	62	4	E	0.00	30.06	Fog, Cloudy
7/20/01 7:15	58	0	ESE	0.00	30.04	Clear, Calm
7/23/01 6:45	64	0	SSW	0.00	29.86	Clear, Humid
7/24/01 7:44	76	3	W	0.00	29.76	Clear, Humid
7/25/01 7:30	79	2	W	0.00	29.69	Clear, Humid
7/26/01 7:20	71	1	ENE	0.01	29.75	Clouds, Humid
7/27/01 7:15	52	1	N	0.21	30.11	Clear, Cool
7/30/01 7:25	58	2	E	0.00	30.05	Clear, Cool
7/31/01 7:15	54	0	N	0.00	30.09	Clear, Cool
8/1/01 7:30	66	1	E	0.00	30.17	Sunny

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Date & Time	Temperature (ºF)	Wind Speed (mph)	Wind Direction	Amount of Precipitation (in)	Barometric Pressure (in)	SHA Weather Observations
8/2/01 7:20	66	0	W	0.00	30.11	Sunny
8/3/01 7:30	74	3	W	0.00	29.03	Cloudy
8/4/01 7:30	71	0	SSW	0.18	30.00	Hazy, Hot, Humid
8/7/01 9:40	76	5	W	0.00	29.79	Clear, Hot, Humid
8/8/01 7:10	79	0	SW	0.00	29.76	Hazy, Hot, Humid
8/9/01 7:00	81	0	W	0.00	29.75	Hazy, Hot, Humid
8/10/01 6:30	78	2	W	0.00	29.66	Hazy, Hot, Humid
8/13/01 7:00	70	0	WSW	2.12	29.87	Cloudy, Rainy
8/14/01 7:40	66	2	E	2.37	29.81	Cloudy
8/15/01 7:10	70	3	SE	0.00	29.94	Clear
8/17/01 7:30	68	2	S	0.00	29.91	Clear
8/20/01 7:45	67	0	S	0.38	29.81	Cloudy, Rainy
8/21/01 8:10	68	1	SSE	0.07	29.83	Cloudy, Rainy
8/22/01 7:40	71	2	WNW	0.00	29.89	Clear, Calm
8/24/01 8:05	65	5	E	0.00	29.43	NR
8/27/01 6:55	65	3	SSW	0.00	29.73	Clear, Calm
8/28/01 7:45	68	2	W	0.00	29.65	Sunny
8/29/01 7:44	68	0	N	0.55	29.74	Foggy, Humid, Clouds
8/30/01 7:40	58	0	S	0.00	30.00	Clear, Cool, Calm
8/31/01 7:20	70	2	SSW	0.00	29.85	Cloudy, Humid
9/4/01 6:50	55	0	SSW	0.00	29.85	Clear, Calm
9/5/01 6:55	58	1	N	0.10	29.86	Clear, Humid
9/6/01 6:55	44	0	W	0.00	30.10	Clear, Calm
9/7/01 6:57	54	0	WSW	0.00	29.98	Clear, Calm
9/10/01 6:50	67	1	SSW	0.00	30.05	Sunny
9/11/01 7:25	60	0	NNW	0.00	29.93	Sunny
9/12/01 6:50	47	0	NNW	0.00	30.05	Clear
9/13/01 7:05	54	0	NNW	0.00	29.96	Clear
9/14/01 8:25	53	2	NNW	0.32	30.00	Rainy
9/17/01 8:10	51	0	E	0.22	29.99	Sunny
9/18/01 8:15	57	0	SSE	0.00	29.87	Sunny
9/19/01 8:30	63	2	ENE	0.00	30.06	Partly Sunny
9/20/01 9:10	69	4	SSE	0.00	30.11	Cloudy
10/3/01 12:50	70	3	SSW	1.05	29.86	Partly Cloudy
10/9/01 7:55	33	0	WSW	0.05	30.52	Clear
10/10/01 8:00	50	2	SW	0.00	30.32	Clear
10/11/01 9:00	59	1	SW	0.00	30.19	Clear
10/16/01 9:05	48	2	SE	0.00	31.04	Clear
10/17/01 12:45	55	12	W	0.44	29.55	Cloudy
10/29/01 7:25	29	0	W	0.00	30.41	Clear
11/2/01 13:30	73	14	SSE	0.11	30.03	Clear
11/6/01 13:15	51	4	NNW	0.36	29.72	Clear
11/15/01 7:15	37	2	W	0.04	30.03	Overcast
11/16/01 9:00	60	1	SW	0.00	29.85	Overcast
11/19/01 10:40	58	6	SW	0.00	29.98	Clear
12/4/01 8:00	33	0	SW	0.38	30.20	Clear
12/5/01 13:30	64	2	NW	0.02	30.10	Clear
4/10/02 NR	53	7	NNE	0.05	NR	Clear
4/19/2002 NR	64	6	SSW	0.01	NR	Clear
5/14/02 NR	54	11	W	0.22	NR	NR
5/15/02 NR	52	14	NNW	0.00	NR	Clear

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Date & Time	Temperature (ºF)	Wind Speed (mph)	Wind Direction	Amount of Precipitation (in)	Barometric Pressure (in)	SHA Weather Observations
5/16/2002 NR	49	9	WSW	0.00	NR	NR
5/20/02 NR	61	5	NNW	0.00	NR	NR
5/21/02 NR	47	5	NNW	0.00	NR	Clear
5/22/02 NR	52	5	SSW	0.00	NR	Sunny
5/23/02 NR	57	7	SSW	0.00	NR	Clear
5/24/02 NR	63	8	NNW	0.00	NR	Clear
7/24/02 NR	61	8	NNE	0.01	NR	Overcast
12/16/02 NR	31	4	N	0.24	NR	Snowing
12/17/02 NR	22	6	N	0.00	NR	Clear
8/5/03 7:30	72	7.4	NE	0.01	NR	Humid, Overcast
8/6/03 7:00	69	8.1	SSE	0.02	29.80	Partly Cloudy
8/7/03 8:00	69	2.5	SSE	0.09	29.85	Partly Cloudy
8/8/03 7:05	67	3.2	SSE	2.24	29.78	Cloudy, Light Rain
8/12/03 7:30	70	3.5	N	0.00	30.00	Sun and Clouds
8/18/03 7:13	62	2.8	N	0.04	29.93	Sun and Clouds
8/19/03 7:25	62	4.5	N	0.00	30.04	Sun
8/20/03 7:15	64	4.2	N	0.00	30.00	Sun and Clear
8/21/03 7:10	64	4.2	N	0.00	29.96	Partly Cloudy
8/22/03 7:22	70	6.8	N	0.00	29.74	Partly Cloudy
8/25/03 11:10	72	4.8	N	0.00	29.87	Sun and Clouds
8/26/03 7:15	60	4.5	N	0.00	29.86	Sun, Calm
8/27/03 7:00	66	8.7	N	0.00	29.66	Partly Cloudy
8/28/03 7:20	56	3.7	N	0.00	29.95	Sunny
8/29/03 7:10	60	6.8	N	0.00	30.08	Sunny
9/2/03 7:15	55	3.7	N	0.67	30.06	Rain
9/3/03 7:10	63	4.2	N	0.15	30.12	Cloudy
9/4/03 7:20	68	2.6	N	0.37	29.76	Rain
9/5/03 7:00	69	2.8	ENE	0.10	29.76	Cloudy
9/8/03 7:50	70	5.2	NE	0.00	30.06	Sunny
9/9/03 6:40	50	5.9	NE	0.00	30.21	Sunny
9/10/03 7:20	42	0.9	NNE	0.00	30.20	Sunny
9/11/03 7:30	62	4.6	NNE	0.00	30.15	Sunny
9/12/03 7:00	60	4.2	NNE	0.00	30.30	Overcast
9/15/03 7:00	62	2	NNE	0.00	30.12	Overcast
9/16/03 7:10	65	4.4	ENE	0.96	29.88	Rain
9/17/03 7:00	50	3	SE	0.05	30.17	Sunny
9/18/03 6:15	52	7	ESE	0.00	30.30	Cloudy
9/19/03 7:20	69	9.4	ENE	0.00	30.14	Overcast
9/29/03 8:05	55	6.3	NNE	0.07	29.72	Clear
9/30/03 7:20	44	4.2	E	0.00	30.00	Clear
10/1/03 7:25	44	1.2	E	0.00	30.08	Cloudy
10/2/03 7:20	48	6	NE	0.05	29.91	Light Rain
10/3/03 7:15	34	5.4	E	0.00	30.06	Sunny, Cold
10/13/03 7:00	50	6.8	NE	0.51	29.71	Clear
10/14/03 7:20	39	4.6	NE	0.00	29.93	Clear
10/15/03 7:00	58	16.2	NE	1.68	28.98	Heavy Rain
10/16/03 7:05	44	8.6	E	0.00	29.81	Clear
10/17/03 7:10	38	3.5	NE	0.00	29.99	Clear
10/20/03 7:00	28	3.6	NNE	0.12	30.15	Clear, Cold
10/21/03 7:00	45	9.9	NNE	0.00	29.56	Cloudy
10/22/03 7:15	45	6.7	NNE	0.08	29.44	Rain

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Date & Time	Temperature (ºF)	Wind Speed (mph)	Wind Direction	Amount of Precipitation (in)	Barometric Pressure (in)	SHA Weather Observations
10/23/03 7:15	36	8.5	NE	0.12	29.35	Snow
10/24/03 7:15	36	7.3	ENE	0.07	29.83	Clear
10/27/03 7:00	58	10.8	NE	0.85	29.86	Rain
10/28/03 7:00	56	4.2	SE	0.56	29.81	Cloudy
10/29/03 6:45	44	11	ESE	0.94	29.98	Clear
10/31/03 7:00	47	6.9	ESE	0.00	30.24	Clear
11/3/03 7:00	53	2.9	NNE	0.07	30.03	Partly Cloudy
11/4/03 7:00	52	8.9	NE	0.00	30.14	Rain
11/5/03 7:00	48	2.4	NE	0.01	29.89	Rain
11/6/03 7:00	40	1.2	NNE	0.37	29.81	Cloudy
11/7/03 7:00	50	3.6	NE	0.01	30.02	Clear
11/10/03 7:00	28	1.9	N	0.00	30.45	Clear
11/11/03 7:00	40	1.5	NE	0.00	29.91	Rainy
11/12/03 7:00	45	2.4	NEE	0.18	29.81	Cloudy
11/13/03 7:00	51	16.6	E	0.20	29.13	Rain
11/17/03 7:00	40	0.6	ENE	0.00	29.86	Cloudy
11/18/03 7:00	36	1.4	ENE	0.02	30.33	Clear
11/19/03 7:00	46	8.3	ENE	0.00	30.04	Partly Cloudy
11/20/03 7:00	56	12	ENE	0.18	29.30	Rain
11/21/03 7:00	44	5.1	ENE	0.84	29.69	Light Rain
11/24/03 6:30	34	2.9	E	0.00	30.07	Clear, Cold
11/25/03 7:00	40	7.1	NE	0.14	29.83	Partly Cloudy
11/26/03 6:45	34	2.9	NE	0.00	30.10	Clear, Cold
12/1/03 6:45	45	13.2	NE	0.00	29.94	Clear
12/2/03 7:00	32	14.2	SE	0.00	29.89	Clear, Cold
12/3/03 7:30	22	9.2	SSE	0.00	30.29	Clear, Cold
12/4/03 7:00	26	5.5	SSE	0.00	30.29	Clear, Cold
9/6/06 NR	68	2.7	NNE	0.10	29.86	Sunny, Overcast
9/7/06 NR	66	2.1	N	0.00	29.98	Partly Cloudy
9/19/06 NR	71	6.9	NNE	0.00	29.70	Overcast; Becoming Sunny
9/25/06 NR	60	3.4	NNE	0.02	29.75	Mostly Cloudy
9/26/06 NR	59	5.6	NNE	0.00	29.85	Overcast
9/27/06 NR	56	2.2	NNE	0.00	29.98	Sunny
9/28/06 NR	59	3.9	NNE	0.00	29.86	Clear
9/29/06 NR	59	6.0	NNE	0.06	29.67	Overcast
10/2/06 NR	57	6.2	NE	0.50	29.98	Cloudy
10/3/06NR	60	4.7	NNE	0.00	30.07	Sunny
10/4/06 NR	66	5.9	NNE	0.00	29.96	Cloudy
10/5/06 NR	59	6.4	N	0.15	30.01	Overcast, Breezy
10/13/06 NR	50	7.2	NNE	0.00	29.75	Sunny

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Notes:

1. Data measured using a Davis Weather Monitor II station with external temperature sensor, anemometer, barometer, and a tipping bucket rain collector. Temperature results are presented in degrees Fahrenheit (ºF); wind speed results are presented in miles per hour (mph); wind direction measurements indicate north (N), northeast (NE), northwest (NW), north-northeast (NNE), north-northwest (NNW), south (S), southeast (SE), south-southeast (SSE), southwest (SW), south-southwest (SSW), west (W), west-northwest (WNW), west-southwest (WSW), east (E), east-southeast (ESE), and east-northeast (ENE); amount of precipitation results are presented in inches (in); and barometric pressure results are presented in inches.

2. Temperature and precipitation data from January 26, 2001 to February 12, 2001, and 2006 was taken from the National Climactic Data Center (NCDC) of Asheville, North Carolina for the Walpole 2 Station located approximately five miles south of the Site and is recorded as the daily average.

3. Wind Direction data for July 7, 2001 to December 5, 2001 was taken from National Oceanic and Atmospheric Administration's National Weather Service (NWS) weather station located in Norwood, Massachusetts. Wind Speed and Wind Direction data for 2002 was not available from the NCDC; therefore this data was taken from the NWS weather station located in Norwood, Massachusetts and is recorded as the daily average.

4. Wind Speed and Barometric Pressure data for 2003 and 2006 was taken from the NWS weather station located in Norwood, Massachusetts and is recorded as the daily averages.

5. Temperature data for 2003 was recorded using a Springfield outdoor thermometer.

6. SHA weather observations are from the field reports for the date indicated.

7. "NR" indicates not recorded.