FIVE-YEAR REVIEW REPORT

First Five-Year Review

for

Troy Mills Landfill Superfund Site

Troy, New Hampshire

September 2010

PREPARED BY:

U.S. Environmental Protection Agency
Region 1
Boston, Massachusetts

Approved by: _____
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U.S. EPA, Region 1

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EXECUTIVE SUMMARY

The Troy Mills Landfill (TML) Superfund Site is located about 1.5 miles south of the center of Troy, New Hampshire and includes a 10-acre portion (the Site) of a larger 270-acre parcel of property. The Site includes a 2-acre landfill where Troy Mills, Inc. (TMI) disposed of hazardous substances that were generated at its acrylic fabric manufacturing facility in Troy between 1967 and 1978. The Site also encompasses a groundwater management zone (GMZ). An estimated 6,000 to 10,000 55-gallon drums of waste liquid and sludge, containing mostly plasticizers such as bis (2-ethylhexyl) phthalate and a petroleum-based solvent known as Varsol™, were disposed of in this area. Other drummed waste materials included pigments, surplus mixes, and tank residuals of vinyl resins, paint resins, and top coating products. Burial of drummed waste at the TML Site ceased in 1978 by order of the New Hampshire Department of Health and Welfare (NHDOH). Immediately to the north of the former drum disposal area is a separate eight-acre solid waste landfill, regulated by the New Hampshire Department of Environmental Services (NHDES). This 8-acre landfill was continuously used by TMI until 2001, for the disposal of waste fabric scraps and other miscellaneous solid waste from the company's manufacturing complex. The solid waste landfill is not part of the Superfund site. TMI filed for bankruptcy in 2001.

Environmental investigations conducted throughout the 1980s and 1990s in and around the former drum disposal area documented the presence of volatile organic compounds (VOCs), semi-VOCs, and inorganic compounds in groundwater, leachate, surficial soil, surface water, and sediment. In September 2003, the Site was listed on the National Priorities List (NPL) and a time-critical removal action was initiated. Between 2004 and 2005, the Environmental Protection Agency (EPA) completed the removal of drums, flammable liquids and contaminated soil/sludge; construction of three light non-aqueous phase liquid (LNAPL) interceptor trenches; and construction of a 2-foot-thick permeable soil cap over the excavation area. A subsequent Remedial Investigation (RI) of the Site by EPA identified a plume of groundwater contamination consisting of organic contaminants (alkylbenzenes, chlorinated solvents, phthalates, and toluene). It was concluded that the contaminants of concern (COCs) were naturally biodegrading and that removal of the buried drums eliminated the primary source of on-going contamination to groundwater. However, the baseline human health risk assessment completed as part of the RI indicated that potential exposure to residual COCs in groundwater, LNAPL-contaminated leachate, and wetland soil via ingestion or direct contact by future recreational users and nearby residents may present an unacceptable risk to human health.

A Record of Decision (ROD) for the Site was signed on September 30, 2005. The selected remedy includes source control, management of contaminant migration, and institutional controls (ICs). The 2005 ROD also incorporated components of the time-critical removal action completed by EPA in summer 2005 and additional long term remedial activities to address potentially unacceptable risks posed by Site contaminants. The long-term remedial actions as specified in the ROD began in 2006 and were implemented to address this endangerment through monitored natural attenuation (MNA) of groundwater contaminants; collection and off-Site disposal of LNAPL; monitoring of groundwater, surface water, sediment, leachate, and wetland soil quality; maintaining the permeable soil cap over the former drum disposal area; and implementing appropriate ICs. As part of a bankruptcy settlement with the United States, approved by the court on June 27, 2008, TMI (through the Bankruptcy Trustee assigned to the case) signed an Easement Deed and Restrictive Covenants to the State of New Hampshire to establish ICs over the Site in November 2009, which was recorded in January 2010.

This first statutory five-year review was performed to document the status of the selected remedy relative to it being protective of human health and the environment. The trigger for this five-year review was the initiation of the ROD-specified cleanup actions completed in the fall of 2005. This five-year review

documents that the remedy is currently protective of human health and the environment as envisioned by the ROD. However, in order for the remedy to be considered protective over the long term, the following actions are recommended:

- With regard to effectiveness of ICs at the Site, report violations and vandalism to the State and the Town for response with appropriate follow-up monitoring and enforcement actions. Repair damaged wells with new locking caps, post warning signs at the inner gate and former drum disposal area, and consider fencing the former drum disposal area to restrict access by all terrain vehicles;
- Conduct a supplemental investigation of the residual LNAPL source area and further evaluate effectiveness of the LNAPL trenches in capturing remaining LNAPL;
- Perform supplemental hydrogeologic studies to confirm hydrostratigraphy and the COC fate and transport in groundwater to confirm the effectiveness of the MNA management of migration remedy at the Site and to better forecast time to cleanup; and
- Perform a hydrologic evaluation within the transition zone between groundwater and surface water in the Rockwood Brook Wetland Study area and Rockwood Brook. Review existing data from nearby groundwater monitoring wells relative to appropriate benchmark ecological risk screening values applied to receptor exposures within the ground water – surface water transition zone.

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Troy Mills Landfill Superfund Site		
EPA ID *(from WasteLAN)*: NHD980520217		
Region: 1	**State:** NH	**City/County:** Troy, Cheshire County

SITE STATUS	
NPL status: X Final Deleted Other (specify)	
Remediation status (choose all that apply): Under Construction **X Operating** Complete	
Multiple OUs? YES **X** NO	**Construction completion date:** September 2005
Has site been put into reuse? YES **X** NO	

REVIEW STATUS	
Lead agency: X EPA State Tribe Other Federal Agency _____	
Author name: Richard Hull with technical assistance from NHDES/GZA GeoEnvironmental, Inc.	
Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA, Region 1
Review period: 04/15/10 to 09/30/10	
Date(s) of site inspection: 04/15/10	
Type of review: **X Post-SARA** Pre-SARA NPL-Removal only Non-NPL Remedial Action Site NPL State/Tribe-lead Regional Discretion	
Review number: X 1 (first) 2 (second) 3 (third) Other (specify) _____	
Triggering action: Actual RA Onsite Construction at OU #____ Actual RA Start at OU#____ Construction Completion Previous Five-Year Review Report **X** Other (specify) **<u>The Signing of Record of Decision, the RA Start, & Construction Completion date are all September 30, 2005</u>**	
Triggering action date *(from WasteLAN)*: 09 / 30 / 2005	
Due date *(five years after triggering action date)*: 09 / 30 / 2010	

Five-Year Review Summary Form, cont'd.

Issues:

1. Effectiveness of ICs, including violations of the State's existing Restrictive Covenants on the Site (ATV/Dirt bike/snowmobile trespasser use over landfill cap), and evidence of vandalism (damage to select monitoring wells/and pumps, damage to inner access gate).
2. Further evaluation is needed regarding the persistence of LNAPL east of the interceptor trenches.
3. Further hydrogeologic investigation is needed to evaluate the potential for two overburden groundwater flow systems (upper ablation and lower lodgment) as unique sub units within the till. In addition, further characterization of groundwater flow direction and contaminant migration in bedrock is needed to further evaluate the MNA remedy relative to the bedrock unit.
4. Determine the approximate dimensions and area of sediment in Rockwood Brook or wetland soil where ground water discharges to surface water.

Recommendations and Follow-up Actions:

1. With regard to the effectiveness of ICs at the Site, report violations and vandalism to the State and the Town for response with appropriate follow-up monitoring and enforcement actions. Repair damaged wells with new locking caps, post warning signs for inner gate and former drum disposal area, and consider fencing the former drum disposal area to restrict access by all terrain vehicles;
2. Conduct a supplemental investigation of residual LNAPL source area and further evaluate effectiveness of the LNAPL trenches in capturing remaining LNAPL;
3. Perform supplemental hydrogeologic studies to confirm hydrostratigraphy and the COC fate and transport in groundwater to confirm the effectiveness of the MNA management of migration remedy at the Site and to better forecast time to cleanup; and
4. Perform a hydrologic evaluation within the transition zone between groundwater and surface water in the Rockwood Brook Wetland Study area and Rockwood Brook. Review existing data from nearby groundwater monitoring wells relative to appropriate benchmark ecological risk screening values, applied to receptor exposures within the ground water – surface water transition zone.

Protectiveness Statement(s):

The remedy at the Troy Mills Landfill Superfund Site is currently protective of human health and the environment as envisioned by the 2005 ROD. However, several actions need to be undertaken in order for the remedy to be protective in the long term.

Five-Year Review Summary Form, cont'd.

Long-Term Protectiveness:

In order for the remedy to be protective in the long-term, the following actions are recommended:

1. With regard to the effectiveness of ICs at the Site, report violations and vandalism to the State and the Town for response with appropriate follow-up monitoring and enforcement actions. Repair damaged wells with new locking caps, post warning signs at the inner gate and former drum disposal area, and consider fencing the former drum disposal area to restrict access to all terrain vehicles;
2. Conduct a supplemental investigation of residual LNAPL source area proximate to well TRY_MW-201S and further evaluate effectiveness of the LNAPL trenches in capturing remaining product;
3. Perform supplemental hydrogeologic studies to confirm hydrostratigraphy and the COC fate and transport of groundwater to confirm the effectiveness of the MNA management of migration remedy at the Site and to better forecast time to cleanup; and
4. Perform an evaluation of the hydrologic regime within the transition zone between groundwater and surface water in the Rockwood Brook Wetland Study area and Rockwood Brook, including review of existing data from nearby groundwater monitoring wells relative to appropriate benchmark ecological risk screening values, applied to receptor exposures within the ground water – surface water transition zone.

Other Comments:

Additional time and monitoring data are needed to confidently assess contaminant concentration trends in groundwater and to confirm the effectiveness of MNA as a management of migration remedy.

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LIST OF ABBREVIATIONS AND ACRONYMS

AGQS	Ambient Groundwater Quality Standards
ARARs	Applicable or Relevant and Appropriate Requirements
ATV	All Terrain Vehicle
AUR	Activity and Use Restrictions
bgs	Below Ground Surface
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability
CFR	Code of Federal Regulations
COCs	Contaminants of Concern
CSF	Cancer Slope Factor
CSM	Conceptual Site Model
CWA	Clean Water Act
EPA	Environmental Protection Agency
ESI	Expanded Site Inspection
ft/day	Feet per day
GEI	GEI Consultants
GMZ	Groundwater Management Zone
GZA	GZA GeoEnvironmental, Inc.
IC	Institutional Control
ICL	Interim Cleanup Levels
IRA	Interim Remedial Action
LNAPL	Light Non-aqueous Phase Liquid
µg/L	Micrograms per liter
MNA	Monitored Natural Attenuation
NAI	Normandeau Associates, Inc.
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NHDES	New Hampshire Department of Environmental Services
NHDOH	New Hampshire Department of Health and Welfare
NHSWM	New Hampshire Bureau of Solid Waste Management
NPL	National Priorities List
O&M	Operation and Maintenance
PA/SI	Preliminary Assessment/Site Investigation
PAHs	Polycyclic Aromatic Hydrocarbons
PRG	Preliminary Remediation Goal
RAO	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RfD	Reference Doses

LIST OF ABBREVIATIONS AND ACRONYMS

RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SSLs	Ecological Soil Screening Levels
START	Superfund Technical Assessment and Response Team
SVOC	Semi-volatile Organic Compounds
TCA	Trichloroethane
TMI	Troy Mills, Inc.
TML	Troy Mills Landfill
U.S.C.	United States Code
VOCs	Volatile Organic Compounds

1.0 INTRODUCTION

1.1 REGULATORY BACKGROUND

The United States Environmental Protection Agency (EPA) must implement a five-year review for the Troy Mills Landfill (TML) Superfund Site in Troy, New Hampshire, consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. §§ 9601 *et seq.,* and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. This is the first five-year review for the TML Site. This review is required by statute because the remedial action performed at the Site will not allow for unlimited use and unrestricted exposure following completion of the cleanup. The trigger for this statutory review was the signing of the Record of Decision (ROD), the initiation of the Remedial Action (RA), and on-Site completion of the selected remedial actions, all dated September 30, 2005.

CERCLA §121(c) as codified in 42 U.S.C. §9621(2) states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in Section 300.430(f)(4)(ii) of the NCP, as codified in CFR §300.430(f)(4)(ii), which states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

1.2 PURPOSE OF THE FIVE-YEAR REVIEW

The purpose of this statutory five-year review is to determine whether the remedy for the TML Site is protective of human health and the environment. The findings and conclusions of this review are documented in this report. The report also identifies issues found during the five-year review process and offers recommendations to address such issues.

1.3 PERSONNEL CONDUCTING THE REVIEW

The EPA is the lead agency assigned to complete a five-year review at the TML Site. The New Hampshire Department of Environmental Services (NHDES) and EPA entered into a Cooperative Agreement to implement the requirements of the ROD for the TML Site. NHDES serves as the lead State regulatory agency providing direct oversight of the implementation of the long-term remedial action at the Site. GZA GeoEnvironmental, Inc. (GZA) has been retained by NHDES and EPA to provide technical assistance associated with the long-term remedial action and preparation of this five-year review report.

1.4 REVIEW STATUS

This is the first, statutory five-year review for the TML Site.

2.0 SITE CHRONOLOGY

The chronology of the TML Site, including all significant events and dates, is included below in **Table 1**.

Table 1 Site Chronology

Year	Site Activities
1967-1968	Troy Mills, Inc. (TMI) begins using the Site as a solid waste landfill. Filling began in the southern half of the landfill in the area now designated as the former drum disposal landfill. Based on photographs, company records, and interviews with former employees, a weekly average of 15 - 20 55-gallon drums of hazardous waste were disposed of into trenches (Weston, 2003).
August 1978	First documented inspection at the TML Site performed by New Hampshire Bureau of Solid Waste Management (NHSWM) notes the existence of iron-stained water, characterized as leachate, emanating from the landfill.
October 1978	TMI obtains a permit from the New Hampshire Department of Health and Welfare (NHDOH) to operate a solid waste disposal facility on the Site for landfilling waste acrylic fabric, wood scraps, broken tools, and empty/damaged 55-gallon drums. Materials such as waste solvents, oils, plastisols, and liquids were specifically excluded from dumping at the Site.
October 1980	NHDES issued an order requiring TMI to cease dumping in the drum disposal landfill, excavate a minimum of three test pits in this area, and install well points for collecting groundwater samples. TMI contracted with Normandeau Associates, Inc. (NAI) to conduct a three-phase landfill leachate investigation.
May 1981	TMI filed a Notification of Hazardous Waste Site form with U.S. EPA for the drum disposal landfill.
August 1981	Phase I Investigation completed by NAI.
December 1981	Phase II Investigation completed by NAI.
July 1982	Phase III Investigation completed by NAI. Four monitoring wells were installed (M1, M2, M3, and M4).
April 1983	Eighteen shallow hand borings advanced at and near the TML: nine in the solid waste landfill, five soil borings in or adjacent to the drum disposal landfill, and one at the sand quarry where the TML cover material was obtained. Analytical results from the drum disposal landfill indicated the presence of chlorobenzene and ethylbenzene.
October 1983	NAI installed three additional monitoring wells (M5, M6, and M7) to determine if the active solid waste landfill was a source of contaminants detected in the groundwater.
November 1983	Based on the Phase II Investigation seismic geophysical survey results (1981), NAI estimated that the drum disposal landfill contained about 11,429 drums. Analytical results of samples from the drums and/or containerized wastes indicated the presence of eight volatile organic compounds (VOCs), four semi-volatile organic compounds (SVOCs), and three metals.
August 1984	NAI letter report presented results of additional seismic monitoring, topographic survey, groundwater and water quality monitoring conducted in July 1984. Concluded that low levels (140 parts per billion, ppb) of TCA detected at wells M6 and M7 may result from solid waste landfill. No VOCs were detected above analytical reporting limits in surface water.
November 1984	NUS Corporation collected groundwater samples from monitoring wells M2, M3, and M7.
January 1985	TMI entered into a Consent Agreement with NHDES which required the submittal of a Waste Analysis Plan, a Preliminary Risk Assessment, a Remedial Investigation/Feasibility Study, and an engineering design of the selected remedial alternative.

Year	Site Activities
March 1986	Level I Human Health Risk Assessment completed by Charles T. Main (CTM).
October 1988	Remedial Investigation (RI) (ChemCycle and GEI Consultants, Inc. [GEI]) completed.
November 1991	Risk Assessment Rockwood Brook Landfill (Menzie-Cura & Associates, and GEI) completed. Report concluded that there is no demonstrable risk to human health or aquatic biota under prevailing steady-state conditions.
December 1992	Draft Feasibility Study (GEI) completed. Recommended remedy is based on the absence of existing risks to the environment or human health, the lack of degradation of groundwater quality at the drum disposal landfill and the conclusion that unacceptable risks to human health or the environment would result only under extraordinary conditions.
February 1994	Based on a further review of historical waste disposal information, GEI provides TMI with a revised buried drum estimate of between about 6,400 and 9,100.
October 1995	Phase I Pre-Design Study (GEI) completed. Eleven monitoring wells were installed (MW-200 series), and LNAPL was observed in wells MW201S and MW203S. GEI continued to monitor surface water quality at the TML until November 1997.
June 1998	Two additional monitoring wells installed (MW201M and MW301), downgradient and crossgradient from the drum disposal landfill, as well as two piezometers (P1 and P2, south of the drum disposal landfill).
August 1998	GEI submitted a Technical Memorandum for the Phase II Pre-Design Investigation to NHDES.
September 1998	Phase II Pre-Design Report (GEI) submitted, detailing the pre-design engineering to evaluate alternatives for TML. The report proposed the installation of the hanging slurry wall combined with product collection and a flow-through (intrinsic) treatment gate downgradient of the drum disposal landfill and the location of the leachate outbreak.
November 1999	GEI proposed that a Preliminary Closure Plan and Engineering Report be submitted to NHDES by summer 2002.
April 2000	NHDES agreed to a modified version of a containment-based remedial action proposed in 1998, with the condition of commitment by TMI to long-term operation, maintenance, and monitoring. Cost of the proposed remediation estimated to be $1.7M.
December 2000	TMI deferred remediation of the drum disposal landfill from the originally proposed date to a later unspecified date due to unfavorable corporate financial and market conditions. Based on the remote location of the TML Site and monitoring data that did not suggest an imminent and substantial threat to public health or the environment, NHDES approved the deferral.
July 2001	NHDES requested U.S. EPA initiate an Expanded Site Inspection (ESI) and prepare a Hazard Ranking System package for the TML Site in case TMI became unable to implement the proposed remediation.
July 2001	NHDES issued Groundwater Management Permit No. GWP-198405082-T-001 with an expiration date of 6 July 2006.
October 2001	Superfund Technical Assessment and Response Team (START) personnel conduct on-Site reconnaissance to initiate the ESI.
November 2001	TMI filed for Chapter 11 bankruptcy (reorganization) on November 2, 2001.
December 2001	As part of the ESI, START collected leachate and soil samples from the drum disposal landfill, and sediment and surface water samples to assess the potential impacts of contaminant migration from the drum disposal landfill to downstream water bodies.
December 2001	TMI ceased disposal operations at the Troy Mills Landfill.
January 2002	NHDES requested TMI to take action in the Remedial Activities Contingency Plan for TML. Following a determination by NHDES (February 2002) that TMI did not have the resources or financing to undertake either the Contingency Plan or the long-term operation, maintenance, or monitoring of the TML, U.S. EPA was requested to implement the Contingency Plan and prepare for the removal of buried drums that still contained liquid product.
August 2002	START conducted a Site reconnaissance of the TML as part of U.S. EPA Program Preliminary Assessment/Site Investigation (PA/SI), including a geophysical survey to delineate the approximate boundary of the buried drum landfill and identify possible test pit locations. Results were reported in

Year	Site Activities
	Weston (November 2002).
September 2002	START personnel excavated 14 test pits on the TML, in the abutting drainage ditch, and in the downgradient wetland area. In test pits excavated in the drum disposal landfill, more than 20 intact or crushed drums were encountered at various depths between 0 and 8 feet below ground surface (bgs). Investigators noted that six drums contained either liquid or sludge.
September 2002	On September 4, U.S. Trustee filed a motion to convert TMI Chapter 11 to Chapter 7 (dissolution). The motion was granted on September 25.
September 2003	Placed on the National Priorities List (NPL) on September 29, 2003.
September-October 2003	Installation of LNAPL interceptor trenches.
June 2004	Shaw Environmental, Inc. (Shaw) completed a study to identify the most cost effective and timely cleanup approach for the drum disposal landfill.
July- November 2004	U.S. EPA START and Emergency and Rapid Response Services contractors excavated and removed approximately 7,670 55-gallon drums from the drum disposal landfill.
November-December 2004	Metcalf & Eddy, Inc. installed five additional 600-series groundwater monitoring wells at the Site (MW601S, MW601D, MW602S, MW602B, and MW603), and conducted groundwater, surface water, soil, and sediment sampling.
July 2005	The Reuse Assessment was issued by U.S. EPA.
September 2005	Final Remedial Investigation (RI) and Feasibility Study (FS) report was prepared by Metcalf & Eddy, Inc.
September 2005	The ROD was issued by U.S. EPA.
September 2005	The Preliminary Close Out Report was issued by U.S. EPA.
Fall 2006	Long Term Remedial Action Implementation including multi-media monitoring began.
November 2006	Three additional groundwater monitoring wells were installed at the Site by GZA including MW701, MW702S, and MW702D.
September 2007	Interim Remedial Action (IRA) Report prepared by GZA
June 2008	Bankruptcy Court approves settlement with the U.S., one of the terms of which is that TMI (through the Bankruptcy Trustee) grant an Easement Deed and Restrictive Covenants to the State of N.H. to establish Institutional Controls for the TML Site.
April 2009	Spring and Fall 2008 Monitoring Data Evaluation Report prepared by GZA
January 28, 2010	Institutional Controls "Easement Deed and Restrictive Covenants" recorded with the New Hampshire Registry of Deeds for the TML Site.
September 2010	Spring and Fall 2009 Monitoring Data Evaluation Report prepared by GZA

3.0 BACKGROUND

3.1 PHYSICAL CHARACTERISTICS

The TML Site includes an undeveloped, 10-acre portion of a larger 270-acre parcel of land (refer to **Figure 1** for a Locus Plan and **Figure 2** for a Site Plan) that encompasses the Groundwater Management Zone (GMZ) and includes the 2-acre former drum disposal area. The former drum disposal area is bordered by the following:

- To the north by an 8-acre solid waste landfill that is separately regulated by the NHDES;
- To the east by a former railroad bed currently used as a walking, ATV, and snowmobile trail, and beyond by undeveloped land;
- To the west by the main Site access road, a wetland area, and Rockwood Brook; and
- To the south by the eastern branch of Rockwood Brook and beyond by undeveloped land.

Rockwood Brook flows south to north and continues downstream to Sand Dam Pond, a recreational area located approximately 1 mile north of the Site. The former drum disposal area is located in an area outside of the 100-year floodplain of Rockwood Brook.

The town center is approximately 1.5 miles north of the TML Site. The town center includes a mix of commercial, municipal, and residential uses. The nearest residences are located on South Street, which parallels the eastern boundary of the Site about a ½ mile away. An estimated 3,886 people reside within about 4 miles of the Site.

3.1.1 Site Geology

The TML Site is situated on the eastern slope of the Rockwood Brook valley. The ground surface slopes from east to west toward the brook consistent with the overburden – bedrock contact. As such, overburden soils at the Site are thinner in the eastern portion of the Site than the western portion. The overburden consists of fill material overlying three distinct stratigraphic units: stratified drift and glacial till comprised of an ablation till and a lodgment till. From the 2005 RI, the geologic cross-section (**Figure 3**) depicts a sand layer that is typically less than about 6 feet in thickness where it has not been excavated and is mostly saturated in the low area west of the access road. Ablation till underlies the sand layer at the TML Site and consists of dense to very dense gray and brown sand, gravel and silt with few to some cobbles and boulders. The ablation till is thickest beneath the southwestern part of the former drum disposal area, where it is up to about 40 feet thick. This unit gradually thins toward Rockwood Brook, where it is less than about 10 feet thick, and is very thin to absent near the eastern edge of the drum disposal area where the bedrock is shallow.

The ablation till is underlain by a very dense lodgment till. The lodgment till at the Site is generally gray, well graded sandy silt to silty sand unit with gravel and occasional cobbles and boulders. The lodgment till is thickest at the bottom of the valley floor near Rockwood Brook, where boring logs indicate a thickness of greater than about 35 feet. This till unit thins eastward toward the eastern edge of the drum disposal area where the bedrock is shallow.

The lodgment till is underlain by biotite schist of the Littleton Formation. The biotite schist at the Site is typically dark gray, hard, folded, with high angle foliation and fractures, and includes quartz veins. Veins of granite, quartz, and pegmatite are also present within the schist. As reported in the RI, the strike and dip of the schistosity of the bedrock average N18E and 61NW, respectively, in nearby outcrops. Two sets of joints were also mapped in the outcrops, both with relatively steep dips. The strike of one was nearly parallel to the schistosity, and the other was orthogonal to it. In addition, the RI report also states that most of the MW-100-series borings were advanced about 10 feet into bedrock, and that the upper bedrock is moderately fractured schist with the degree of fracturing decreasing with depth. An exception to this general rule was found at well MW-108, which was drilled much deeper into bedrock due to the presence of a low-velocity seismic anomaly. An intensely to moderately fractured zone was found to extend to a depth of about 60 feet below the bedrock surface at MW-108.

3.1.2 Site Contaminant Hydrogeology

The 2005 RI reports two groundwater flow systems are present at the TML Site, including an overburden and bedrock system. The overburden groundwater flow system is inclusive of the sand, ablation till, and lodgment till units, with depth to groundwater generally ranging from about 5 to 20 feet bgs. Groundwater flow in the overburden is to the west or northwest, toward Rockwood Brook. The hydraulic gradient is steep to the east of the access road, reflecting the low permeability of the till deposits relative to the sand deposits. Refer to **Figure 4** and **Figure 5** for an interpretation of recent overburden groundwater flow directions. The hydraulic gradient decreases somewhat to the west of the access road, probably reflecting the higher permeability of the stratified drift deposits and the capture of groundwater by the drainage ditch along the access road (just down slope of the northernmost LNAPL collection trench) and to seepage and evapotranspiration in the Rockwood Brook Wetland Area.

Borehole permeability testing as part of the RI showed that in five tests, the hydraulic conductivity of the till ranged from 0.004 to 2 feet per day (ft/day) (ChemCyc1e, 1988). Given groundwater at the Site is typically present at a depth of about 5 to 20 feet bgs, the bulk of overburden groundwater flow likely occurs within the glacial till. Given the till includes an ablation upper unit deposit consisting of dense to very dense gray and brown sand, gravel and silt and a lodgment lower unit deposit consisting of very dense gray, sandy silt to silty sand unit with gravel and occasional cobbles and boulders, it is likely the overburden flow system is two tiered, with a shallower and more hydraulically conductive system (*i.e.,* values closer to 2 ft/day) in the ablation till, and a deeper and less conductive system (*i.e.,* values closer to 0.004 ft/day) in the lodgment till. This characterization of greater flow within the more conductive, shallower ablation till than in the less conductive, deeper lodgment till appears consistent with the results of the June 2010 vertical groundwater quality profiling data relative to the greatest differentials in VOC concentrations. For example, the 1,2,4-TMB concentrations (and certain other VOCs) detected at a depth of about 45 to 55 feet bgs at well TRY_MW-101 were generally higher than the concentrations from greater depth intervals. GZA notes the boring log for that location is consistent with the presence of a shallower ablation till and a deeper lodgment till. GZA also notes a similar trend for the vertical profiling data for well TRY_MW-201P (*i.e.,* higher petroleum VOC (pVOC)/DEHP concentrations at a shallower depth [ablation till] interval than the deeper [lodgment till] interval).[1]

However, based on the available data the direction of flow in the deeper part of the aquifer appears similar to that in the shallow overburden, to the west and northwest. Assuming the bedrock groundwater system is a regional flow system, its general direction of flow is consistent with discharge into the Connecticut River, about 20 miles to the west of the Site.

At some of the monitoring well locations at the Site, two or more wells exist with screens at different depths. These well clusters can be used to assess vertical hydraulic gradients at the Site and determine the potential for upward or downward groundwater flow in the overburden groundwater system. In general, vertical gradients are downward or neutral except in areas where groundwater is rising to discharge into a stream or wetland. Packer testing in two of the bedrock monitoring wells conducted as part of the RI indicated hydraulic conductivity values ranging from 0.002 to 0.13 ft/day. These values are slightly lower than those measured in the overburden and suggest that the bulk permeability of the rock is lower than that of the till. Given that the degree of fracturing/weathering appears to decrease with depth, it is likely that bulk bedrock groundwater flow similarly decreases with depth.

[1] GZA notes that this trend was reverse relative to detected *cis*-1,2-DCE concentrations likely due to the fact that its parent compound, likely TCE, is a DNAPL with a specific gravity greater than one that tends to migrate vertically downward in groundwater systems as opposed to pVOCs or DEHP, which have specific gravities less than one and generally remain atop water columns.

3.1.3 Contamination Sources and Exposure Pathways

The sources of contamination, release mechanisms, exposure pathways to receptors for the Site, as well as other Site-specific factors have been considered in the development of a Conceptual Site Model (CSM) for the TML Site. The risk assessment and response action for the Site is based on this CSM.

The historical sources of contamination for the Site were primarily the drummed wastes disposed of in the 2-acre former drum disposal area. The wastes that were contained in the drums were generated from vinyl casting, vinyl laminating, and foam rubber processes that were used at the TMI manufacturing facility to produce synthetic fabric products. Disposed contaminants included: vinyl chloride polymers; plasticizers (primarily bis [2-ethylhexyl] phthalate, butylbenzyl phthalate, and di-n-octyl phthalate); and solvents including methyl ethyl ketone (MEK), toluene, acetone, Solvesso 100™ (primarily Cg-C\o dialkyl and trialkyl benzenes), Varsol™ (mineral spirits or Stoddard solvent), and Chloroethene™ (primarily 1,1,1- trichloroethane). Although the 2004-2005 removal action successfully remediated the drummed wastes and heavily contaminated soils, some residual impacted soil remains on-Site beneath the permeable soil cap. In addition, dissolved phase groundwater contamination exists as well as an isolated area of LNAPL proximate to the interceptor trenches. The interceptor trenches have been designed to capture and manage the remaining LNAPL source at the Site.

Results of the RI and more recent water quality monitoring at the Site suggest that dissolved phase contamination is largely present within the overburden groundwater flow system and within at least two dissolved-phase plumes, as described below:

- A pVOC plume (**Figure 6 – pVOC Isopleth Map**) migrating towards the west with the highest concentration isopleth (1,000 parts per billion, ppb) located just west of well TRY_MW-205 and the leading edge to the west of the wetland near Rockwood Brook; and
- A cVOC plume (**Figure 7 – chlorinated VOC (cVOC) Isopleth Map**) migrating generally towards the west to northwest with the highest concentration isopleths (100 ppb) located just west of well TRY_MW-205 and the leading edge to the west of the wetland near Rockwood Brook.

Residual dissolved phase contamination is present to a much lesser extent in the bedrock aquifer.

Potential migration pathways in Site groundwater include transport through the unsaturated zone, by percolation through residual contaminated soil, and in the saturated zone by natural groundwater flow. Transport in surface water can occur during storm events by overland flow of surface water after contact with contaminated soils and wastes and suspension of contaminated soils. Once the overland flow waters reach the flowing surface water bodies, contaminated surface water and suspended sediment can migrate further downstream. Contaminated groundwater can also seep into flowing surface water and be transported downstream.

3.2 LAND AND RESOURCE USE

The following summarizes the current and projected land uses for the Site and surrounding area, as identified in the ROD and at the time of this five-year review.

3.2.1 Land Uses

The TML Site is undeveloped and is surrounded primarily by undeveloped woodlands, a gravel access road to the west, and a former railroad bed currently used as a recreational trail to the east. The area within ½ mile of the Site is primarily forested and residential. Wetlands are located downgradient from the former drum disposal area. Active sand and gravel operations are located within 1,000 feet of the TML Site to the north, northwest, and southwest. Based on review of recent aerial photographs, an area of agricultural land is located approximately 700 feet northeast of the Site.

The 270-acre former Troy Mills property and the immediately surrounding parcels are zoned "rural district." Allowable uses include: one- and two-family dwellings, agricultural uses, stables and riding academies, plant nurseries and greenhouses, veterinary hospitals, family daycare, and sand and gravel operations. Other allowable uses subject to a special permit are: conversion apartments, accessory apartments, family group day care, and group childcare centers.

As a practical matter, residential and other uses that require the construction of buildings and other significant structures within the TML Site would be limited due to the ICs in place at the Site to protect the remedy (the Easement Deed and Restrictive Covenants held by the State). Furthermore, as part of the settlement of the TMI bankruptcy, the property has been abandoned, so there presently is no landowner to develop the property.

As indicated in the ROD, reasonably-anticipated future uses of the Site include passive and active recreational use. Reasonably-anticipated future uses of adjacent land and in surrounding areas include recreational and residential use. The future land use assumptions for the Site and surrounding areas are based on discussions with State and local officials. In July 2005, EPA prepared a Reuse Assessment for the Site that summarizes information on current and the potential future land uses at the Site that were known to EPA at that time.

3.2.2 Groundwater and Surface Water Uses

The Town of Troy operates a public water supply system that serves the downtown Troy area and vicinity. Public water and sewer extend to residents on South Street for about 1,500 feet south of downtown and about ½ mile northeast of the Site. Troy's public water supply wells and the associated wellhead protection area are several miles north of the Site. A transient water supply well is located at the Meadowood Assembly Hall in Fitzwilliam, about a mile east of the Site. The nearest private drinking water wells are on South Street approximately ½ mile northeast of the Site.

NHDES has prepared a Groundwater Use and Value Determination and has determined that Site groundwater is classified as "medium," based primarily on the low yield of the underlying overburden and bedrock aquifers and the moderate likelihood of future drinking water use in the area. There is no current use of the groundwater at the Site and surrounding areas.

The potential future beneficial use of the groundwater at the Site and surrounding areas is for drinking water purposes assuming portions of the 270-acre property in vicinity of the Site are developed for residential use. The current use of the surface water at the Site and surrounding areas is recreational. Hikers, fishermen, hunters, birders and other similar users access and travel along Rockwood Brook. In addition, Sand Dam Pond, a recreational area located approximately one mile north of the Site, receives surface water discharges from Rockwood Brook. From Sand Dam Pond, Rockwood Brook enters the South Branch of the Ashuelot River. The potential beneficial use of the surface water at the Site and surrounding areas is recreational. Rockwood Brook and the Ashuelot River are designated as Class B

surface waters by NHDES. The Class B designation indicates surface waters that are "potentially of the second highest quality and are acceptable for swimming and other recreation, fish habitat and for use as a water supply following adequate treatment." There are no known drinking water intakes within 15 miles downstream of the Site. Evidence of fishing along Rockwood Brook, downstream of the Site, has been documented in the past.

3.3 HISTORY OF CONTAMINATION

Troy Mills, Inc. disposed of hazardous substances that were generated at its acrylic fabric manufacturing facility in Troy between 1967 and 1978. An average of 15 to 20 drums per week were dumped from trucks into trenches and compacted under the weight of heavy equipment. An estimated total of 6,000 to 10,000 55-gallon drums of waste liquid and sludge containing mostly plasticizers such as bis (2-ethylhexyl) phthalate and a petroleum-based solvent known as Varsol™ were disposed of in this area. Other drummed waste included pigments, surplus mixes, and tank residuals of vinyl resins, paint resins, and top coating products. Burial of drummed waste at the TML Site ceased in 1978 by order of the NHDOH.

Environmental investigations conducted throughout the 1980s and 1990s documented VOCs, sVOCs, and inorganic compounds in groundwater, leachate, surface soil, surface water, and sediment in and around the former drum disposal area.

Immediately to the north of the former drum disposal area is an 8-acre solid waste landfill separately regulated by the NHDES, which was used by Troy Mills, Inc. until 2001 for the disposal of waste fabric scraps and other miscellaneous solid waste from the company's manufacturing complex. The solid waste landfill is not part of the Superfund site.

3.4 INITIAL RESPONSE

In September 2003 the Site was listed on the NPL and a time-critical removal action was initiated. The first phase of the removal action included the installation of three LNAPL interceptor trenches to capture free product floating on the groundwater. The trenches consist of slotted rectangular concrete structures (4 feet high by 4 feet wide by 8 feet long) placed at the top of the water table. The downgradient sides of the trenches are covered with a geomembrane designed to limit the migration of LNAPL. The trenches were designed to capture LNAPL before it discharges along with groundwater along the western edge of the former drum disposal area. The LNAPL was recovered periodically via vacuum extraction or absorbed onto sorbent booms.

The second phase of the removal action, which was initiated in July 2004, involved the excavation of 7,692 buried drums, the removal of about 29,924 gallons of flammable liquid waste and about 3,099 cubic yards of sludge, and the excavation of about 26,244 tons of heavily contaminated soil, which were transported off Site for disposal at permitted facilities. Less contaminated residual soil, which met contaminant field screening levels developed by EPA in consultation with NHDES, were segregated from the soil and other materials to be disposed of off-Site and backfilled into the excavation. Post-excavation sampling and laboratory analyses conducted by EPA identified no residual soil with contaminant concentrations above NHDES soil screening criteria and confirmed that all soil with the potential to leach contaminants into groundwater had been effectively removed from the Site.

In summer 2005, EPA completed its removal action with the construction of a 2-foot-thick permeable soil cap over the excavation area to prevent direct contact risks to underlying residual contaminated soil. The permeable soil cap is constructed of a geotextile placed over the residual soil, a minimum of 18 inches of

sand from a nearby sand quarry, and 6 inches of topsoil which was hydroseeded to establish a vegetative cover that protects the surface of the cap from erosion. In addition, several drainage structures were constructed (riprap drainage swales) to limit cap erosion due to surface runoff.

The NHDES and EPA entered into a Cooperative Agreement to implement the requirements of the 2005 ROD for the TML Site. NHDES serves as the lead State regulatory agency providing direct oversight of implementation of the long-term remedial action at the Site, which began in 2006. The long-term remedial action includes continued maintenance of the LNAPL interceptor trenches and permeable soil cap, implementation of an environmental monitoring program and the maintenance and enforcement of ICs.

3.5 BASIS FOR TAKING ACTION

In 2005 subsequent to the removal actions within the drum disposal area, EPA completed a RI at the Site. As part of the RI, EPA collected and analyzed surface water, sediment, and wetland soil samples from nearby Rockwood Brook and the surrounding wetland, referred to as the "Rockwood Brook Wetland Study Area." EPA also evaluated historical groundwater data, collected and analyzed air and soil samples from locations throughout the TML Site, and evaluated analytical data collected over the course of the drum removal action.

The baseline human health risk assessment completed as part of the RI indicated that future recreational users and near-Site residents potentially exposed to residual contaminants of concern (COCs) in groundwater, LNAPL-contaminated leachate, and wetland soil via ingestion or direct contact may present an unacceptable human health risk (*e.g.,* cancer risk exceeding 1E-04 and non-cancer hazard index exceeding 1.0). As concluded in the RI and presented in the ROD, actual or threatened releases of residual hazardous substances from this Site, if not addressed, may present an imminent and substantial endangerment to public health or welfare.

The ROD-specified COCs for leachate included bis (2-ethylhexyl) phthalate.

The ROD-specified COCs for wetland soil included Manganese.

The ROD-specified COCs for groundwater included:

- Trimethylbenzne
- 1,4-Dioxane
- 2-Butanone
- 4-Isopropylene
- Benzene
- cis-1,2-Dichloroethene
- n-Butylbenzene
- n-Propylbenzene
- Tetrachloroethene
- Tetrahydrofuran
- Toluene
- Trichloroethene
- Vinyl Chloride
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Bis (2-ethylhexyl) phthalate
- Dibenzo(a,h)anthracene
- Naphthalene
- Pentachlorophenol
- Arsenic
- Boron
- Manganese

The baseline ecological risk assessment completed as part of the RI concluded that there is negligible ecological risk to organisms within Rockwood Brook surface water, sediment, and wetlands at the TML Site.

The long-term remedial actions as specified in the ROD were implemented to address the risks identified through monitored natural attenuation (MNA) of groundwater contaminants; collection and off-Site disposal of LNAPL for source control; monitoring of groundwater, surface water, sediment, leachate, and wetland soil; maintaining the permeable soil cap over the former drum disposal area; and implementing appropriate ICs.

4.0 REMEDIAL ACTIONS

4.1 REMEDY SELECTION

The selected remedy specified in the 2005 ROD included both source control and management of migration components to obtain a comprehensive remedy. The selected remedy incorporated components of the time-critical removal action completed by EPA in summer 2005 and additional remedial activities to address unacceptable levels of risk posed by Site COCs.

The source control remedial components of the selected remedy included:

- Removing all potential floating free product, LNAPL, before it can reach the nearby wetlands in a series of existing LNAPL interceptor trenches constructed by EPA in 2003 until LNAPL levels dissipate; and
- Maintaining the 2-foot-thick permeable soil cap constructed by EPA in 2005 to prevent potential contact with residual contaminated soil in the former drum disposal area. The permeable cap also allows precipitation to infiltrate through the cap and facilitate the cleanup of groundwater.

The management of migration remedial component of the selected remedy included:

- MNA of contaminated groundwater until groundwater cleanup levels are met.

Additional remedial components of the selected remedy included:

- Establishing ICs that restrict the use of contaminated groundwater for drinking water purposes until groundwater cleanup levels are achieved, restrict activities that would disturb the cap, prevent the disturbance of remedy components until they are no longer needed, and require notification of any changes in the use of the land;
- Implementing a comprehensive monitoring and sampling program to evaluate groundwater, surface water, leachate, sediment, and wetlands soil to ensure that natural attenuation processes are continuing as expected; and
- Since hazardous substances will remain at the Site, review of the remedy at least once every five years after the initiation of remedial action at the Site, as required by law.

Based on information relating to types of contaminants, environmental media of concern, and potential exposure pathways, response action objectives (RAOs) were developed to mitigate, restore, and/or prevent existing and future potential threats to human health and the environment. The RAOs for the selected remedy for the TML Site are:

- Contain and remove LNAPL to the extent practicable and prevent dermal contact exposure to LNAPL-contaminated leachate until the LNAPL has dissipated. The baseline human health risk assessment concluded that elevated levels of bis (2-ethylhexyl) phthalate in LNAPL-contaminated leachate pose a potential cancer risk and non-cancer hazard to future adult and young child recreational users of the Site.
- Limit migration of groundwater contaminants beyond a designated New Hampshire GMZ to downgradient areas, and over time, restore Site groundwater to safe drinking water levels. In addition, prevent ingestion of Site groundwater until it has been restored to safe drinking water levels. The baseline human health risk assessment concluded that elevated levels of VOCs, SVOCs, and metals pose a cancer and non-cancer hazard to future adult and young child residential drinking water users. In addition, the human health risk assessment concluded that an elevated level of naturally-occurring manganese in wetland soils released due to Site-related chemical processes and carried by the migration of contaminated groundwater to the adjacent wetlands poses a non-cancer hazard to future adult and young child recreational users.
- Implement EPA's presumptive capping remedy for landfill sites to continue to prevent direct contact with residual soils within the former drum disposal area, through the maintenance of the permeable soil cap installed as part of EPA's removal action. A risk assessment was not performed to quantitatively assess exposure risks from the residual soils as the soils are currently under a 2-foot soil cap and not available to exposure under current or reasonably-anticipated future recreational land uses. Implementation of EPA's presumptive capping remedy will ensure that the cap is maintained to prevent potential future exposures.

Interim Cleanup Levels (ICLs) were established in the 2005 ROD for groundwater and leachate for all COCs identified in the human health risk assessment found to pose an unacceptable risk to public health or were in exceedance of an applicable or relevant and appropriate requirement (ARAR). Refer to the table below for a summary of the COCs and the associated ICLs.

Table 2 Summary of Cleanup Levels Established in the 2005 ROD

Contaminant of Concern	ROD ICLs (µg/L)	NH AGQS (µg/L)
Groundwater		
1,4 Dioxane	3	3
Benzene	5	5
Tetrachloroethene	5	5
Trichloroethene	5	5
Vinyl Chloride	2	2
Benzo(a)pyrene	0.2	0.2
benzo(b)fluoranthene	0.05	0.05
bis(2-Ethylhexyl)phthalate	6	-
Dibenzo(a,h)anthracene	0.01	0.005
Pentachlorophenol	1	1
1,2,4-Trimethylbenzene	50	330
1,3,5-Trimethylbenzene	50	330

Contaminant of Concern	ROD ICLs (µg/L)	NH AGQS (µg/L)
2-Butanone	170	4000
P-Isopropyltoluene	50	260
cis-1,2 Dichloroethene	70	70
n-Butylbenzene	50	260
n-Propylbenzene	50	260
Tetrahydrofuran	154	154
Toluene	1,000	1,000
Naphthalene	20	20
Arsenic	10	10
Boron	620	620
Manganese	300	840
Leachate		
Bis (2-Ethylhexyl) phthalate	40	N/A

Notes:
ROD ICLs = Interim Cleanup Levels found in the ROD
AGQS = New Hampshire Ambient Groundwater Quality Standards
µg/L = micrograms per liter

The primary expected outcome of the ROD selected remedy was that the entire 2-acre former drum disposal area within the TML Site and impacted downgradient areas will no longer present an unacceptable risk to future recreational users and will be suitable for recreational use. In addition, approximately five years were estimated in the ROD as the amount of time necessary to achieve the goals consistent with recreational use. Another expected outcome of the ROD selected remedy was that groundwater at the Site will not present an unacceptable risk to future nearby residents and will be suitable for consumption in approximately 30 years. MNA modeling estimated 30 years as the amount of time necessary to achieve this outcome consistent with consumption of groundwater for drinking water purposes.

4.2 REMEDY IMPLEMENTATION

The remedy identified in the ROD was divided into source control, management of migration, and IC components.

4.2.1 Source Control

With the completion of the removal action in 2005, all known drums have been removed from the TML Site. Removal and off-Site disposal of the drums, their contents, and heavily contaminated soils represents a significant source control accomplishment and was incorporated into the final remedy.

Additional source control measures were required to address potential human health risks posed by LNAPL and residual low-level contaminated soils remaining in the former drum disposal area. Continued maintenance of the LNAPL interceptor trenches, installed by EPA in 2003 and operated since then, was selected because, to date, the trenches have effectively captured LNAPL and to make use of components that were already available and thus easy to implement.

Maintenance of the permeable soil cap that was constructed by EPA in 2005 as part of the removal action was also selected as the most effective alternative to address potential direct exposure risks to underlying residual contaminated soils. This alternative was selected because it effectively prevents potential direct

exposure risks to underlying soils, makes use of a permeable soil cap that has already been constructed and thus easy to implement, and facilitates the MNA management of migration remedy for contaminated groundwater. Groundwater monitoring of the capped contamination will be required as long as contamination exceeding CERCLA risk levels remains in place.

4.2.2 Management of Migration

MNA was selected as the management of migration remedy because it provides, in combination with the completed source control actions, for the cost-effective restoration of groundwater to drinking water standards, protects human health and the environment, complies with all ARARs, and will allow for the future use of groundwater for drinking water at the Site. This remedy will allow naturally occurring processes to continue reducing contaminant concentrations in groundwater. The 2005 ROD also required monitoring of groundwater, surface water, sediment, leachate, and wetlands soil to ensure the effectiveness of the remedy.

The key elements of the groundwater management of migration remedy:

- A network of monitoring wells will be included in the long-term groundwater monitoring program (refer to **Table 3** for well construction information and **Figure 2** for an illustration of well locations).
- Environmental monitoring will be performed in order to evaluate the progress and success of the groundwater remedy. Groundwater monitoring will consist of collecting samples from selected monitoring wells from areas both within and outside of contaminated groundwater areas. Groundwater samples will be analyzed for VOCs, SVOCs/PAHs, 1,4-dioxane, metals, water quality parameters (*i.e.,* alkalinity, chloride, nitrate, nitrite, ortho-phosphate, sulfate, and total organic carbon), and natural attenuation parameters (*e.g.,* methane/ethane/ethane, carbon dioxide, and volatile fatty acids).

  Surface water, sediment, leachate, and wetland soil samples will also be collected from locations within Rockwood Brook and the adjacent wetland to evaluate the effect of contaminated groundwater discharge on Rockwood Brook and its wetland (refer to **Figure 2** for an illustration of sampling locations). Surface water samples will be analyzed for VOCs, SVOCs, metals, and water quality parameters. Leachate will be analyzed for VOCs, SVOCs, and metals. Sediment samples will be analyzed for VOCs, SVOCs, and metals. Wetland soil samples will be analyzed for SVOCs and metals. The approximate dimensions or area of sediment in Rockwood Brook or the wetland soil in the wetland where ground water discharges to surface water, will be delineated using field techniques to estimate extent of the resource areas affected.

  The frequency of groundwater, surface water, sediment, leachate, and wetland soil sampling is currently spring and fall of each year. In the future, sampling may be less frequent if sampling data indicate consistent trend of the data.
- Environmental sampling of leachate mentioned above will be conducted on a periodic basis to evaluate contaminant concentrations. To confirm that LNAPL-related contaminants (primarily bis (2-ethylhexyl) phthalate) continue to remain below preliminary remediation goals (PRGs) for the leachate, periodic sampling and analysis of the leachate will be required.
- The wetland soil sampling mentioned above will be conducted primarily to determine if elevated levels of naturally-occurring manganese still persist in the wetland. Manganese is not a known contaminant attributable to wastes disposed of at the Site. However, manganese is often mobilized to groundwater from soils when an aquifer is in a chemically reduced state due to the

presence of organic carbon, either anthropogenic or natural. As the wetland is the discharge point for the groundwater, the dissolved-phase manganese contacting the atmosphere is oxidized and precipitates out in the wetland, accounting for the higher concentration in that area. Manganese concentrations in wetland soils should diminish as organic contamination in groundwater decreases, and this expected trend will be confirmed through wetland soil sampling.

- Once groundwater and leachate concentrations dissipate below PRGs, final wetland monitoring activities will be conducted and will include an evaluation of the wetland (which may include conducting a wetland functions and values assessment; visual observation of stained soil, iron staining, and/or stressed vegetation; etc.), as appropriate, to determine if the wetlands have been impacted and to assess what, if any, mitigation efforts may be required to mitigate the impact to the wetlands.
- There are an estimated four existing monitoring wells that are screened across significant depth, and as a result, cross-contamination between shallow and deeper aquifers is a potential. It was indicated in the ROD that these monitoring wells would be decommissioned as part of management of migration remedy.

4.2.3 Institutional Controls

Institutional controls will minimize the possibility of exposure to residual contaminated media. An "Easement Deed and Restrictive Covenants" for the TML Site is held by the State and was recorded with the Registry of Deeds on January 28, 2010. The ICs at the TML Site include:

- Boundaries have been established for GMZ pursuant to the New Hampshire Code of Administrative Rule Env-Or 607.05 (refer to **Figure 2** for an illustration of the GMZ for the TML Site). The extraction of any groundwater, injection of water into the ground or application of surface water in a manner that causes the migration of any contaminated groundwater in excess of the ICLs established under the ROD to a point beyond the applicable GMZ is prohibited;
- Activity and Use Restrictions (AUR) in the form of Restrictive Covenants held by the State have been established and prohibit the use of any portion of the area of the TML Site for residential use, childcare centers, playgrounds, athletic fields, or elementary or secondary schools. Digging, excavation, or construction within the AUR area is also prohibited unless approval is obtained from the NHDES with notification of the EPA; and
- In order to protect the integrity of the remedies at the TML Site, no action that impacts the integrity of the soil cap within the AUR shall be taken. Such prohibited activities include, but are not limited to, use of all ATVs or other similar vehicles, excavation, or other activities that lead to erosion or damage of the soil cap.

4.3 SYSTEM OPERATIONS/OPERATION AND MAINTENANCE

The first 10 years of Fund-financed operation are termed Long-Term Response Action activities (EPA 540-R-98-016, January 2000). After the initial 10-year period, the State funds the entire monitoring effort as operation and maintenance (O&M). See also Section 300.435(f)(3) of the NCP, 40 CFR § 300.435(f)(3). Several Long-Term Response Action tasks are required at the TML Site to preserve the integrity of the remedies including the following:

- Inspection and maintenance of the soil cap. Inspections are conducted to verify the following activities:

- Maintaining the vegetative growth and soil cover through annual reseeding, fertilizing, and mowing, as necessary;
- Repairing the soil cover if settlement occurs;
- Assessing that land use activities do not cause impacts to the cover materials;
- Maintaining the gates and any perimeter Site fencing; and
- Miscellaneous maintenance and inspection.

- Inspection and maintenance of the monitoring well network. Inspections are conducted to verify the following activities:
  - Maintenance or replacement of monitoring well locks;
  - Replacement of monitoring well protective casings or surface seals if damaged;
  - Redevelopment of monitoring wells if sediment accumulates in well; and
  - Replacement of damaged dedicated sampling equipment.
- Sampling and analysis of groundwater, surface water, sediment, wetland soil and leachate.
- Inspection and maintenance of the LNAPL interceptor trenches.

System operations and maintenance costs for 2006-2010 are summarized in **Table 4**.

Table 4 - Estimated Annual System Operations/O&M Costs

Year	Total Cost ($)
2006	$206,000
2007	$206,000
2008	$225,000
2009	$314,000
2010 (estimated)	$286,000

5.0 PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

This is the first five-year review for the TML Site. Therefore, the following topics will be discussed as part of subsequent five-year reviews.

- Protectiveness statements from last review;
- Status of recommendations and follow-up actions from the last review; and
- Status of other prior issues

6.0 FIVE-YEAR REVIEW PROCESS

This five-year review was conducted in accordance with EPA's most current five-year review guidance (EPA, 2001). Tasks completed as part of this five-year review include review of pertinent Site-related documents, interviews with parties associated or familiar with the Site, an inspection of the Site, a review of the current status of regulatory or other relevant standards, and a data review.

6.1 ADMINISTRATIVE COMPONENTS

The Five-Year Review Team was led by Richard Hull of EPA, other EPA members with expertise in geology and hydrology (Jean Choi), risk assessment (Margaret McDonough), Site history (Mike Jasinski), legal issues (David Peterson), and Quality Assurance (Charles Porfert); Kenneth Kettenring and Sharon Perkins of NHDES, and technical support from GZA (Steven Lamb, Michael Asselin, Amy Doherty, and Richard Schaffner).

6.2 COMMUNITY NOTIFICATION AND INVOLVEMENT

Community involvement in the five-year review process for the TML Site was initiated by EPA's publication of a legal notice in the Keene Sentinel on May 8, 2010 (see **Appendix A**). Interviews were also undertaken by the EPA review team with various members of the public and Agencies (see **Appendix B**).

Once this document has been finalized, a public notice will be published in the local paper, and the document will be available on the EPA website and at the OSRR Records and Information Center (Boston, Massachusetts) and in the local repository located in the Gay-Kimball Library in Troy, New Hampshire.

6.3 DOCUMENT AND ARARs[2] REVIEW

Site-related documents reviewed as part of this five-year review include the following:

- Remedial Investigation (Metcalf & Eddy, 2005);
- Final Feasibility Study (Metcalf & Eddy, 2005);
- Record of Decision (EPA, 2005);
- Preliminary Close Out Report (EPA, 2005);
- Troy Mills Landfill Superfund Site Reuse Assessment (EPA, 2005);
- Interim Remedial Action Report (GZA, 2007);
- Spring and Fall 2008 Data Evaluation Report (GZA, 2009);
- Easement Deed and Restrictive Covenants (NHDES, 2010); and
- June 2009 Through June 2010 Sampling Data Report (GZA, 2010), included as **Appendix C** of this report.

[2] A number of Federal ARARs identified have been either rescinded or renamed and a number of State ARARs have been reorganized and renumbered (as noted in this subsection). None of these regulatory changes affect either the cleanup standards cited in the ROD or the implementation and long-term maintenance of the remedy.

The following federal ARARs were identified in the 2005 ROD for the selected remedy at the TML Site:

- Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 *et seq.* (RCRA) - Hazardous Waste Identification and Listing (40 C.F.R. Part 261) – adopted under delegated NH hazardous waste regulations;
- RCRA - Hazardous Waste Generator Requirements (40 C.F.R. Part 262) – adopted under delegated NH hazardous waste regulations;
- RCRA - Hazardous Waste Facility Requirements (40 C.F.R. Part 264) - adopted under delegated NH hazardous waste regulations;
- RCRA Air Emissions Standards (40 C.F.R. 264, Subpart AA and BB);
- Clean Air Act, 42 U.S.C. §§ 7401 *et seq.* (CAA) - National Emission Standards for Hazardous Waste Pollutants (NESHAPS) (40 C.F.R. Part 61);
- Clean Water Act, 42 U.S.C. §§ 1251 *et seq.* (CWA) - Ambient Water Quality Criteria (renamed National Recommended Water Quality Criteria) (promulgated under 33 U.S.C. § 304(a); 40 C.F.R. 122.44);
- CWA – Dredge and Filling of Wetlands (40 C.F.R. Part 230 and 33 C.F.R. Parts 320-323);
- Safe Drinking Water Act, 42 U.S.C. §§ 300f *et seq.* (SDWA) - Maximum Contaminant Levels (40 C.F.R. Part 141, Subparts B and G);
- SDWA – Maximum Contaminant Levels Goals (40 C.F.R. Part 141, Subpart F);
- Protection of Floodplains (40 C.F.R. Part 6, Appendix A) (since rescinded);
- Protection of Wetlands (40 C.F.R. Part 6, Appendix A) (since rescinded); and
- Fish and Wildlife Coordination Act (16 U.S.C. §§ 661 *et seq.*)(regulations identified at 40 C.F.R. § 603.2(g) have been rescinded).

The following more stringent State ARARs were identified in the 2005 ROD for the selected remedy at the TML Site:

- New Hampshire Drinking Water Quality Standards (formerly Env-Ws 316, 317, 319 - now Env-Dw 702-705);
- New Hampshire Criteria and Conditions for Dredge and Fill in Wetlands (Env-Wt 300);
- New Hampshire Hazardous Waste Identification and Listing Rules (formerly Env-Wm 403.6, now Env-Hw 403.6);
- New Hampshire Hazardous Waste Generators Rules (formerly Env-Wm 500, now Env-Hw 500);
- New Hampshire Hazardous Waste Facility Owner and Operator Rules (formerly Env-Wm 700, now Env-Hw 700);
- New Hampshire Hazardous Waste – Miscellaneous Units (formerly Env-Wm 708.03(d)(8), now Env-Hw 708.03(d)(8));
- New Hampshire Solid Waste Management (formerly Env-Wm 100-300, now Env-Sw 100-200, 800);

- New Hampshire Reporting and Remediation of Oil Discharges Rules (formerly Env-Wm 1600, now Env-Or 605.3-605.4);
- New Hampshire Air Pollution Rules (formerly Env-A 100 – 3800, now Env-A 100 - 4800);
- New Hampshire Ambient Air Quality Standards (Env-A 300);
- New Hampshire Fugitive Dust Control (Env-A 1002);
- New Hampshire Regulated Air Toxic Pollutants Rules (Env-A 1400);
- New Hampshire Well Abandonment Rules (formerly listed as Env-We 604, but actually We 604);
- New Hampshire Groundwater Quality Criteria (formerly located in Groundwater Protection Standards, Env-Wm 1403, now Env-Or 603);
- New Hampshire Groundwater Management (formerly located in Groundwater Protection Standards, Env-Wm 1403, now Env-Or 607);
- New Hampshire Groundwater Release Detection Rules (formerly located in Groundwater Protection Standards Env-Wm 1403, now Env-Or 700);
- New Hampshire Groundwater Monitoring Well Rules (formerly Env-Wm 1403.27, now Env-Or 704.02);
- New Hampshire Surface Water Quality Regulations (formerly Env-Ws 1700, now Env-Wq 1700); and
- New Hampshire Alteration of Terrain (formerly Env-Wm 415, now Env-Wq 1500).

The following policies, advisories, criteria, and guidance's were also considered during the implementation of the remedial action:

- EPA Reference Doses (RfDs);
- EPA Carcinogenicity Slope Factors (CSFs);
- EPA Health Advisories – Office of Drinking Water (Manganese);
- EPA Guidance on Use of MNA at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites;
- EPA Guidance on Risk-Based Clean Closure;
- EPA Guidance on Presumptive Remedy for CERCLA Municipal Landfill Sites;

6.4 DATA REVIEW

The RI identified a plume of groundwater contamination consisting of organic contaminants (alkylbenzenes, chlorinated solvents, phthalates, and toluene). It was concluded that removal of the buried drums eliminated the primary source of on-going contamination to groundwater. However, the baseline human health risk assessment completed as part of the RI indicated that exposure to residual COCs in groundwater, LNAPL-contaminated leachate, and wetland soil via ingestion or direct contact may present an unacceptable human health. MNA was selected as the management of migration remedy.

The 2005 ROD requires monitoring of groundwater, surface water, sediment, leachate, and wetlands to ensure the effectiveness of the remedy. The long-term monitoring program began in 2006 to monitor Site-related contamination in the various media; data for each media are summarized below.

Soils within the former drum disposal area have been remediated and require no further action except for annual inspections and maintenance of the soil cap, as long as a CERCLA risk remains present.

Inspection of the trenches and periodic sampling of trench water and leachate has been conducted. However, no measurable LNAPL has been observed in any of the three trenches since December 2005.

The following provides a summary of the monitoring data results by media. Refer to **Appendix C** that includes the June 2009 Through June 2010 Sampling Data Report.

6.4.1 Groundwater

6.4.1.1 Groundwater Flow Direction

Consistent with historical data collected by GZA and others between 2006 and 2009, the predominant groundwater flow direction in the overburden at the Site is inferred to be to the west and northwest toward Rockwood Brook. Refer to **Table 6** for tabularized groundwater elevation data and **Figure 4** and **Figure 5** for the most recent overburden groundwater elevation contours inferred from June 8, 2009 and September 30, 2009 water level measurements, respectively. These data are generally consistent with the observed Site and vicinity topographical features as well as historical inferences.

Although not contoured due to insufficient number of data points, water level measurements from bedrock wells along a northwest transect across the Site (*i.e.,* TRY_MW-701, TRY_MW-603, TRY_MW-602B, TRY_MW-108, TRY_M-7D, and TRY_MW-105D) suggest that groundwater flow direction in bedrock is consistent with that observed in overburden groundwater. Information included in the RI indicated that the bedrock surface slopes downwards from east to west across the Site, towards Rockwood Brook. Actual groundwater flow within the bedrock will follow specific fractures at varying orientation and dip angles, as well as hydraulic gradient and would be considerably more complex than the general assumed westerly flow direction presented herein. Additional bedrock wells are needed to further characterize groundwater flow direction in bedrock within the dominant fractures beneath and downgradient of the drum disposal area.

Water level measurements at the TRY_MW-601 and TRY_MW-702 well clusters generally indicated a downward and neutral vertical gradient, respectively. At the TRY_MW-104 cluster, water level measurements indicated a slight upwards vertical gradient, consistent with historical data within this discharge area proximate to Rockwood Brook and the wetland area. An upwards vertical gradient continues to be observed at the TRY_MW-602 well cluster, suggesting that at this location there is a potential for groundwater from bedrock to flow vertically upwards into the overlying till.

6.4.1.2 Groundwater Quality

The following summarizes the groundwater analytical results (refer to **Table 7**):

- For the purposes of background water quality, wells TRY_MW-508 (shallow overburden groundwater) and TRY_MW-701 (bedrock groundwater) situated east and southeast of the former drum disposal area, respectively, are routinely sampled. Since these wells have been sampled (2009 and 2006, respectively), analytical results have indicated that no VOCs or SVOCs

were detected in background samples above laboratory reporting limits. Of the metals detected, none have exceeded their respective AGQS in background overburden or bedrock groundwater.

- Refer to **Figure 8** for an illustration of regulatory exceedances in groundwater. VOCs detected in groundwater that exceeded either the AGQS or ROD ICLs included the petroleum constituents 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, n-propylbenzene and naphthalene and chlorinated VOCs including cis-1,2 dichloroethene (DCE) and vinyl chloride (VC). SVOCs detected in groundwater that exceeded the AGQS and ROD ICL included bis (2-ethylhexyl) phthalate. Of the metals detected, only manganese exceeded the applicable AGQS or ROD ICL.

- Consistent with historical data results from the RI, the source of residual contamination in groundwater continues to be the former drum disposal area. The spatial variability of contaminant concentrations observed is suspected to be related to the historical nature of discrete drum releases throughout this area as evidenced by comingled plumes with different signature contaminants.

- The area of highest contaminant concentrations and resulting interpreted contaminant plume continues to be within overburden groundwater along the northern side of the former drum disposal area with the primary axis trending along the northwest flow path and including wells TRY_MW-602S, TRY_MW-205, and TRY_MW-101. At this time, however, there are a limited number of bedrock wells within the former drum disposal area. Additional bedrock wells are needed to further characterize contaminant migration within the dominant fractures beneath and downgradient of the drum disposal area.

- Consistent with the RI, the northern plume appears to originate within the northeastern corner of the former drum disposal area. Contaminants are largely petroleum in nature within the northern plume area and include the trimethylbenzenes, alkylbenzenes, BTEX compounds (benzene, toluene, ethylbenzene, and xylene), and naphthalene. The trend of total VOCs observed at wells TRY_MW-205 and TRY_MW-602S appears to be increasing (since 2005) while the trend of total VOCs at well TRY_MW-101 appears to be generally neutral (since 2005). Although there is a general concentration trend upward as noted above, it is important to note that the chemical concentrations do oscillate up and down which typically happens after a drum/soil removal action where the soil is disturbed. Since these three wells are the closest to the suspected residual sources in the former drum disposal area, it is expected that the chemical concentrations would tend to remain elevated for some time after the removal and remedial actions at the TML Site.

- Elevated concentrations of similar petroleum contaminants were also observed within the plume fringes to the south (TRY_MW-204 and TRY_MW-601S/D), east (TRY_M-2, TRY_M-7, TRY_M104S, and TRY_MW-501), and north (TRY_MW-301). Refer to **Figure 9,** which illustrates the distribution of VOCs at the Site. The trend of total VOCs observed at these well locations since 2005 appears to generally be neutral.

- A chlorinated VOC plume is co-mingled with the petroleum plume with highest concentrations observed at well TRY_MW-201M, the source of which appears to be separate from the northern largely petroleum plume. The predominant chlorinated VOC detected at the Site continues to be DCE; however, concentrations of other chlorinated VOCs have been detected including tricholorethene, VC, 1,1,1,-tricholorethane (1,1,1 TCA) and 1,1,-dichloroethane (1,1 DCA). Downgradient of TRY_MW-201M, DCE concentrations declined an order-of-magnitude in overburden groundwater at wells TRY_M-2, TRY_M104S, and TRY_MW-501 (refer to **Figure 9**). VC was observed to be elevated at these locations, at concentrations which exceeded the AGQS and ROD ICL.

- Consistent with the RI, well couplets situated within the historical plumes at wells TRY_MW-602S (shallow overburden) / TRY_MW-602B (bedrock), contaminant concentrations appear higher within the overburden relative to bedrock whereas at TRY_MW-601S (shallow overburden) and TRY_MW-601D (deep overburden), contamination is higher in deep overburden.
- Of the wells sampled for 1,4 dioxane, low concentrations (below the applicable AGQS and ROD ICL) were detected at wells TRY_MW-201M and TRY_M-7. The concentrations of 1,4 dioxane in groundwater are consistent with the distribution of chlorinated VOCs.
- Bis (2-ethylhexyl) phthalate was only detected at three locations in 2009 including wells TRY_MW-205 (historically detected at this location), TRY_MW-204, and TRY_MW-201P (refer to **Figure 10**). The trend of bis(2-ethylhexyl)phthalate concentrations observed at TRY_MW-205 more recently (between 2008 and 2009) appear to be neutral; however, since 2005, have decreased. Bis (2-ethylhexyl) phthalate has not previously been detected at TRY_MW-204. At this time, insufficient data exists to confirm the persistence of bis(2-ethylhexyl)phthalate at this location. Recent groundwater analytical data collected in June 2010 indicated elevated bis (2-ethylhexyl) phthalate concentrations at well TRY_MW-201P ranging from 151 μg/L at a depth of 41.5 feet bgs to 1,240 μg/L at a depth of 11.5 feet bgs. The turbidity data collected at these locations was elevated indicating possible entrainment of fine sediments. The detection of bis (2-ethylhexyl) phthalate at well TRY_MW-201P is most likely related to the pooling of LNAPL in front of Trench C (as indicated by the LNAPL observed in well TRY_MW-201S).
- Manganese was detected in groundwater above the respective AGQS and ROD ICL in most Site wells as illustrated on **Figure 11**. There is no apparent trend of manganese concentrations since 2005. Since 2005, arsenic has not generally been detected in groundwater above the AGQS or ROD ICL and as a result, beginning in 2009, was no longer an analyte. The distribution of other geochemical parameters and dissolved gases at the Site are illustrated on **Figure 11** and **Figure 12**, respectively.

6.4.2 Surface Water and Sediment – Rockwood Brook

Refer to **Table 8** and **Table 9** for a summary of the surface water and sediment analytical results tabulated since 2006, respectively. The following summarizes the surface water analytical results:

- Recent historical data (since 2006) indicates that no VOCs or SVOCs have been detected in surface water above laboratory reporting limits.
- Manganese has been detected in surface water above laboratory reporting limits; however, there currently is no New Hampshire surface water criteria for manganese. The concentration of manganese in surface water was observed to be generally consistent with historical concentrations at the surface water quality sampling locations.

The following summarizes the sediment analytical results:

- Recent historical data (since 2006) indicates that no VOCs or SVOCs were detected in sediment above laboratory reporting limits. Bis(e-ethylhexyl)phthalate was detected in 2006, but has not been detected since that time and there is currently no NOAA screening criteria for that phthalate.

- Of the metals analyzed for, none exceeded the NOAA screening values available. The metals concentrations detected in 2009 appear generally consistent with historical concentrations at the sediment sampling locations.

6.4.3 Wetland Soil

Refer to **Table 10** for a summary of the wetland soil analytical results tabulated since 2006. The following summarizes the wetland soil analytical results:

- The only SVOC detected in wetland soil above laboratory reporting limits is bis (2-ethylhexyl) phthalate, which was detected at all four sample locations. There is currently no SRS to evaluate the bis (2-ethylhexyl) phthalate data; however, the data appears generally consistent with historical concentrations detected at these locations and appears to show a slight declining temporal trend; and
- Of the metals detected, only the concentration of manganese at TRY_WES-01 (the furthest downgradient location) exceeded the applicable SRS. The concentration of manganese at this location in 2009 was considerably higher relative to those detected in 2008 and 2006. The concentration of manganese at TRY_WES-02 was also elevated; however, it was just below the applicable SRS.

6.4.4 Leachate

Refer to **Table 11** for a summary of the leachate analytical results tabulated since 2006. No LNAPL has been observed in leachate. The following summarizes the leachate analytical results:

- Of the VOCs detected, none exceeded their respective Surface Water Criterion (where available). The contaminants detected included various petroleum and chlorinated VOCs, consistent with the observed groundwater contamination. Total VOCs has generally remained consistent between 2006 and 2009;
- Bis (2-ethylhexyl) phthalate was detected in leachate during both rounds in 2008, but was not detected above laboratory reporting limits in any other years. No other SVOCs were detected in leachate above laboratory reporting limits; and
- Manganese was detected in leachate; however, there is currently no Surface Water Criterion to evaluate the data against. The concentration detected is consistent with historical manganese concentrations in leachate.

6.4.5 Inspection of the Interceptor Trenches and LNAPL Measurements

Historically, well TRY_MW-201S and Trench B have contained measurable LNAPL (refer to **Figure 2**). The apparent LNAPL thickness was measured at well TRY_MW-201S using an oil-water interface probe on June 8, 2009 (1.0 feet) and on October 5, 2009 (0.9 feet). Trace LNAPL was also observed at well TRY_MW-201P (apparent thickness of 0.01 feet). The presence of LNAPL in this area suggests a small continuing source area proximate to this well just east of the interceptor trenches.

Visual inspection of LNAPL interceptor trenches A, B, and C were conducted on June 8, 2009 and on October 5, 2009. Consistent during both monitoring rounds, standing water was observed within the absorbent boom situated in Trench B. Apparent product blebs and/or a partial sheen was observed on the water surface within Trench B, and a trace amount of LNAPL (as noted by a periodic sustained audible

"beep") was measured from the centrally located manhole using an oil-water interface probe. No visual evidence (sheens or blebs) of LNALP was observed in Trenches A and C.

6.5 SITE INSPECTION

A Site inspection was conducted on April 15, 2010, which included visual inspection of the former drum disposal area, gates/fencing, and Site groundwater monitoring wells on the TML Site. The Site inspection was performed by Michael Jasinski of the EPA. Also present were Jean Choi, Margaret Mcdonough, and Cornell Rosiu from EPA, Kenneth Kettenring and Sharon Perkins of NHDES, and Michael Asselin, Steven Lamb, and Amy Doherty of GZA.

The soil cap appeared to be in good condition with a considerable amount of vegetation growing throughout the area. The trenches appeared to be in good condition. The following were identified during the Site inspection relative to the monitoring well network that requires repair and/or replacement:

- Apparent vandalism of two of the monitoring wells including TRY_MW-301 and TRY_MW-205. The well lock and caps were broken off both wells. The dedicated bladder pump in well TRY_MW-301 had been removed and discarded in the woods. The bladder pump included in TRY_MW-205 appeared to be unharmed.
- Damaged well caps were also observed at TRY_M-2 and TRY_MW-502.
- The protective standpipe at well TRY_MW-105D has sustained damage from an unknown action. GZA noted during the fall 2009 sampling round that the downhole PVC casing was visibly cracked and dislodged at the ground surface causing an obstruction. The obstruction prevented sampling equipment from being installed in the well.
- The northern chain link gate had been previously damaged by vandalism as well, but had subsequently been repaired by GZA prior to the Site visit. An off-road vehicle by-pass and ford has been constructed around the southern gate.

It was noted that there are no signs prominently displayed that deter access to the Site at either of the inner gated entrance nor the access roadway to the former drum disposal area.

Refer to **Appendix E** for the Site Inspection Form.

6.6 INTERVIEWS

As required in the EPA Five-Year Review Guidance Document, an interview was conducted with the Town of Troy, New Hampshire. The Interview Record form is provided in **Appendix B**.

7.0 TECHNICAL ASSESSMENT

This section addresses the three technical assessment questions identified in the EPA's Five-Year Review guidance document as noted below:

- Question A: Is the remedy functioning as intended by the decision documents?
- Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of remedy selection still valid?

- Question C: Has any other information come to light that could call into question the protectiveness of the remedy?
-

The following discussion details how each question has been answered based on the findings of this five year review.

7.1 *QUESTION A*: IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?

Yes.

7.1.1 Source Control

The source control remedial components of the selected remedy includes continued maintenance of the series of existing LNAPL interceptor trenches for the removal of LNAPL before it can reach the nearby wetlands and maintenance of the 2-foot-thick permeable soil cap constructed to prevent potential contact with residual contaminated soil in the former drum disposal area. The following provides information regarding the assessment of each of the source control components of the remedy.

7.1.1.1 LNAPL Interceptor Trenches

The 2005 ROD specifies that the interceptor trenches will continue to be maintained and operated until LNAPL levels dissipate, at which time, they will be kept available for continued monitoring as part of the groundwater component of the remedy. The ROD further states that if continued monitoring is no longer necessary, the interceptor trenches will be decommissioned in a manner determined appropriate at that time. The risk assessment concludes that as long as the LNAPL interceptor trenches are maintained properly and operated as designed, future risk associated with LNAPL-contaminated leachate exposures are estimated to be below risk management criteria.

Although measurable product has not been observed in any of the trenches other than a trace amount since late fall 2005, persistent LNAPL has been observed in nearby/upgradient well TRY_MW-201S (apparent thickness close to one foot) as well as a trace amount of measured LNAPL at the upgradient well TRY_MW-201P. Review of the LNAPL Interceptor Trench design indicates that a fine woven mesh wire fence (14.5 gauge) with a filter cloth laid over the surface of the wire fence was installed on the up-gradient side of the trenches to prevent silt fines from entering the trenches. Recent 2009 groundwater elevation measurements collected at well TRY_MW-201S indicate that the groundwater level and LNAPL layer are at the top of Trench C. Despite the groundwater level outside the trench being located at the top of the trench, the water level in the trench is at least four feet lower. This information suggests that groundwater and LNAPL may no longer be flowing into the trench, most likely due to the trench's up-gradient filter cloth becoming plugged with fine soil particles as well as soil bacteria metabolizing the petroleum constituents. It is suspected that residual LNAPL is collecting on the up-gradient side of the filter cloth and may be pooling in this area. This is further supported by the fact that LNAPL had not been observed in TRY_MW-201S prior to 2006 as groundwater had been sampled from this location in 2005. During this time frame is when active LNAPL recovery was occurring at the trenches. No observations of LNAPL surfacing in leachate or the down-gradient wetlands have been made as of the April 15, 2009 Site Inspection.

Based on these observations, it is unclear if the LNAPL interceptor trenches have reached the end of their useful life or they require maintenance as they may no longer be functioning as intended.

Supplemental investigations of the physical condition of the trenches and the presence of residual LNAPL observed at TRY_MW-201S are required to evaluate the current effectiveness of the LNAPL trenches in capturing residual LNAPL at the Site.

7.1.1.2 Permeable Soil Cap - Former Drum Disposal Area

A risk assessment was not performed to quantitatively assess exposure risks from the residual soil as these soils are currently under a 2-foot soil cap and not available for potential exposure under current or reasonably-anticipated future recreational land uses. The capping remedy is effective if properly maintained to prevent potential future exposures. Inspection of the cap as discussed above indicated the cap was in good condition and is functioning as intended.

7.1.2 Management of Migration

The management of migration remedial component of the selected remedy includes MNA of contaminated groundwater until groundwater cleanup levels are met. The remedy is functioning as intended, although insufficient time has elapsed since implementation of the MNA groundwater remedy to provide definitive trends and reassess cleanup times.

The interim cleanup goals for groundwater remain reasonable, given that there are no known consumers of the groundwater for drinking water purposes. The focused MNA evaluation performed as part of this five-year review on selected surrogate COCs indicates that there is primary and secondary evidence in support of MNA serving as a management of migration strategy. The evaluation confirms that there is an overall decreasing trend in groundwater contaminant concentrations following the 2004-2005 removal actions (refer to **Appendix D**). Additional data from future sample events will improve the data set and provide a more comprehensive assessment of concentration trends in the groundwater and the effectiveness of MNA to meet the RAOs.

7.2 ***QUESTION B:*** ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEANUP LEVELS, AND RAOS USED AT THE TIME OF THE REMEDY SELECTION STILL VALID?

Yes. The exposure assumptions and RAOs remain valid, and land use has not changed; the Site remains within a large undeveloped parcel of land. Groundwater in the vicinity of the Site is not used as a potable water supply.

Some minor changes in toxicity values have occurred after the submittal of the 2005 ROD, but none of these changes are expected to change the risk characterization conclusion or impact the interim cleanup levels presented in the 2005 ROD. The 2005 ROD stated that "Because the baseline human health risk assessment revealed that future recreational users and near-Site residents potentially exposed to compounds of concern in groundwater, LNAPL-contaminated leachate, and wetland soil via ingestion or direct contact may present an unacceptable human health risk (e.g., cancer risk exceeds 1E-4 and HI exceeds 1.0), actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health or welfare." The changes in toxicity values summarized in **Table 1** would not change the above statement.

The changes in toxicity values will not impact the interim cleanup levels presented in the 2005 ROD. The interim groundwater cleanup levels established for the Site were based on the ARARs. As these interim cleanup levels were not risk-based, the changes in toxicity values will not result in changes of the interim cleanup levels for groundwater.

The leachate cleanup level for bis (2-ethylhexyl) phthalate was a risk-based level for the protection of recreational dermal contact exposure. The RfD value for bis (2-ethylhexyl) phthalate used in the 2005 ROD is still valid. Although inhalation unit risk value is available for bis (2-ethylhexyl) phthalate, the level in ambient air is expected to be minimal and therefore inhalation is not a complete exposure pathway. Based on the above discussion, the risk-based cleanup goal for bis (2-ethylhexyl) phthalate in leachate is still valid.

7.2.1 Review of Toxicity and Chemical Characteristics

7.2.1.1 Changes in Toxicity Values Used in Human Health Risk Assessment

Changes in Toxicity Values

Changes of toxicity values for the COCs at the Site are summarized in **Table 1** and briefly discussed in this Section.

The following changes would result in elevated risk estimates relative to the 2005 risk results:

- Toluene. The current oral chronic reference dose (RfD) value available on IRIS is lower than the RfD value presented in the 2005 ROD;
- 1,3,5 Trimethylbenzene. A screening level RfD value that is lower than the PPRTV presented in the ROD is available;
- Naphthalene. An inhalation reference concentration (RfC) value is available on IRIS. A unit risk value is available from CalEPA;
- N-propylbenzene. A PPRTV screening level RfC value is available;
- 1,4 Dioxane. A revised cancer slope factor (CSF) is available on IRIS.

The other toxicity values are either the same or less stringent compared to the values presented in the 2005 ROD (e.g., oral chronic reference dose value for n-propylbenzene, inhalation unit risk value and oral CSF for trichloroethene, and inhalation reference concentration value for toluene are less stringent relative to the 2005 values). The RfD for 1,4 dioxane was not included in the 2005 ROD. An RfD is not available for n-butyl benzene. An RfC is not available for trichloroethylene or 1,3,5 trimethylbenzene.

Table 5 Summary of Change of Toxicity Values

COC	Oral Chronic Reference Dose (mg/kg-day)		Source
	2005 ROD	Current	
1,3,5-trimethylbenzene	5.0E-02	1E-02	Screening Value
n-Propylbenzene	2.0E-03	1E-01	Screening Value
Toluene	2.0E-01	8E-02	IRIS
n-butylbenzene	2.0E-03	NA	NA
1,4 Dioxane	3.0E-02	NL	IRIS
COC	**Inhalation Unit Risk $(ug/m^3)^{-1}$**		**Source**
	2005 ROD	**Current**	
Trichloroethene	1.1E-04	2E-06	CalEPA
Naphthalene	NL	3.4E-05	CalEPA
COC	**Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$**		**Source**
	2005 ROD	**Current**	
Trichloroethene	0.4	5.9E-03	CalEPA
1,4 Dioxane	3E-02	NL	IRIS

COC	Chronic Inhalation Reference Concentration (ug/m^3)		Source
	2005 ROD	Current	
n-Propylbenzene	NA	1,000	Screening Value
Toluene	400	5000	IRIS
Trichloroethene	40	NA	
Naphthalene	NL	3	IRIS
1,3,5 Trimethylbenzene	6	NA	NA

Notes:
1. Provisional Peer Reviewed Toxicity Values (PPRTV), PPRTV Appendix Screening Values and California Environmental Protection Agency (CalEPA) values were cited from USEPA May 2010 Regional Screening Level Summary Table.
2. Integrated Risk Information System (IRIS) values were based on on-line database available at http://www.epa.gov/ncea/iris.

NA = Not Available; NL = Not Listed in 2005 ROD

7.2.1.2 Changes in Benchmark Values Used in Ecological Risk Assessment

The majority of the 2005 benchmark values used for COPC identification for the ecological risk assessment are still valid. The EPA Ecological Soil Screening Levels (SSLs) for certain metals (*e.g.,* aluminum, beryllium, cadmium, and copper) have been updated since the 2005 ROD. However, the updates would not change the COPC identification results (either the chemicals were already COPCs in the 2005 ROD or the maximum detected concentrations would still be below the updated SSLs). Therefore, the change of SSLs will not result in changes in the ecological risk assessment[3].

[3] The toxicity reference values used for evaluating risks to small mammals via exposure to wetland soil were not presented in the 2005 ROD and therefore were not included in this review.

7.3 *QUESTION C*: HAS ANY OTHER INFORMATION COME TO LIGHT THAT COULD CALL INTO QUESTION THE PROTECTIVENESS OF THE REMEDY?

Yes. Recent technical information[4] from EPA highlights the potential for exposure of, and risk to, ecological receptors inhabiting sediment or wetland soil at the groundwater-surface water transition zone where there is discharge of contaminated groundwater. These zones likely exist where Site groundwater discharges to surface water within the Rockwood Brook Wetland Study Area and Rockwood Brook. The dimensions of the affected resource areas using field techniques and estimation of ecological exposure levels are important to understanding whether or not the ROD is protective of the environment in the long term. The Site is currently protective of the environment, but further evaluation is needed to confirm its long-term protectiveness through an evaluation of the hydrologic regime and contaminant discharge frequency, duration, and magnitude within the transition zone.

7.4 SUMMARY OF THE TECHNICAL ASSESSMENT

In general, the remedy appears to be functioning as intended by the ROD based on the four years of groundwater monitoring data collected at the TML Site since 2005. With regard to the source control remedy, however, at this time it is unclear if the LNAPL interceptor trenches have reached the end of their useful life or they require maintenance to allow for free flow of LNAPL into the trenches. Supplemental investigations are required relative to the physical condition of the trenches and residual LNAPL observed at TRY_MW-201S. Through these investigations it will be possible to evaluate the effectiveness of the LNAPL trenches in capturing residual LNAPL at the Site, to ensure that the trenches are protective in the long term.

Results of the focused MNA Assessment substantiate either a declining trend in COC concentrations in groundwater or evidence that biological degradation mechanisms are capable of attenuating COCs. Additional time and monitoring data are needed however, to confidently assess contaminant concentration trends in groundwater. Furthermore, supplemental hydrogeologic studies are needed to confirm hydrostratigraphy and COC fate and transport in groundwater to confirm the effectiveness of the MNA management of migration remedy at the Site.

8.0 ISSUES

This five-year review has identified the following issues of concern with respect to the protectiveness of the remedy implemented to date at the TML Site (refer to **Table 12**).

[4] ECO Update/Ground Water Forum Issue Paper, Evaluating Ground-Water/Surface-Water Transition Zones in Ecological Risk Assessments, Joint Document of the Ecological Risk Assessment Forum and the Ground Water " Forum, United States Environmental Protection Agency, Office of Solid Waste and Emergency Response, Publication 9285.6-17, EPA-540-R-06-072, July 2008.

Table 12 Issues at the Troy Mills Landfill Superfund Site, Troy, New Hampshire

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Effectiveness of Institutional Controls, including violations of the State's existing restrictive covenants on the Site (ATV/Dirt bike/snowmobile trespasser use over landfill cap), and evidence of vandalism (damage to select monitoring wells/and pumps, damage to inner access gate).	N	Y
Further evaluation is needed regarding the persistence of LNAPL east of the interceptor trenches.	N	Y
Further hydrogeologic investigation is needed to evaluate the potential for two overburden groundwater flow systems (upper ablation and lower lodgment) as unique sub units within the till. In addition, further characterization of groundwater flow direction and contaminant migration in bedrock is needed to further evaluate the MNA remedy relative to the bedrock unit.	N	Y
Determine the approximate dimensions and area of sediment in Rockwood Brook or wetland soil where ground water discharges to surface water.	N	Y

9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

In response to the issues noted in Section 8.0 above, recommended actions are listed in **Table 13**:

Table 13 Recommendations and Follow-up Actions for the Troy Mills Landfill Superfund Site, Troy, New Hampshire

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Effectiveness of Institutional Controls, including violations of the State's existing restrictive covenants on the Site (ATV/Dirt bike/snowmobile trespasser use over landfill cap), and evidence of vandalism (damage to select monitoring wells/and pumps, damage to inner access gate).	Report violations and vandalism to the State and the Town for response with appropriate follow-up enforcement actions. Repair damaged wells with new locking caps, post warning signs at inner gate and former drum disposal area, and consider fencing the former drum disposal area to restrict access to all terrain vehicles.	NHDES	EPA	5/31/11	N	Y

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Further evaluation is needed regarding the persistence of LNAPL east of the interceptor trenches.	Conduct a supplemental investigation of the residual LNAPL source area and further evaluate effectiveness of the LNAPL trenches in capturing remaining LNAPL	NHDES	EPA	9/30/12	N	Y
Further hydrogeologic investigation is needed to evaluate the potential for two overburden groundwater flow systems (upper ablation and lower lodgment) as unique sub units within the till. In addition, further characterization of groundwater flow direction and contaminant migration in bedrock is needed to further evaluate the MNA remedy relative to the bedrock unit.	Perform supplemental hydrogeologic studies to confirm hydrostratigraphy and the COC fate and transport of groundwater to confirm the effectiveness of the MNA management of migration remedy at the Site and to better forecast time to cleanup.	NHDES	EPA	9/30/12	N	Y
Determine the approximate dimensions and area of sediment in the brook or wetland soil where ground water discharges to surface water.	Perform a hydrologic evaluation within the transition zone between groundwater and surface water in the Rockwood Brook Wetland Study area and Rockwood Brook. Review existing data from nearby groundwater monitoring wells relative to appropriate benchmark ecological risk screening values applied to receptor exposures within the ground water – surface water transition zone.	NHDES	EPA	9/30/12	N	Y

10.0 PROTECTIVENESS STATEMENT(S)

The remedy implemented at the TML Site is currently protective of human health and the environment as envisioned by the 2005 ROD. However, in order for the remedy to be protective in the long-term, the following actions need to be taken:

- With regard to the effectiveness of Institutional Controls at the Site, report violations and vandalism to the State and the Town for response with appropriate follow-up enforcement actions. Repair damaged wells with new locking caps, include posting warning signs for inner gate and former drum disposal area, and consider fencing the former drum disposal area to restrict access by all terrain vehicles;
- Conduct a supplemental investigation of the residual LNAPL source area proximate to well TRY_MW-201S and further evaluate effectiveness of the LNAPL trenches in capturing remaining LNAPL;
- Perform supplemental hydrogeologic studies to confirm hydrostratigraphy and the COC fate and transport of groundwater to confirm the effectiveness of the MNA management of migration remedy at the Site and to better forecast time to cleanup; and
- Perform an evaluation of the hydrologic regime within the transition zone between groundwater and surface water in the Rockwood Brook Wetland Study area and Rockwood Brook, review of existing data from nearby groundwater monitoring wells relative to appropriate benchmark ecological risk screening values applied to receptor exposures within the ground water – surface water transition zone.

11.0 NEXT REVIEW

The next five-year review is scheduled for completion five years from the date of signature of this report.

FIGURES

TABLES

APPENDIX A

PUBLIC NOTICE

APPENDIX B

INTERVIEW DOCUMENTATION

APPENDIX C

JUNE 2009 THROUGH JUNE 2010 SAMPLING DATA REPORT (GZA)

APPENDIX D

FOCUSED MNA EVALUATION (GZA)

APPENDIX E

SITE INSPECTION CHECKLIST

FIGURES

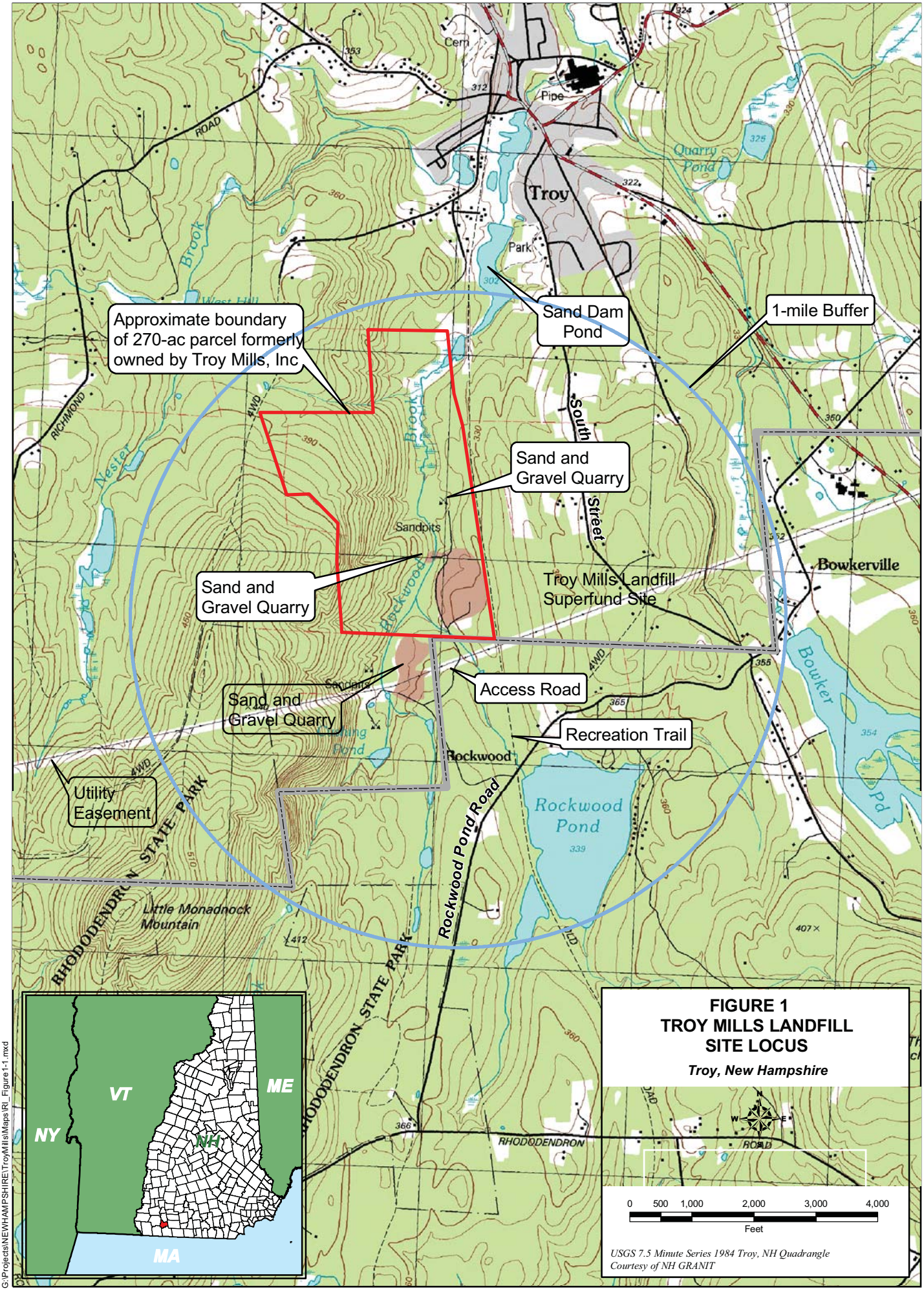
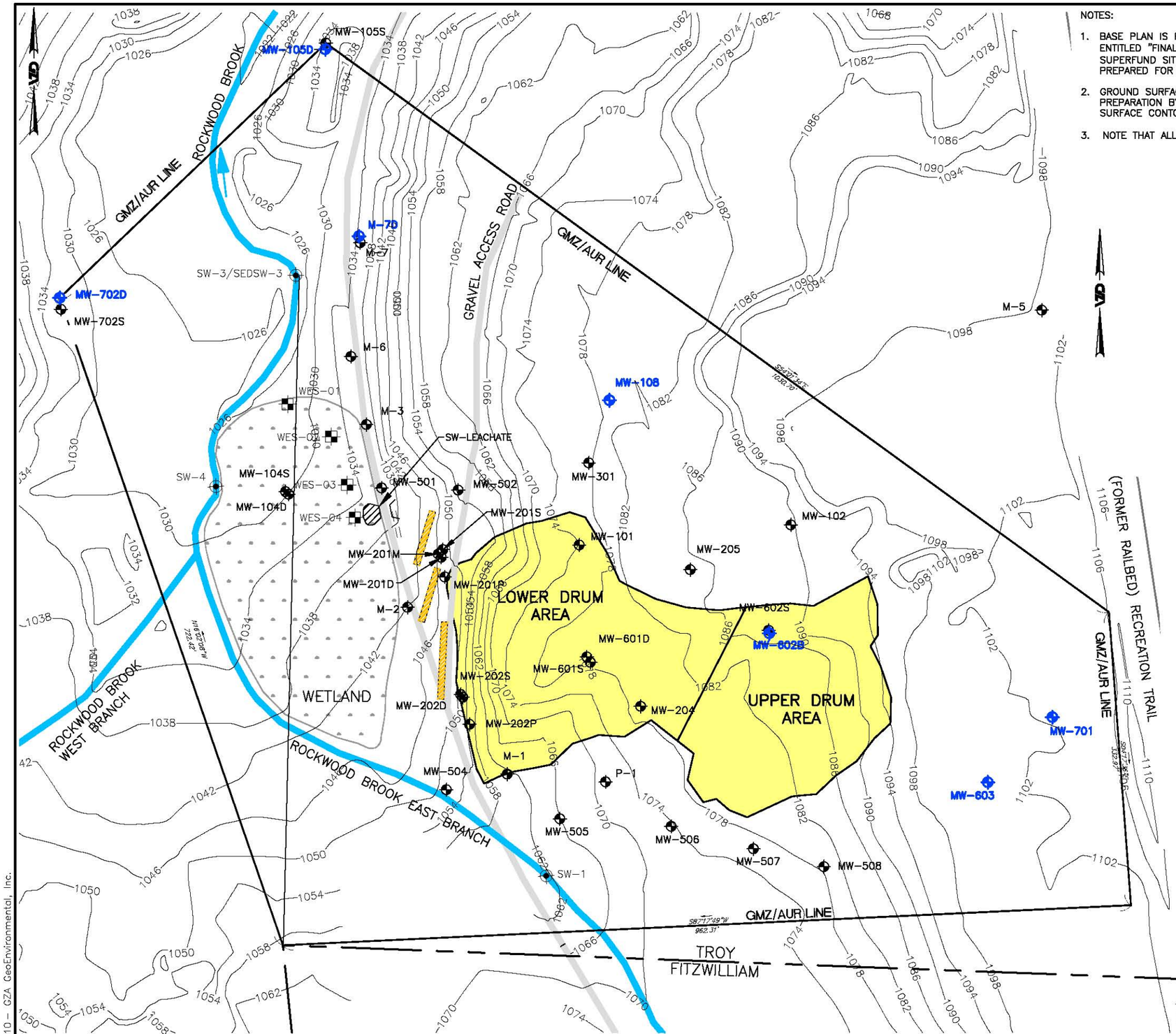


FIGURE 1
TROY MILLS LANDFILL
SITE LOCUS
Troy, New Hampshire

G:\Projects\NE\NHAMPSHIRE\TroyMills\Maps\RI_Figure1-1.mxd



NOTES:

1. BASE PLAN IS FROM FIGURE 2.2 OF THE REPORT BY METCALF & EDDY, INC. ENTITLED "FINAL REMEDIAL INVESTIGATION, VOLUME I, TROY MILLS LANDFILL SUPERFUND SITE, TROY, NEW HAMPSHIRE", DATED SEPTEMBER 2005, AND PREPARED FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
2. GROUND SURFACE CONTOURS ARE FROM THE BASE PLAN. THE METHOD OF PREPARATION BY OTHERS IS UNKNOWN. EPA GRADING CHANGED GROUND SURFACE CONTOURS SHOWN IN VICINITY OF LOWER AND UPPER DRUM AREA.
3. NOTE THAT ALL SAMPLE ID'S HAVE A "TRY_" PREFIX

LEGEND

- GMZ/AUR BOUNDARY
- 1100 GROUND SURFACE CONTOUR
- APPROXIMATE BOUNDARY OF FORMER DRUM DISPOSAL AREA, AND EXTENT OF DRUM DISPOSAL EXCAVATION
- APPROXIMATE LOCATION OF LNAPL INTERCEPTOR TRENCHES
- LEACHATE AREA
- WES-01 WETLAND SOIL SAMPLE LOCATION
- SW-1 SURFACE WATER SAMPLE LOCATION
- MW-602D BEDROCK WELL
- MW-601S OVERBURDEN WELL
- STREAM FLOW DIRECTION

REV. NO.	DESCRIPTION	BY	DATE

GRAPHIC SCALE: 1" = 120'

0 60 120 240

PROJ MGR: MBA
DESIGNED BY: ANP
REVIEWED BY: SRL

OPERATOR: MA
CHECKER: ATD
DATE: AUG 2010

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(603) 624-9463

TROY MILLS LANDFILL SUPERFUND SITE
TROY, NEW HAMPSHIRE

SITE PLAN

PROJECT NO. 04.0024466.43

FIGURE NO. 2

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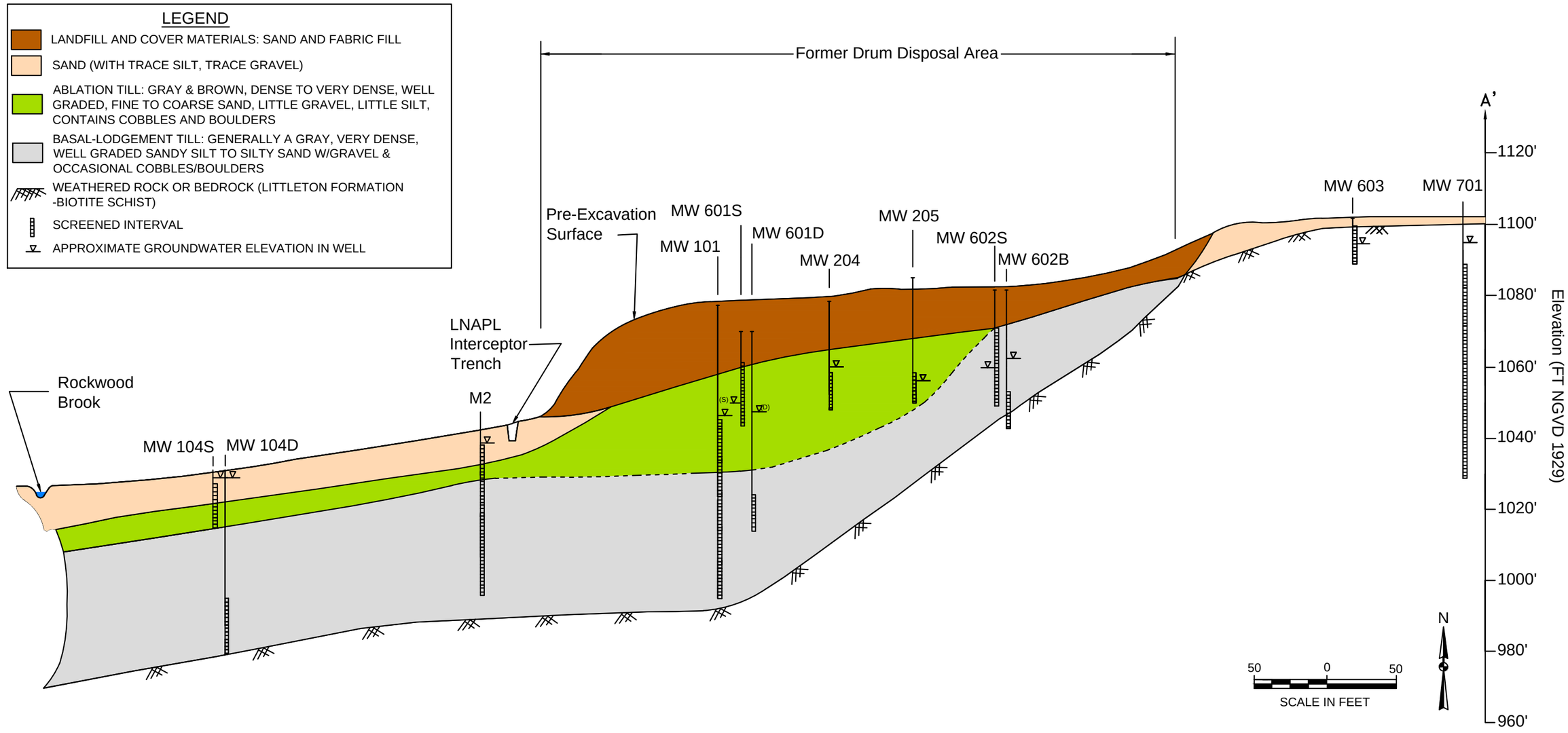
FILE: P:\04Jobs\0024400s\04.0024466.00\04.0024466.42 – Troy Well Interval Sampling\Figures-CAD\FIGURE 1.dwg BY: joseph.nichols DATE: 12 Aug 2010 – 4:11pm



Notes: 1) STRATIGRAPHIC PROFILE ADJUSTED TO ACCOUNT FOR OFFSET WELL AND BORING LOCATIONS.

2) THE UPPER 5 TO 15 FT OF OVERBURDEN SOILS IN THE DRUM AREA WERE REMIXED DURING EXCAVATION OPERATIONS.

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

NO.	ISSUE/DESCRIPTION	BY	DATE

TROY MILLS LANDFILL
GEOLOGIC CROSS-SECTION A-A'

TROY, NEW HAMPSHIRE

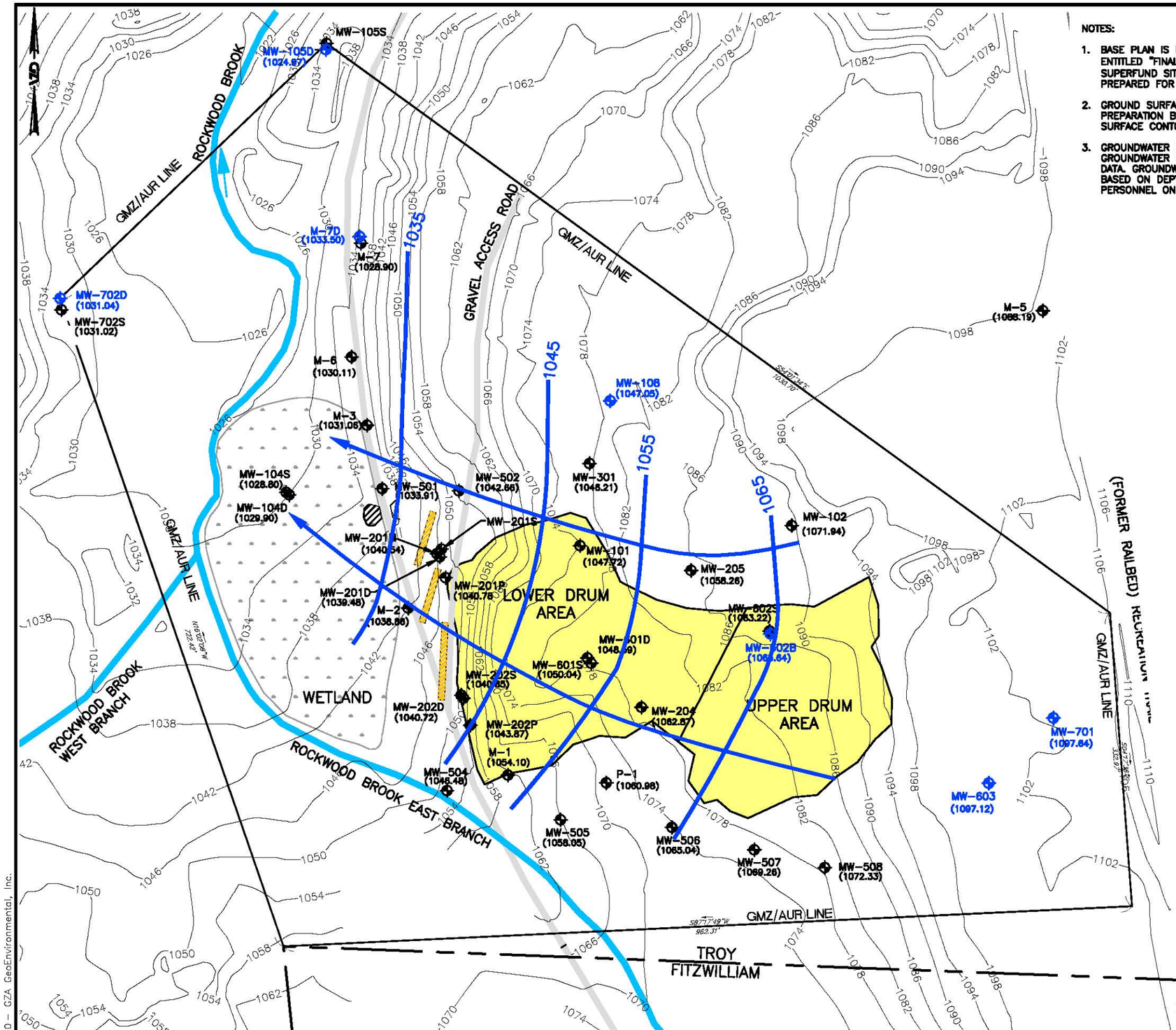
GEOLOGIC CROSS-SECTION A-A'
CHLORINATED VOC DATA

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
380 HARVEY ROAD
MANCHESTER, NEW HAMPSHIRE 03103
(603) 623-3600

PREPARED FOR:

PROJ MGR: ATD	REVIEWED BY: MBA	CHECKED BY: SRL	FIGURE 3
DESIGNED BY: ATD	DRAWN BY: PJH	SCALE: AS SHOWN	
DATE AUGUST 2010	PROJECT NO. 04.0024466.43	REVISION NO.	SHEET NO.

©2008 - GZA GeoEnvironmental, Inc. GZA-21\Jobs\0024400s\04-0024466.00\04-0024466.43 - Troy 5 Yr Review Report\Figures-CAD\Report Figures\FIGURE 3.dwg [Figure 3] September 02, 2010 - 1:06pm jonathan.kolodzik



NOTES:

1. BASE PLAN IS FROM FIGURE 2.2 OF THE REPORT BY METCALF & EDDY, INC. ENTITLED "FINAL REMEDIAL INVESTIGATION, VOLUME I, TROY MILLS LANDFILL SUPERFUND SITE, TROY, NEW HAMPSHIRE", DATED SEPTEMBER 2005, AND PREPARED FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
2. GROUND SURFACE CONTOURS ARE FROM THE BASE PLAN. THE METHOD OF PREPARATION BY OTHERS IS UNKNOWN. EPA GRADING CHANGED GROUND SURFACE CONTOURS SHOWN IN VICINITY OF LOWER AND UPPER DRUM AREA.
3. GROUNDWATER SURFACE ELEVATION CONTOURS REFLECT OVERBURDEN GROUNDWATER SURFACE ELEVATION DATA AND DO NOT INCLUDE BEDROCK DATA. GROUNDWATER SURFACE ELEVATION CONTOURS SHOWN HEREON ARE BASED ON DEPTH-TO-GROUNDWATER LEVEL MEASUREMENTS MADE BY GZA PERSONNEL ON JUNE 8 2009.

LEGEND

- GMZ/AUR BOUNDARY
- 1100 GROUND SURFACE CONTOUR
- APPROXIMATE BOUNDARY OF FORMER DRUM DISPOSAL AREA, AND EXTENT OF DRUM DISPOSAL EXCAVATION
- APPROXIMATE LOCATION OF LNAPL INTERCEPTOR TRENCHES
- LEACHATE AREA
- MW-602D BEDROCK WELL
- MW-601S OVERBURDEN WELL
- (1031.55) GROUNDWATER ELEVATION IN FEET (JUNE 8, 2009)
- 1035 OVERBURDEN GROUNDWATER ELEVATION CONTOUR (JUNE 8, 2009)
- STREAM FLOW DIRECTION
- ESTIMATED GROUNDWATER FLOW DIRECTION

REV. NO.	DESCRIPTION	BY	DATE

PROJ MGR: MBA
DESIGNED BY: ANP
REVIEWED BY: SRL

OPERATOR: MA
CHECKER: ATD
DATE: AUG 2010

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GRAPHIC SCALE: 1" = 120'
0 60 120 240

TROY MILLS LANDFILL SUPERFUND SITE
TROY, NEW HAMPSHIRE

OVERBURDEN GROUNDWATER CONTOURS (JUNE 8, 2009)

PROJECT NO. 04.0024466.43

FIGURE NO. 4

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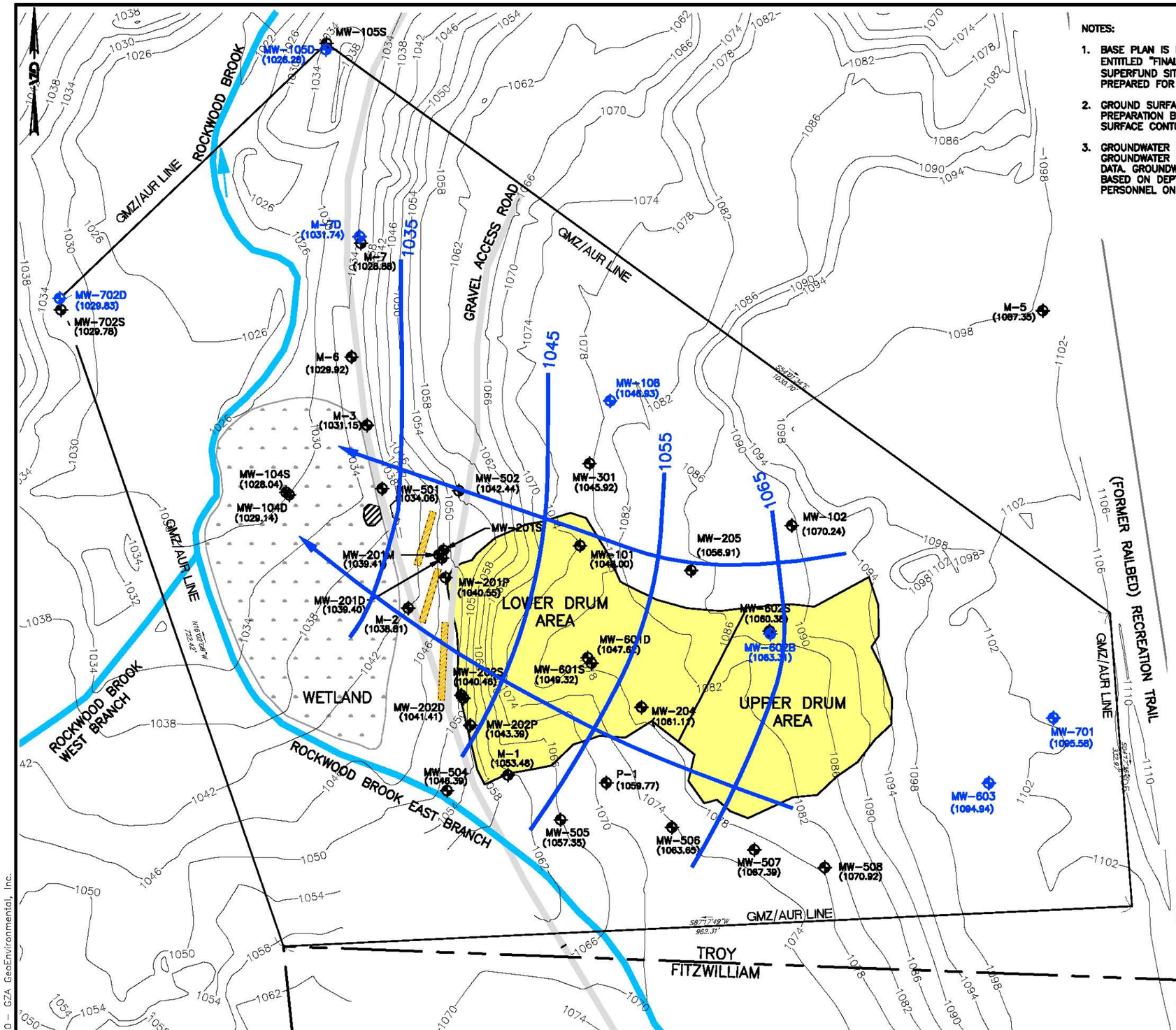
FILE: Z:\04Jobs\0024400s\04.0024466.00\04.0024466.43 - Troy 5 Yr Review Report\Figures-CAD\Report Figures\FIGURE 4.dwg BY: jonathan.kalafatis DATE: 02 Sep 2010 - 2:01pm



NOTES:

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3. GROUNDWATER SURFACE ELEVATION CONTOURS REFLECT OVERBURDEN GROUNDWATER SURFACE ELEVATION DATA AND DO NOT INCLUDE BEDROCK DATA. GROUNDWATER SURFACE ELEVATION CONTOURS SHOWN HEREON ARE BASED ON DEPTH-TO-GROUNDWATER LEVEL. MEASUREMENTS MADE BY GZA PERSONNEL ON SEPTEMBER 30, 2009.

LEGEND

- GMZ/AUR BOUNDARY
- 1100 GROUND SURFACE CONTOUR
- APPROXIMATE BOUNDARY OF FORMER DRUM DISPOSAL AREA, AND EXTENT OF DRUM DISPOSAL EXCAVATION
- APPROXIMATE LOCATION OF LNAPL INTERCEPTOR TRENCHES
- LEACHATE AREA
- MW-602D BEDROCK WELL
- MW-601S OVERBURDEN WELL
- (1031.55) GROUNDWATER ELEVATION IN FEET (SEPTEMBER 30, 2009)
- 1035 OVERBURDEN GROUNDWATER ELEVATION CONTOUR (SEPTEMBER 30, 2009)
- STREAM FLOW DIRECTION
- ESTIMATED GROUNDWATER FLOW DIRECTION

REV. NO.	DESCRIPTION	BY	DATE

PROJ MGR: MBA
DESIGNED BY: ANP
REVIEWED BY: SRL

OPERATOR: MA
CHECKER: ATD
DATE: AUG 2010

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GRAPHIC SCALE: 1" = 120'
0 60 120 240

TROY MILLS LANDFILL SUPERFUND SITE
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OVERBURDEN GROUNDWATER CONTOURS (SEPTEMBER 30, 2009)

PROJECT NO. 04.0024466.43

FIGURE NO. 5

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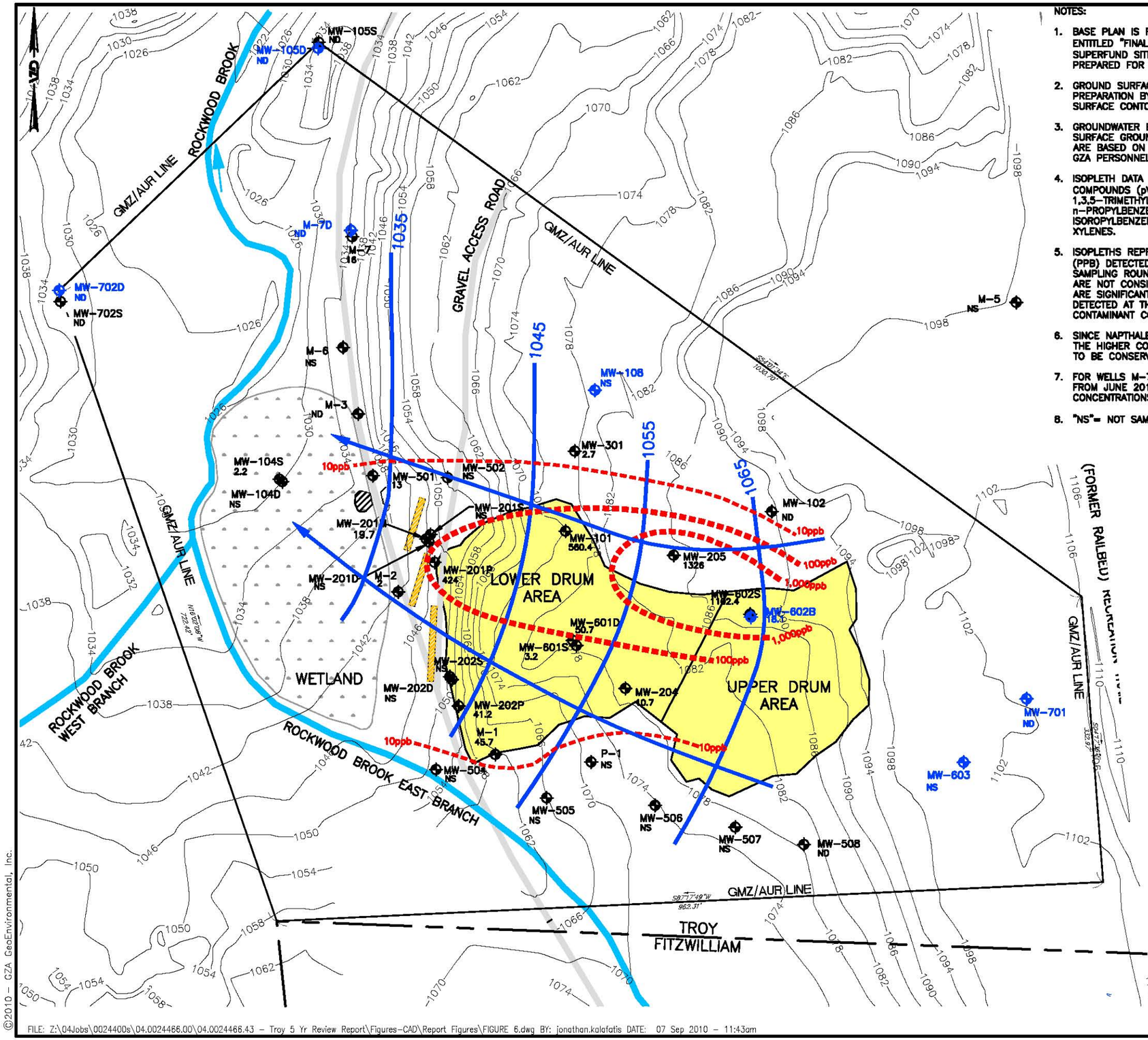
FILE: Z:\04Jobs\0024400s\04.0024466.00\04.0024466.43 - Troy 5 Yr Review Report\Figures-CAD\Report Figures\FIGURE 5.dwg BY: jonathan.kalafatis DATE: 02 Sep 2010 - 1:38pm



NOTES:

1. BASE PLAN IS FROM FIGURE 2.2 OF THE REPORT BY METCALF & EDDY, INC. ENTITLED "FINAL REMEDIAL INVESTIGATION, VOLUME I, TROY MILLS LANDFILL SUPERFUND SITE, TROY, NEW HAMPSHIRE", DATED SEPTEMBER 2005, AND PREPARED FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
2. GROUND SURFACE CONTOURS ARE FROM THE BASE PLAN. THE METHOD OF PREPARATION BY OTHERS IS UNKNOWN. EPA GRADING CHANGED GROUND SURFACE CONTOURS SHOWN IN VICINITY OF LOWER AND UPPER DRUM AREA.
3. GROUNDWATER ELEVATION CONTOURS REFLECT OVERBURDEN GROUNDWATER SURFACE GROUNDWATER SURFACE ELEVATION CONTOURS SHOWN HEREON ARE BASED ON DEPTH-TO-GROUNDWATER LEVEL MEASUREMENTS MADE BY GZA PERSONNEL ON SEPT. 30 2009.
4. ISOPLETH DATA FOR TOTAL PETROLUM-RELATED VOLATILE ORGANIC COMPOUNDS (pVOC'S) INCLUDES; 1,2,4-TRIMETHYLBENZENE 1,3,5-TRIMETHYLBENZENE, BENZENE, NAPTHALENE, n-BUTYLBENZENE n-PROPYLBENZENE, p-ISOPROPYLTOLUENE, TOLUENE, ETHYLBENZENE, ISOROPYLBENZENE, sec-BUTYLBENZENE, t-BUTYLBENZENE, AND total XYLENES.
5. ISOPLETHS REPRESENT TOTAL pVOC CONCENTRATIONS IN PARTS PER BILLION (PPB) DETECTED IN OVERBURDEN AND TILL DURING THE OCTOBER, 2009 SAMPLING ROUND. NOTE THAT THE SCREEN LENGTHS OF WELLS SAMPLED ARE NOT CONSISTENT, SOME WELLS SUCH AS MW-101 HAVE SCREENS THAT ARE SIGNIFICANTLY LONGER THAN OTHERS; THEREFORE THE CONCENTRATIONS DETECTED AT THESE WELLS COULD BE UNDER REPRESENTATIONS OF ACTUAL CONTAMINANT CONCENTRATIONS.
6. SINCE NAPTHALENE WAS ANALYZED BY TWO METHODS, EPA 8260 AND 8270, THE HIGHER CONCENTRATION WAS USED FOR THE PURPOSES OF THIS TABLE TO BE CONSERVATIVE.
7. FOR WELLS M-7D, MW-201P, M-1 AND M-3, AVAILABLE ANALYTIC DATA IS FROM JUNE 2010. OF THE INTERVAL DATA, THE INTERVAL WITH THE HIGHEST CONCENTRATIONS ARE DEPICTED IN THIS FIGURE
8. "NS"= NOT SAMPLED IN OCTOBER 2009

REV. NO.	DESCRIPTION	BY	DATE

PROJ MGR: MBA
DESIGNED BY: ANP
REVIEWED BY: SRL

OPERATOR: MA
CHECKER: ATD
DATE: AUG 2010

GRAPHIC SCALE: 1" = 120'
0 60 120 240

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TROY MILLS LANDFILL SUPERFUND SITE
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OCTOBER 2009
OVERBURDEN PVOC ISOPLETH MAP

PROJECT NO.
04.0024466.43

FIGURE NO.
6

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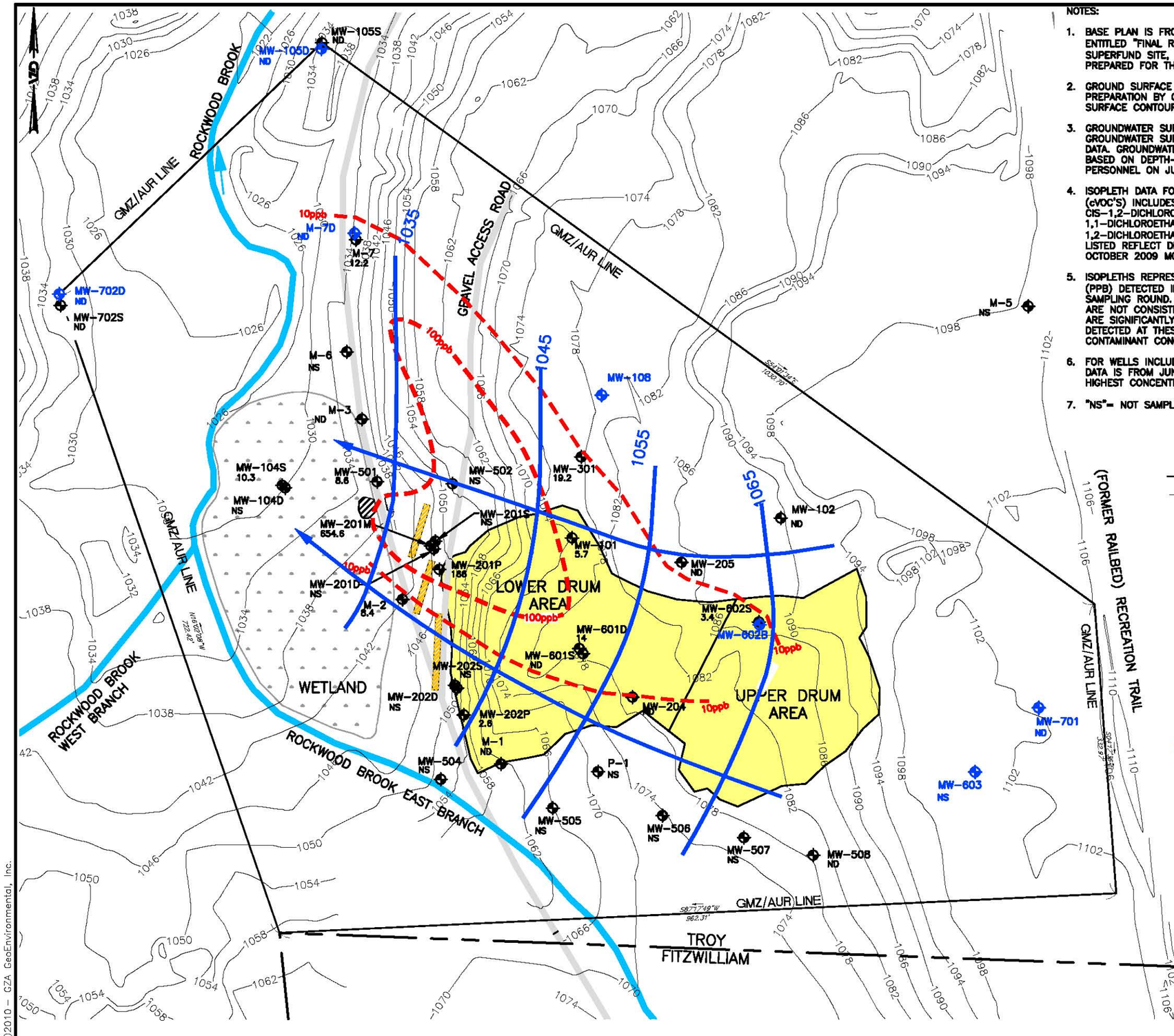

NOTES:

1. BASE PLAN IS FROM FIGURE 2.2 OF THE REPORT BY METCALF & EDDY, INC. ENTITLED "FINAL REMEDIAL INVESTIGATION, VOLUME I, TROY MILLS LANDFILL SUPERFUND SITE, TROY, NEW HAMPSHIRE", DATED SEPTEMBER 2005, AND PREPARED FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
2. GROUND SURFACE CONTOURS ARE FROM THE BASE PLAN. THE METHOD OF PREPARATION BY OTHERS IS UNKNOWN. EPA GRADING CHANGED GROUND SURFACE CONTOURS SHOWN IN VICINITY OF LOWER AND UPPER DRUM AREA.
3. GROUNDWATER SURFACE ELEVATION CONTOURS REFLECT OVERBURDEN GROUNDWATER SURFACE ELEVATION DATA AND DO NOT INCLUDE BEDROCK DATA. GROUNDWATER SURFACE ELEVATION CONTOURS SHOWN HEREON ARE BASED ON DEPTH-TO-GROUNDWATER LEVEL MEASUREMENTS MADE BY GZA PERSONNEL ON JUNE 8 2009.
4. ISOPLETH DATA FOR TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS (cVOC'S) INCLUDES; TETRACHLOROETHENE, TRICHLOROETHANE, CIS-1,2-DICHLOROETHENE, VINYL CHLORIDE, 1,1,1-TRICHOLOETHANE, 1,1-DICHLOROETHANE, 1,1-DICHLOROETHENE, 1,2,4-TRICHLOROBENZENE, 1,2-DICHLOROETHANE, 1,4-DICHLOROBENZENE, 2-CHLOROTOULENE. cVOC'S LISTED REFLECT DETECTION ABOVE ANALYTICAL REPORTING LIMIT DURING THE OCTOBER 2009 MONITORING ROUND.
5. ISOPLETHS REPRESENT TOTAL cVOC CONCENTRATIONS IN PARTS PER BILLION (PPB) DETECTED IN OVERBURDEN AND TILL DURING THE OCTOBER, 2009 SAMPLING ROUND. NOTE THAT THE SCREEN LENGTHS OF WELLS SAMPLED ARE NOT CONSISTENT, SOME WELLS SUCH AS MW-101 HAVE SCREENS THAT ARE SIGNIFICANTLY LONGER THAN OTHERS; THEREFORE THE CONCENTRATIONS DETECTED AT THESE WELLS COULD BE UNDER REPRESENTATIONS OF ACTUAL CONTAMINANT CONCENTRATIONS.
6. FOR WELLS INCLUDING M-7, MW-201P, M-1 AND M-3, AVAILABLE ANALYTIC DATA IS FROM JUNE 2010. OF THE INTERVAL DATA, THE INTERVAL WITH THE HIGHEST CONCENTRATIONS ARE DEPICTED IN THIS FIGURE
7. "NS"= NOT SAMPLED IN OCTOBER 2009

LEGEND

- GMZ/AUR BOUNDARY
- 1100 — GROUND SURFACE CONTOUR
- APPROXIMATE BOUNDARY OF FORMER DRUM DISPOSAL AREA, AND EXTENT OF DRUM DISPOSAL EXCAVATION
- APPROXIMATE LOCATION OF LNAPL INTERCEPTOR TRENCHES
- LEACHATE AREA
- MW-602D — BEDROCK WELL
- MW-601S — OVERBURDEN WELL
- 1035 — OVERBURDEN GROUNDWATER ELEVATION CONTOUR (SEPT. 30, 2009)
- STREAM FLOW DIRECTION
- ESTIMATED GROUNDWATER FLOW DIRECTION
- 100ppb — OCTOBER 2009 TOTAL cVOC PLUME ISOPLETHS (SEE NOTES)
- 14 — cVOC CONCENTRATION IN ug/L
- ND — NOT DETECTED ABOVE THE LABORATORY REPORTING LIMITS

REV. NO.	DESCRIPTION	BY	DATE

GRAPHIC SCALE: 1" = 120'
0 60 120 240

PROJ MGR: MBA
DESIGNED BY: ANP
REVIEWED BY: SRL

OPERATOR: MA
CHECKER: ATD
DATE: AUG 2010

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TROY MILLS LANDFILL SUPERFUND SITE
TROY, NEW HAMPSHIRE

OCTOBER 2009
OVERBURDEN cVOC ISOPLETHE MAP

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04.0024466.43

FIGURE NO.
7

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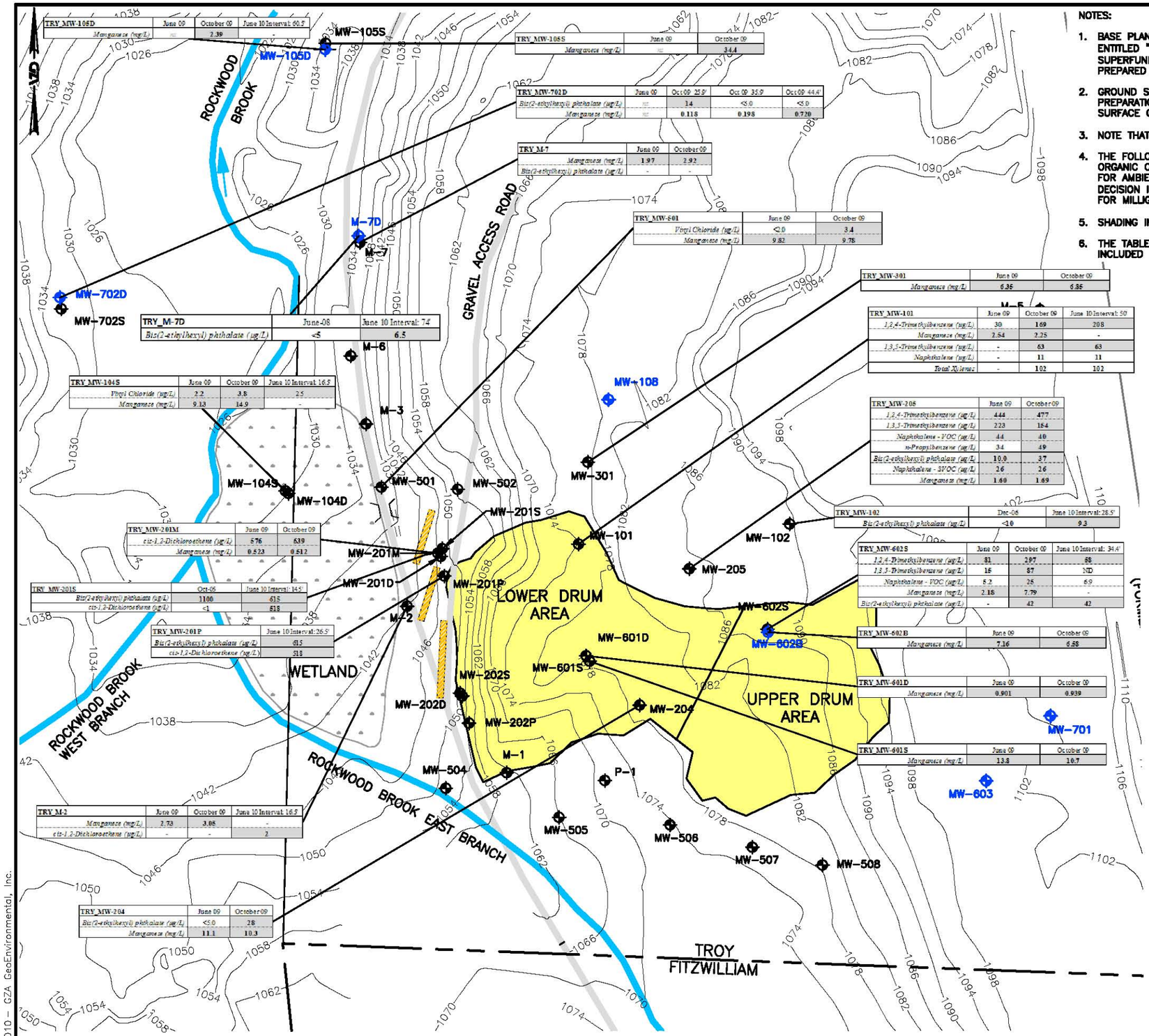
FILE: P:\04Jobs\0024400s\04.0024466.00\04.0024466.43 - Troy 5 Yr Review Report\Figures-CAD\Report Figures\FIGURE 7_REV.dwg BY: mirsad.alihodzic DATE: 07 Sep 2010 - 3:54pm



TRY_MW-105D	June 09	October 09	June 10 Interval: 60.5'
Manganese (mg/L)	NS	2.39	-

TRY_MW-105S	June 09	October 09
Manganese (mg/L)	NS	34.4

TRY_MW-702D	June 09	Oct 09 25.9'	Oct 09 35.9'	Oct 09 44.4'
Bis(2-ethylhexyl) phthalate (µg/L)	NS	14	<5.0	<5.0
Manganese (mg/L)	NS	0.118	0.198	0.720

TRY_M-7	June 09	October 09
Manganese (mg/L)	1.97	2.92
Bis(2-ethylhexyl) phthalate (µg/L)	-	-

TRY_MW-601	June 09	October 09
Vinyl Chloride (µg/L)	<2.0	3.4
Manganese (mg/L)	9.82	9.78

TRY_M-7D	June-08	June 10 Interval: 74'
Bis(2-ethylhexyl) phthalate (µg/L)	<5	6.5

TRY_MW-301	June 09	October 09
Manganese (mg/L)	6.35	6.85

TRY_MW-101	June 09	October 09	June 10 Interval: 50'
1,2,4-Trimethylbenzene (µg/L)	30	169	208
Manganese (mg/L)	2.54	2.25	-
1,3,5-Trimethylbenzene (µg/L)	-	63	63
Naphthalene (µg/L)	-	11	11
Total Xylenes	-	102	102

TRY_MW-104S	June 09	October 09	June 10 Interval: 16.5'
Vinyl Chloride (µg/L)	2.2	3.8	2.5
Manganese (mg/L)	9.13	14.9	-

TRY_MW-205	June 09	October 09
1,2,4-Trimethylbenzene (µg/L)	444	477
1,3,5-Trimethylbenzene (µg/L)	223	154
Naphthalene - VOC (µg/L)	44	40
n-Propylbenzene (µg/L)	34	49
Bis(2-ethylhexyl) phthalate (µg/L)	10.0	37
Naphthalene - SVOC (µg/L)	26	26
Manganese (mg/L)	1.60	1.69

TRY_MW-102	Dec-08	June 10 Interval: 28.5'
Bis(2-ethylhexyl) phthalate (µg/L)	<10	9.3

TRY_MW-201M	June 09	October 09
cis-1,2-Dichloroethene (µg/L)	576	639
Manganese (mg/L)	0.523	0.512

TRY_MW-602S	June 09	October 09	June 10 Interval: 34.4'
1,2,4-Trimethylbenzene (µg/L)	31	197	58
1,3,5-Trimethylbenzene (µg/L)	16	87	ND
Naphthalene - VOC (µg/L)	5.2	25	6.9
Manganese (mg/L)	2.18	7.79	-
Bis(2-ethylhexyl) phthalate (µg/L)	-	42	42

TRY_MW-201S	Oct-08	June 10 Interval: 14.5'
Bis(2-ethylhexyl) phthalate (µg/L)	1100	615
cis-1,2-Dichloroethene (µg/L)	<1	518

TRY_MW-201P	June 10 Interval: 26.5'
Bis(2-ethylhexyl) phthalate (µg/L)	615
cis-1,2-Dichloroethene (µg/L)	518

TRY_MW-602B	June 09	October 09
Manganese (mg/L)	7.16	6.58

TRY_MW-601D	June 09	October 09
Manganese (mg/L)	0.901	0.939

TRY_MW-601S	June 09	October 09
Manganese (mg/L)	13.8	10.7

TRY_M-2	June 09	October 09	June 10 Interval: 16.5'
Manganese (mg/L)	2.73	3.05	-
cis-1,2-Dichloroethene (µg/L)	-	-	2

TRY_MW-204	June 09	October 09
Bis(2-ethylhexyl) phthalate (µg/L)	<5.0	28
Manganese (mg/L)	11.1	10.3

NOTES:

1. BASE PLAN IS FROM FIGURE 2.2 OF THE REPORT BY METCALF & EDDY, INC. ENTITLED "FINAL REMEDIAL INVESTIGATION, VOLUME I, TROY MILLS LANDFILL SUPERFUND SITE, TROY, NEW HAMPSHIRE", DATED SEPTEMBER 2005, AND PREPARED FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
2. GROUND SURFACE CONTOURS ARE FROM THE BASE PLAN. THE METHOD OF PREPARATION BY OTHERS IS UNKNOWN. EPA GRADING CHANGED GROUND SURFACE CONTOURS SHOWN IN VICINITY OF LOWER AND UPPER DRUM AREA.
3. NOTE THAT ALL SAMPLE ID'S HAVE A "TRY_" PREFIX
4. THE FOLLOWING ABBREVATIONS ARE USED IN THIS TABLE: VOC FOR VOLATILE ORGANIC COMPOUND, SVOC FOR SEMI VOLATILE ORGANIC COMPOUND, AGQS FOR AMBIENT GROUNDWATER QUALITY STANDARD, ROD ICL FOR RECORD OF DECISION INTERIM CLEANUP LEVEL, µG/L FOR MICROGRAMS PER LITER, MG/L FOR MILLIGRAMS PER LITER, NS FOR NOT SAMPLED.
5. SHADING INDICATES AN EXCEEDANCE OF THE AGQS AND/OR THE ROD ICL.
6. THE TABLE BELOW SUMMARIZES THE AGQS AND ROD FOR COMPOUNDS INCLUDED IN THE FIGURE:

LEGEND

1100 — GROUND SURFACE CONTOUR

APPROXIMATE BOUNDARY OF FORMER DRUM DISPOSAL AREA, AND EXTENT OF DRUM DISPOSAL EXCAVATION

APPROXIMATE LOCATION OF LNAPL INTERCEPTOR TRENCHES

MW-602D — BEDROCK WELL

MW-601S — OVERBURDEN WELL

STREAM FLOW DIRECTION

COMPOUND		AGQS	ROD ICL
VOCs	1,2,4-Trimethylbenzene (µg/L)	330	50
	1,3,5-Trimethylbenzene (µg/L)	330	50
	cis-1,2-Dichloroethene (µg/L)	100	70
	Naphthalene (µg/L)	20	20
	n-Propylbenzene (µg/L)	260	50
	Vinyl Chloride (µg/L)	2	2
SVOCs	Bis(2-ethylhexyl) phthalate (µg/L)	6	6
	Naphthalene (µg/L)	20	20
Metals	Manganese (mg/L)	0.84	0.3

REV. NO.	DESCRIPTION	BY	DATE

PROJ MGR: MBA
DESIGNED BY: ANP
REVIEWED BY: SRL

OPERATOR: MA
CHECKER: ATD
DATE: AUG 2010

GRAPHIC SCALE: 1" = 120'
0 60 120 240

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TROY MILLS LANDFILL SUPERFUND SITE
TROY, NEW HAMPSHIRE

GROUNDWATER EXCEEDANCES OF THE AGQS/ROD ICL

PROJECT NO.
04.0024466.43

FIGURE NO.
8

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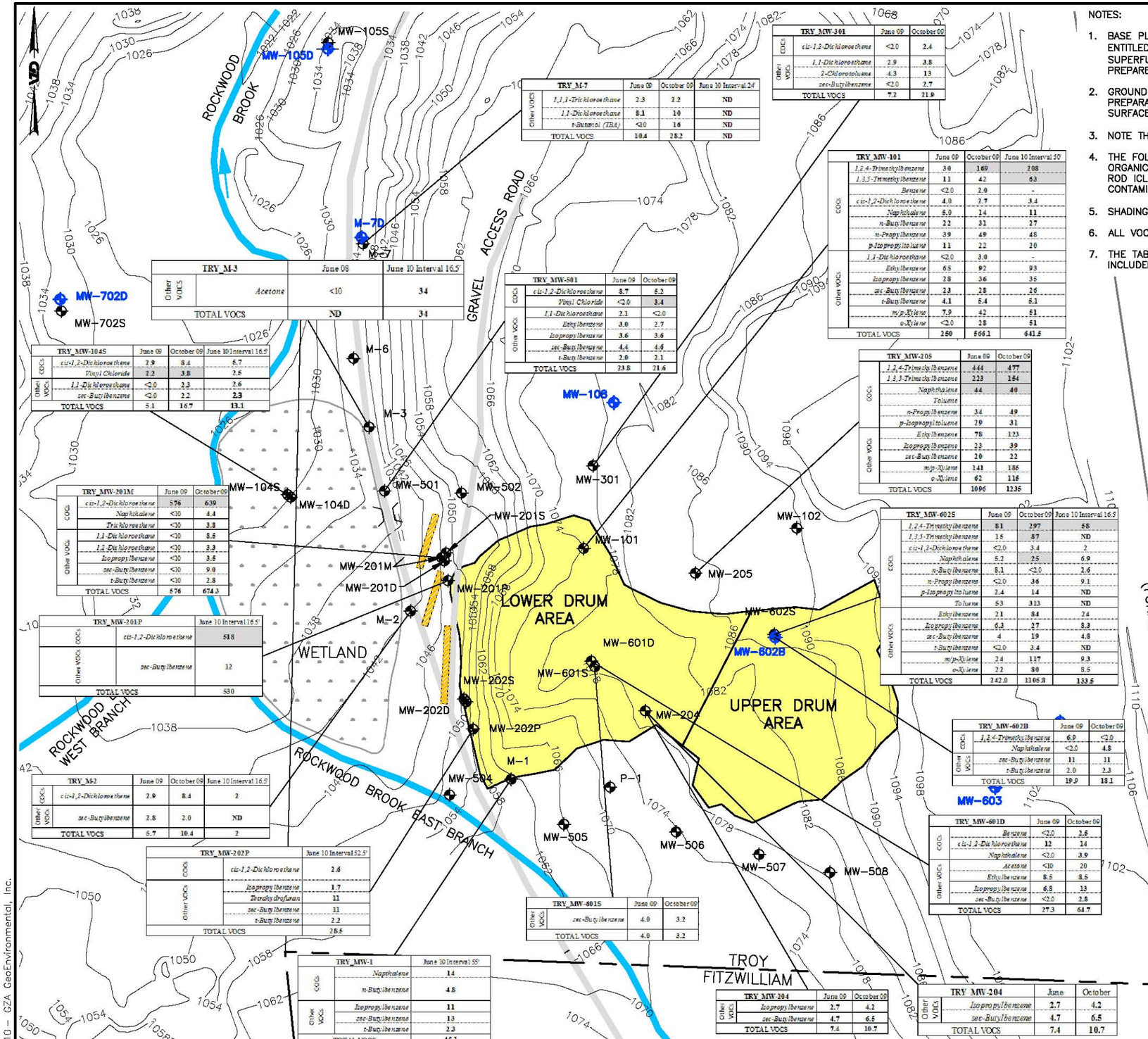
FILE: Z:\04Jobs\0024400s\04.0024466.00\04.0024466.43 – Troy 5 Yr Review Report\Figures-CAD\Report Figures\FIGURE 8.dwg BY: jonathan.kalafatis DATE: 02 Sep 2010 – 1:25pm



TRY_M-3		June 08	June 10 Interval 16.5'
Other VOCs	Acetone	<10	34
TOTAL VOCS		ND	34

TRY_M-7		June 09	October 09	June 10 Interval 24'
Other VOCs	1,1,1-Trichloroethane	2.3	2.2	ND
	1,1-Dichloroethane	8.1	10	ND
	t-Butanol (TBA)	<10	16	ND
TOTAL VOCS		10.4	28.2	ND

TRY_MW-301		June 09	October 09
COCs	cis-1,2-Dichloroethene	<2.0	2.4
Other VOCs	1,1-Dichloroethane	2.9	3.8
	2-Chlorotoluene	4.3	13
	sec-Butylbenzene	<2.0	2.7
TOTAL VOCS		7.2	21.9

TRY_MW-101		June 09	October 09	June 10 Interval 50'
COCs	1,2,4-Trimethylbenzene	30	169	208
	1,3,5-Trimethylbenzene	11	42	63
	Benzene	<2.0	2.0	-
	cis-1,2-Dichloroethene	4.0	2.7	3.4
	Naphthalene	5.0	14	11
	n-Butylbenzene	22	31	27
	n-Propylbenzene	39	49	48
	p-Isopropyltoluene	11	22	20
Other VOCs	1,1-Dichloroethane	<2.0	3.0	-
	Ethylbenzene	65	92	93
	Isopropylbenzene	28	36	35
	sec-Butylbenzene	23	28	26
	t-Butylbenzene	4.1	5.4	5.1
	m/p-Xylene	7.9	42	51
	o-Xylene	<2.0	28	51
TOTAL VOCS		250	566.1	641.5

TRY_MW-501		June 09	October 09
COCs	cis-1,2-Dichloroethene	8.7	5.2
	Vinyl Chloride	<2.0	3.4
Other VOCs	1,1-Dichloroethane	2.1	<2.0
	Ethylbenzene	3.0	2.7
	Isopropylbenzene	3.6	3.6
	sec-Butylbenzene	4.4	4.6
	t-Butylbenzene	2.0	2.1
TOTAL VOCS		23.8	21.6

TRY_MW-104S		June 09	October 09	June 10 Interval 16.5'
COCs	cis-1,2-Dichloroethene	2.9	8.4	5.7
	Vinyl Chloride	2.2	3.8	2.5
Other VOCs	1,1-Dichloroethane	<2.0	2.3	2.6
	sec-Butylbenzene	<2.0	2.2	2.3
TOTAL VOCS		5.1	16.7	13.1

TRY_MW-205		June 09	October 09
COCs	1,2,4-Trimethylbenzene	444	477
	1,3,5-Trimethylbenzene	223	154
	Naphthalene	44	40
	Toluene		
	n-Propylbenzene	34	49
	p-Isopropyltoluene	29	31
Other VOCs	Ethylbenzene	78	123
	Isopropylbenzene	23	39
	sec-Butylbenzene	20	22
	m/p-Xylene	141	185
	o-Xylene	62	115
TOTAL VOCS		1096	1235

TRY_MW-201M		June 09	October 09
COCs	cis-1,2-Dichloroethene	576	639
	Naphthalene	<10	4.4
	Trichloroethene	<10	3.8
Other VOCs	1,1-Dichloroethane	<10	8.5
	1,2-Dichloroethane	<10	3.3
	Isopropylbenzene	<10	3.5
	sec-Butylbenzene	<10	9.0
	t-Butylbenzene	<10	2.8
TOTAL VOCS		576	674.3

TRY_MW-602S		June 09	October 09	June 10 Interval 16.5'
COCs	1,2,4-Trimethylbenzene	81	297	58
	1,3,5-Trimethylbenzene	18	87	ND
	cis-1,2-Dichloroethene	<2.0	3.4	2
	Naphthalene	5.2	25	6.9
	n-Butylbenzene	8.1	<2.0	2.6
	n-Propylbenzene	<2.0	36	9.1
	p-Isopropyltoluene	2.4	14	ND
	Toluene	53	313	ND
Other VOCs	Ethylbenzene	21	84	24
	Isopropylbenzene	6.3	27	8.3
	sec-Butylbenzene	4	19	4.8
	t-Butylbenzene	<2.0	3.4	ND
	m/p-Xylene	24	117	9.3
	o-Xylene	22	80	8.5
TOTAL VOCS		242.0	1105.8	133.5

TRY_MW-201P		June 10 Interval 16.5'
COCs	cis-1,2-Dichloroethene	518
Other VOCs	sec-Butylbenzene	12
TOTAL VOCS		530

TRY_MW-602B		June 09	October 09
COCs	1,2,4-Trimethylbenzene	6.9	<2.0
	Naphthalene	<2.0	4.8
Other VOCs	sec-Butylbenzene	11	11
	t-Butylbenzene	2.0	2.3
TOTAL VOCS		19.9	18.1

TRY_M-2		June 09	October 09	June 10 Interval 16.5'
COCs	cis-1,2-Dichloroethene	2.9	8.4	2
Other VOCs	sec-Butylbenzene	2.8	2.0	ND
TOTAL VOCS		5.7	10.4	2

TRY_MW-601D		June 09	October 09
COCs	Benzene	<2.0	2.6
	cis-1,2-Dichloroethene	12	14
	Naphthalene	<2.0	3.9
Other VOCs	Acetone	<10	20
	Ethylbenzene	8.5	8.5
	Isopropylbenzene	6.8	13
	sec-Butylbenzene	<2.0	2.8
TOTAL VOCS		27.3	64.7

TRY_MW-202P		June 10 Interval 52.5'
COCs	cis-1,2-Dichloroethene	2.6
Other VOCs	Isopropylbenzene	1.7
	Tetrahydrofuran	11
	sec-Butylbenzene	11
	t-Butylbenzene	2.2
TOTAL VOCS		28.5

TRY_MW-601S		June 09	October 09
Other VOCs	sec-Butylbenzene	4.0	3.2
TOTAL VOCS		4.0	3.2

TRY_MW-1		June 10 Interval 55'
COCs	Naphthalene	14
	n-Butylbenzene	4.8
Other VOCs	Isopropylbenzene	11
	sec-Butylbenzene	13
	t-Butylbenzene	2.3
TOTAL VOCS		48.1

TRY_MW-204		June 09	October 09
Other VOCs	Isopropylbenzene	2.7	4.2
	sec-Butylbenzene	4.7	6.5
TOTAL VOCS		7.4	10.7

TRY_MW-204		June	October
Other VOCs	Isopropylbenzene	2.7	4.2
	sec-Butylbenzene	4.7	6.5
TOTAL VOCS		7.4	10.7

NOTES:

1. BASE PLAN IS FROM FIGURE 2.2 OF THE REPORT BY METCALF & EDDY, INC. ENTITLED "FINAL REMEDIAL INVESTIGATION, VOLUME I, TROY MILLS LANDFILL SUPERFUND SITE, TROY, NEW HAMPSHIRE", DATED SEPTEMBER 2005, AND PREPARED FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
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3. NOTE THAT ALL SAMPLE ID'S HAVE A "TRY_" PREFIX
4. THE FOLLOWING ABBREVIATIONS ARE USED IN THIS TABLE: VOC FOR VOLATILE ORGANIC COMPOUND, AGQS FOR AMBIENT GROUNDWATER QUALITY STANDARD, ROD ICL FOR RECORD OF DECISION INTERIM CLEANUP LEVEL, COC FOR CONTAMINANT OF CONCERN, AND NS FOR NOT SAMPLED.
5. SHADING INDICATES AN EXCEEDANCE OF THE AGQS AND/OR THE ROD ICL.
6. ALL VOC CONCENTRATIONS ARE GIVEN IN UNITS OF MICROGRAMS PER LITER.
7. THE TABLE BELOW SUMMARIZES THE AGQS AND ROD FOR COMPOUNDS INCLUDED IN THE FIGURE:

LEGEND

1100 — GROUND SURFACE CONTOUR

APPROXIMATE BOUNDARY OF FORMER DRUM DISPOSAL AREA, AND EXTENT OF DRUM DISPOSAL EXCAVATION

APPROXIMATE LOCATION OF LNAPL INTERCEPTOR TRENCHES

MW-602D — BEDROCK WELL

MW-601S — OVERBURDEN WELL

STREAM FLOW DIRECTION

	COMPOUND	AGQS	ROD ICL
COCs	1,2,4-Trimethylbenzene	330	50
	1,3,5-Trimethylbenzene	330	50
	Benzene	5	5
	cis-1,2-Dichloroethene	100	70
	Naphthalene	20	20
	n-Butylbenzene	260	50
	n-Propylbenzene	260	50
	p-Isopropyltoluene	260	50
	Toluene	1,000	1,000
	Trichloroethene	5	5
	Vinyl Chloride	2	2
Other VOCs	1,1-Dichloroethane	81	na
	1,2-Dichloroethane	5	na
	2-Chlorotoluene	100	na
	Acetone	6,000	na
	Ethylbenzene	700	na
	Isopropylbenzene	800	na
	sec-Butylbenzene	260	na
	t-Butanol (TBA)	40	na
	t-Butylbenzene	260	na
	m/p-Xylene	na	na
	o-Xylene	na	na

REV. NO.	DESCRIPTION	BY	DATE

GRAPHIC SCALE: 1" = 120'

0 60 120 240

PROJ MGR: MBA
DESIGNED BY: ANP
REVIEWED BY: SRL

OPERATOR: MA
CHECKER: ATD
DATE: AUG 2010

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(603) 624-9463

TROY MILLS LANDFILL SUPERFUND SITE
TROY, NEW HAMPSHIRE

DISTRIBUTION OF VOCS IN GROUNDWATER

PROJECT NO. 04.0024466.43

FIGURE NO. 9

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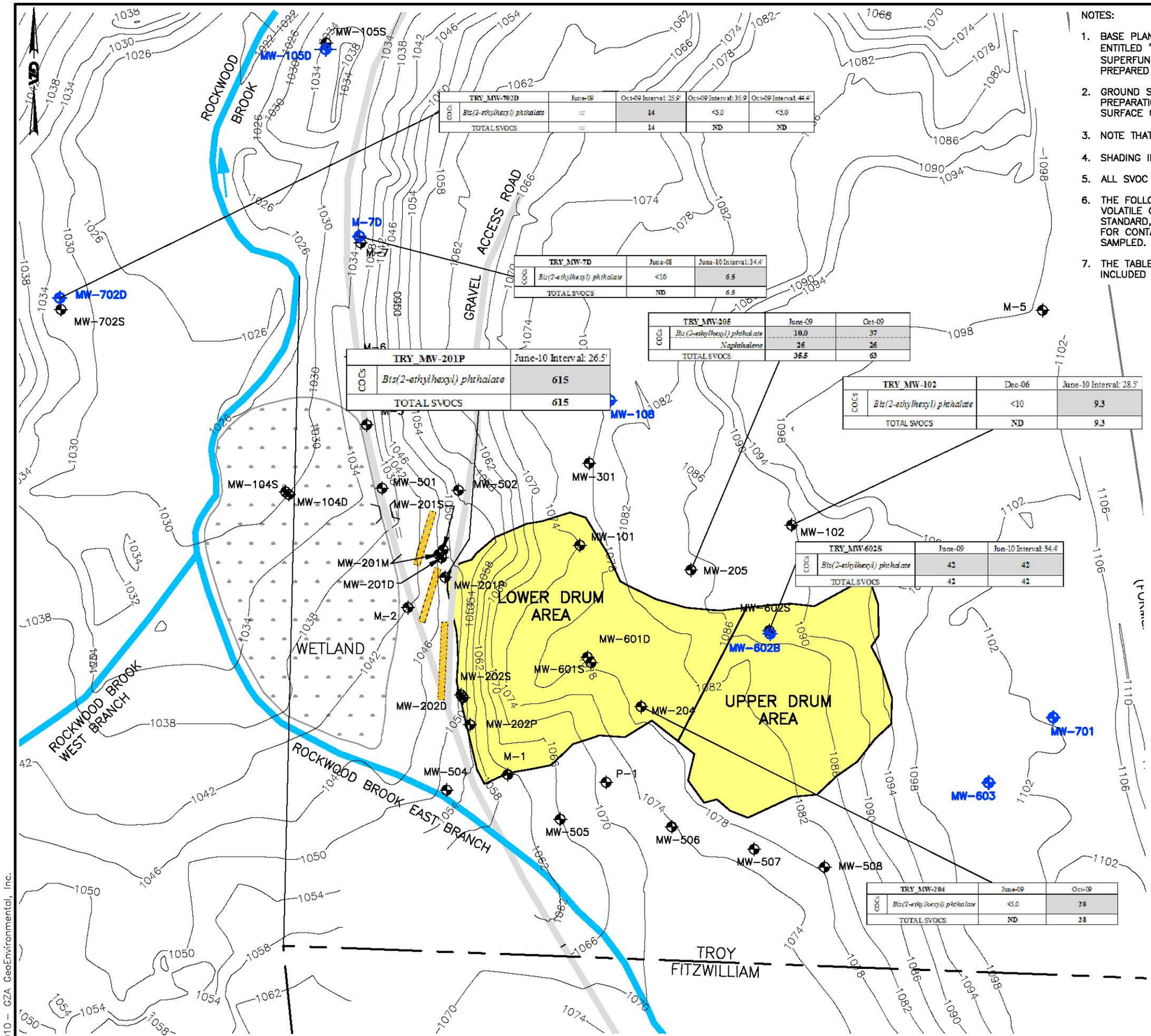
FILE: P:\04Jobs\0024400s\04.0024466.00\04.0024466.43 – Troy 5 Yr Review Report\Figures-CAD\Report Figures\FIGURE 9.dwg BY: joseph.nichols DATE: 12 Aug 2010 – 4:17pm



TRY_MW-702D		June-09	Oct-09 Interval: 25.9'	Oct-09 Interval: 35.9'	Oct-09 Interval: 44.4'
COCs	Bis(2-ethylhexyl) phthalate	NS	14	<5.0	<5.0
TOTAL SVOCS		NS	14	ND	ND

TRY_MW-7D		June-08	June-10 Interval: 34.4'
COCs	Bis(2-ethylhexyl) phthalate	<10	6.5
TOTAL SVOCS		ND	6.5

TRY_MW-205		June-09	Oct-09
COCs	Bis(2-ethylhexyl) phthalate	10.0	37
	Naphthalene	26	26
TOTAL SVOCS		35.5	63

TRY_MW-201P		June-10 Interval: 26.5'
COCs	Bis(2-ethylhexyl) phthalate	615
TOTAL SVOCS		615

TRY_MW-102		Dec-06	June-10 Interval: 28.5'
COCs	Bis(2-ethylhexyl) phthalate	<10	9.3
TOTAL SVOCS		ND	9.3

TRY_MW-602S		June-09	Jun-10 Interval: 34.4'
COCs	Bis(2-ethylhexyl) phthalate	42	42
TOTAL SVOCS		42	42

TRY_MW-204		June-09	Oct-09
COCs	Bis(2-ethylhexyl) phthalate	<5.0	28
TOTAL SVOCS		ND	28

NOTES:

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3. NOTE THAT ALL SAMPLE ID'S HAVE A "TRY_" PREFIX
4. SHADING INDICATES AN EXCEEDANCE OF THE AGQS AND/OR THE ROD ICL.
5. ALL SVOC CONCENTRATIONS ARE GIVEN IN UNIT OF MICROGRAMS PER LITER.
6. THE FOLLOWING ABBREVIATIONS ARE USED IN THIS TABLE: SVOC FOR SEMI VOLATILE ORGANIC COMPOUND, AGQS FOR AMBIENT GROUNDWATER QUALITY STANDARD, ROD ICL FOR RECORD OF DECISION INTERIM CLEANUP LEVEL, COCS FOR CONTAMINANT OF CONCERN, ND FOR NOT DETECTED AND NS FOR NOT SAMPLED.
7. THE TABLE BELOW SUMMARIZES THE AGQS AND ROD FOR COMPOUNDS INCLUDED IN THE FIGURE.

LEGEND

1100 — GROUND SURFACE CONTOUR

APPROXIMATE BOUNDARY OF FORMER DRUM DISPOSAL AREA, AND EXTENT OF DRUM DISPOSAL EXCAVATION

APPROXIMATE LOCATION OF LNAPL INTERCEPTOR TRENCHES

MW-602D — BEDROCK WELL

MW-601S — OVERBURDEN WELL

STREAM FLOW DIRECTION

COMPOUND		AGQS	ROD ICL
COCs	Bis(2-ethylhexyl) phthalate	6	6
	Naphthalene	20	20
TOTAL SVOCS		26.0	26

REV. NO.	DESCRIPTION	BY	DATE

PROJ MGR: MBA
DESIGNED BY: ANP
REVIEWED BY: SRL

OPERATOR: MA
CHECKER: ATD
DATE: AUG 2010

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GRAPHIC SCALE: 1" = 120'
0 60 120 240

TROY MILLS LANDFILL SUPERFUND SITE
TROY, NEW HAMPSHIRE

DISTRIBUTION OF SVOCS IN GROUNDWATER

PROJECT NO. 04.0024466.43

FIGURE NO. 10

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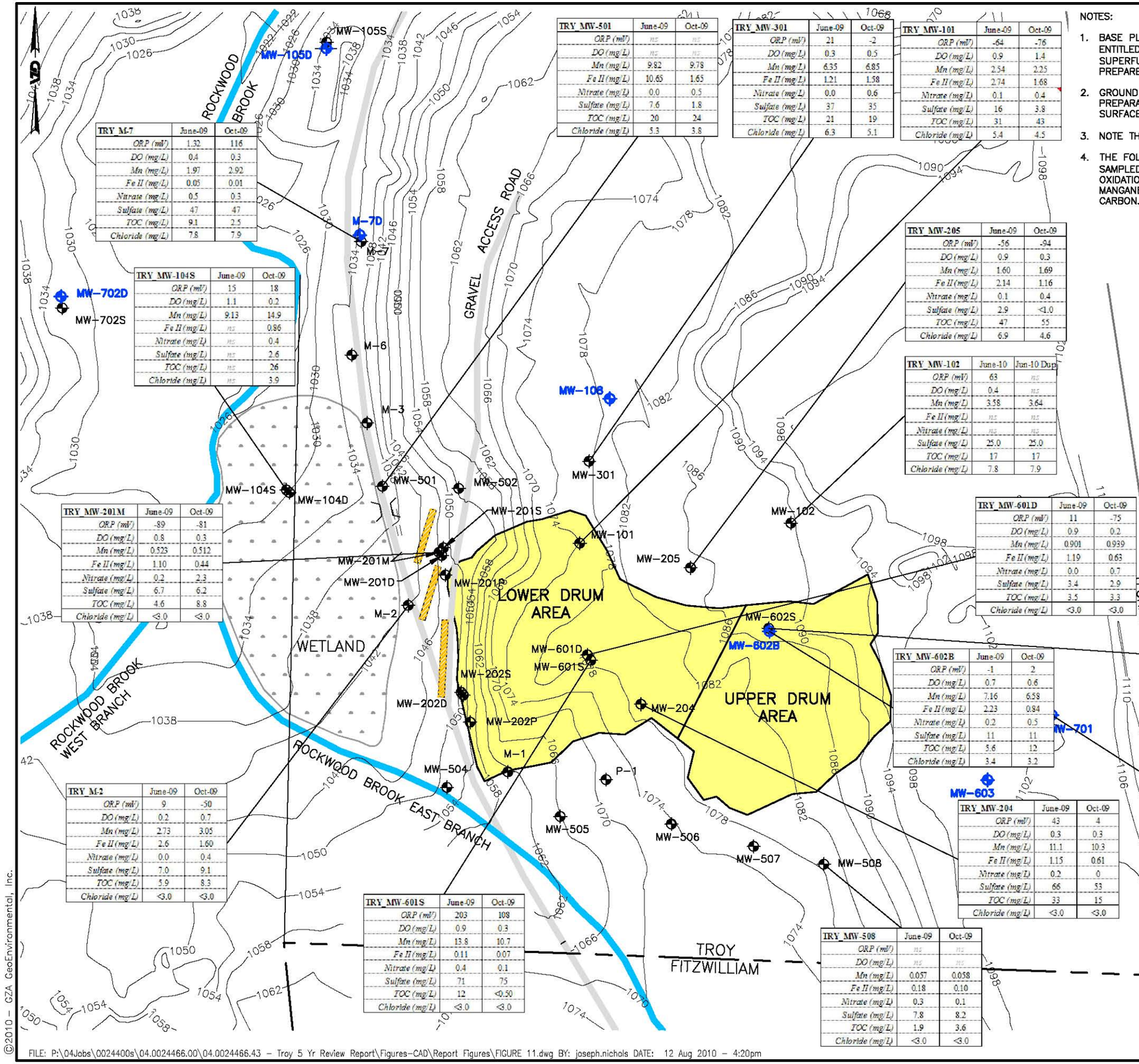
FILE: P:\04Jobs\0024400s\04.0024466.00\04.0024466.43 – Troy 5 Yr Review Report\Figures-CAD\Report Figures\FIGURE 10.dwg BY: joseph.nichols DATE: 12 Aug 2010 – 4:19pm



TRY_M-7	June-09	Oct-09
ORP (mV)	1.32	116
DO (mg/L)	0.4	0.3
Mn (mg/L)	1.97	2.92
Fe II (mg/L)	0.05	0.01
Nitrate (mg/L)	0.5	0.3
Sulfate (mg/L)	47	47
TOC (mg/L)	9.1	2.5
Chloride (mg/L)	7.8	7.9

TRY_MW-104S	June-09	Oct-09
ORP (mV)	15	18
DO (mg/L)	1.1	0.2
Mn (mg/L)	9.13	14.9
Fe II (mg/L)	ns	0.86
Nitrate (mg/L)	ns	0.4
Sulfate (mg/L)	ns	2.6
TOC (mg/L)	ns	26
Chloride (mg/L)	ns	3.9

TRY_MW-201M	June-09	Oct-09
ORP (mV)	-89	-81
DO (mg/L)	0.8	0.3
Mn (mg/L)	0.523	0.512
Fe II (mg/L)	1.10	0.44
Nitrate (mg/L)	0.2	2.3
Sulfate (mg/L)	6.7	6.2
TOC (mg/L)	4.6	8.8
Chloride (mg/L)	<3.0	<3.0

TRY_M-2	June-09	Oct-09
ORP (mV)	9	-50
DO (mg/L)	0.2	0.7
Mn (mg/L)	2.73	3.05
Fe II (mg/L)	2.6	1.60
Nitrate (mg/L)	0.0	0.4
Sulfate (mg/L)	7.0	9.1
TOC (mg/L)	5.9	8.3
Chloride (mg/L)	<3.0	<3.0

TRY_MW-601S	June-09	Oct-09
ORP (mV)	203	108
DO (mg/L)	0.9	0.3
Mn (mg/L)	13.8	10.7
Fe II (mg/L)	0.11	0.07
Nitrate (mg/L)	0.4	0.1
Sulfate (mg/L)	71	75
TOC (mg/L)	12	<0.50
Chloride (mg/L)	<3.0	<3.0

TRY_MW-501	June-09	Oct-09
ORP (mV)	ns	ns
DO (mg/L)	ns	ns
Mn (mg/L)	9.82	9.78
Fe II (mg/L)	10.65	1.65
Nitrate (mg/L)	0.0	0.5
Sulfate (mg/L)	7.6	1.8
TOC (mg/L)	20	24
Chloride (mg/L)	5.3	3.8

TRY_MW-301	June-09	Oct-09
ORP (mV)	21	-2
DO (mg/L)	0.3	0.5
Mn (mg/L)	6.35	6.85
Fe II (mg/L)	1.21	1.58
Nitrate (mg/L)	0.0	0.6
Sulfate (mg/L)	37	35
TOC (mg/L)	21	19
Chloride (mg/L)	6.3	5.1

TRY_MW-101	June-09	Oct-09
ORP (mV)	-64	-76
DO (mg/L)	0.9	1.4
Mn (mg/L)	2.54	2.25
Fe II (mg/L)	2.74	1.68
Nitrate (mg/L)	0.1	0.4
Sulfate (mg/L)	16	3.8
TOC (mg/L)	31	43
Chloride (mg/L)	5.4	4.5

TRY_MW-205	June-09	Oct-09
ORP (mV)	-56	-94
DO (mg/L)	0.9	0.3
Mn (mg/L)	1.60	1.69
Fe II (mg/L)	2.14	1.16
Nitrate (mg/L)	0.1	0.4
Sulfate (mg/L)	2.9	<1.0
TOC (mg/L)	47	55
Chloride (mg/L)	6.9	4.6

TRY_MW-102	June-10	Jun-10 Dup
ORP (mV)	63	ns
DO (mg/L)	0.4	ns
Mn (mg/L)	3.58	3.64
Fe II (mg/L)	ns	ns
Nitrate (mg/L)	ns	ns
Sulfate (mg/L)	25.0	25.0
TOC (mg/L)	17	17
Chloride (mg/L)	7.8	7.9

TRY_MW-601D	June-09	Oct-09
ORP (mV)	11	-75
DO (mg/L)	0.9	0.2
Mn (mg/L)	0.901	0.939
Fe II (mg/L)	1.19	0.63
Nitrate (mg/L)	0.0	0.7
Sulfate (mg/L)	3.4	2.9
TOC (mg/L)	3.5	3.3
Chloride (mg/L)	<3.0	<3.0

TRY_MW-602S	June-09	Oct-09
ORP (mV)	-48	-41
DO (mg/L)	0.3	0.3
Mn (mg/L)	2.18	7.79
Fe II (mg/L)	1.01	0.74
Nitrate (mg/L)	0.1	0
Sulfate (mg/L)	18	2.6
TOC (mg/L)	22	27
Chloride (mg/L)	<3.0	4.4

TRY_MW-602B	June-09	Oct-09
ORP (mV)	-1	2
DO (mg/L)	0.7	0.6
Mn (mg/L)	7.16	6.58
Fe II (mg/L)	2.23	0.84
Nitrate (mg/L)	0.2	0.5
Sulfate (mg/L)	11	11
TOC (mg/L)	5.6	12
Chloride (mg/L)	3.4	3.2

TRY_MW-701	June-09	Oct-09
ORP (mV)	71	117
DO (mg/L)	6.8	4.8
Mn (mg/L)	0.020	0.020
Fe II (mg/L)	0.08	0.03
Nitrate (mg/L)	0.2	0.4
Sulfate (mg/L)	7.1	7.8
TOC (mg/L)	1.5	1.6
Chloride (mg/L)	<3.0	<3.0

TRY_MW-204	June-09	Oct-09
ORP (mV)	43	4
DO (mg/L)	0.3	0.3
Mn (mg/L)	11.1	10.3
Fe II (mg/L)	1.15	0.61
Nitrate (mg/L)	0.2	0
Sulfate (mg/L)	66	53
TOC (mg/L)	33	15
Chloride (mg/L)	<3.0	<3.0

TRY_MW-508	June-09	Oct-09
ORP (mV)	ns	ns
DO (mg/L)	ns	ns
Mn (mg/L)	0.057	0.058
Fe II (mg/L)	0.18	0.10
Nitrate (mg/L)	0.3	0.1
Sulfate (mg/L)	7.8	8.2
TOC (mg/L)	1.9	3.6
Chloride (mg/L)	<3.0	<3.0

NOTES:

1. BASE PLAN IS FROM FIGURE 2.2 OF THE REPORT BY METCALF & EDDY, INC. ENTITLED "FINAL REMEDIAL INVESTIGATION, VOLUME I, TROY MILLS LANDFILL SUPERFUND SITE, TROY, NEW HAMPSHIRE", DATED SEPTEMBER 2005, AND PREPARED FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
2. GROUND SURFACE CONTOURS ARE FROM THE BASE PLAN. THE METHOD OF PREPARATION BY OTHERS IS UNKNOWN. EPA GRADING CHANGED GROUND SURFACE CONTOURS SHOWN IN VICINITY OF LOWER AND UPPER DRUM AREA.
3. NOTE THAT ALL SAMPLE ID'S HAVE A "TRY_" PREFIX
4. THE FOLLOWING ABBREVATION ARE USED IN THIS TABLE: NS FOR NOT SAMPLED, MV FOR MILLIVOLTS, MG/L FOR MILLIGRAMS PER LITER, ORP FOR OXIDATION REDUCTION POTENTIAL, DO FOR DISSOLVED OXYGEN, MN FOR MANGANESE, FE II FOR FERROUS IRON, AND TOC FOR TOTAL ORGANIC CARBON.

LEGEND

1100 — GROUND SURFACE CONTOUR

APPROXIMATE BOUNDARY OF FORMER DRUM DISPOSAL AREA, AND EXTENT OF DRUM DISPOSAL EXCAVATION

APPROXIMATE LOCATION OF LNAPL INTERCEPTOR TRENCHES

MW-602D — BEDROCK WELL

MW-601S — OVERBURDEN WELL

STREAM FLOW DIRECTION

REV. NO.	DESCRIPTION	BY	DATE

PROJ MGR: MBA
DESIGNED BY: ANP
REVIEWED BY: SRL

OPERATOR: MA
CHECKER: ATD
DATE: AUG 2010

GZA GeoEnvironmental, Inc. Engineers and Scientists
380 HARVEY ROAD
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GRAPHIC SCALE: 1" = 120'
0 60 120 240

TROY MILLS LANDFILL SUPERFUND SITE
TROY, NEW HAMPSHIRE

DISTRIBUTION OF GEOCHEMICAL PARAMETERS IN GROUNDWATER

PROJECT NO. 04.0024466.43

FIGURE NO. 11

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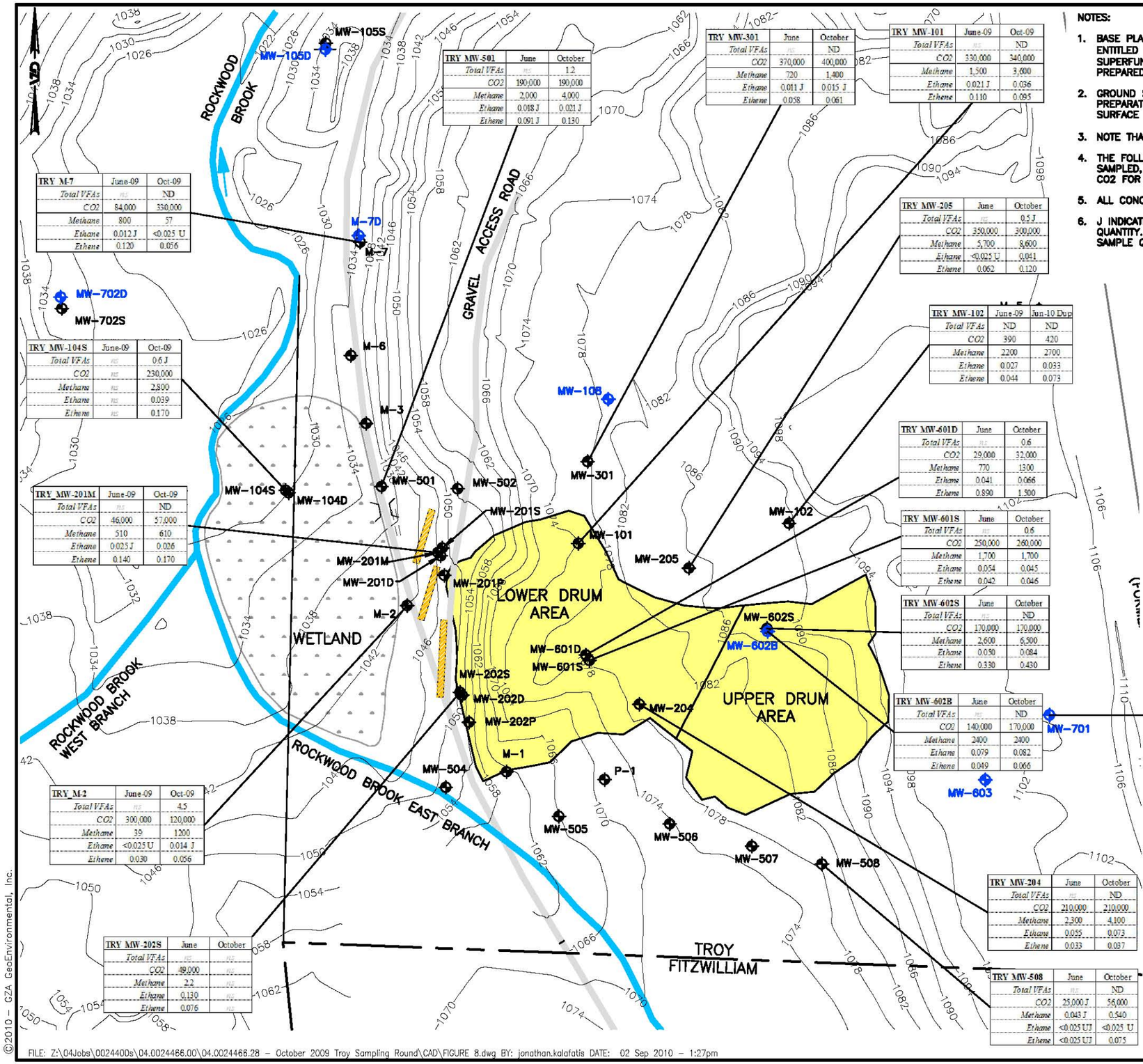
FILE: P:\04Jobs\0024400s\04.0024466.00\04.0024466.43 – Troy 5 Yr Review Report\Figures-CAD\Report Figures\FIGURE 11.dwg BY: joseph.nichols DATE: 12 Aug 2010 – 4:20pm



TRY MW-501	June	October
Total VFAs	ns	1.2
CO2	190,000	190,000
Methane	2,000	4,000
Ethane	0.018 J	0.021 J
Ethene	0.091 J	0.130

TRY MW-301	June	October
Total VFAs	ns	ND
CO2	370,000	400,000
Methane	720	1,400
Ethane	0.011 J	0.015 J
Ethene	0.038	0.061

TRY MW-101	June-09	Oct-09
Total VFAs	ns	ND
CO2	330,000	340,000
Methane	1,500	3,600
Ethane	0.021 J	0.036
Ethene	0.110	0.095

TRY M-7	June-09	Oct-09
Total VFAs	ns	ND
CO2	84,000	330,000
Methane	800	57
Ethane	0.012 J	<0.025 U
Ethene	0.120	0.056

TRY MW-205	June	October
Total VFAs	ns	0.5 J
CO2	350,000	300,000
Methane	5,700	8,600
Ethane	<0.025 U	0.041
Ethene	0.062	0.120

TRY MW-102	June-09	Jun-10 Dup
Total VFAs	ND	ND
CO2	390	420
Methane	2200	2700
Ethane	0.027	0.033
Ethene	0.044	0.073

TRY MW-104S	June-09	Oct-09
Total VFAs	ns	0.6 J
CO2	ns	230,000
Methane	ns	2,800
Ethane	ns	0.039
Ethene	ns	0.170

TRY MW-601D	June	October
Total VFAs	ns	0.6
CO2	29,000	32,000
Methane	770	1300
Ethane	0.041	0.066
Ethene	0.890	1.500

TRY MW-201M	June-09	Oct-09
Total VFAs	ns	ND
CO2	46,000	57,000
Methane	510	610
Ethane	0.025 J	0.026
Ethene	0.140	0.170

TRY MW-601S	June	October
Total VFAs	ns	0.6
CO2	250,000	260,000
Methane	1,700	1,700
Ethane	0.054	0.045
Ethene	0.042	0.046

TRY MW-602S	June	October
Total VFAs	ns	ND
CO2	170,000	170,000
Methane	2,600	6,500
Ethane	0.050	0.084
Ethene	0.330	0.430

TRY MW-701	June	October
Total VFAs	ns	0.5
CO2	32,000	36,000
Methane	1.2	0.072 J
Ethane	<0.025 U	<0.025 UJ
Ethene	0.06	0.017 J

TRY MW-602B	June	October
Total VFAs	ns	ND
CO2	140,000	170,000
Methane	2400	2400
Ethane	0.079	0.082
Ethene	0.049	0.066

TRY M-2	June-09	Oct-09
Total VFAs	ns	4.5
CO2	300,000	120,000
Methane	39	1200
Ethane	<0.025 U	0.014 J
Ethene	0.030	0.056

TRY MW-204	June	October
Total VFAs	ns	ND
CO2	210,000	210,000
Methane	2,300	4,100
Ethane	0.055	0.073
Ethene	0.033	0.037

TRY MW-202S	June	October
Total VFAs	ns	ns
CO2	49,000	ns
Methane	2.2	ns
Ethane	0.130	ns
Ethene	0.076	ns

TRY MW-508	June	October
Total VFAs	ns	ND
CO2	25,000 J	56,000
Methane	0.043 J	0.540
Ethane	<0.025 UJ	<0.025 U
Ethene	<0.025 UJ	0.075

NOTES:

1. BASE PLAN IS FROM FIGURE 2.2 OF THE REPORT BY METCALF & EDDY, INC. ENTITLED "FINAL REMEDIAL INVESTIGATION, VOLUME I, TROY MILLS LANDFILL SUPERFUND SITE, TROY, NEW HAMPSHIRE", DATED SEPTEMBER 2005, AND PREPARED FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
2. GROUND SURFACE CONTOURS ARE FROM THE BASE PLAN. THE METHOD OF PREPARATION BY OTHERS IS UNKNOWN. EPA GRADING CHANGED GROUND SURFACE CONTOURS SHOWN IN VICINITY OF LOWER AND UPPER DRUM AREA.
3. NOTE THAT ALL SAMPLE ID'S HAVE A "TRY_" PREFIX
4. THE FOLLOWING ABBREVIATIONS ARE USED IN THIS TABLE: NS FOR NOT SAMPLED, ND FOR NOT DETECTED, VFAS FOR VOLATILE FATTY ACIDS, AND CO2 FOR CARBON DIOXIDE.
5. ALL CONCENTRATIONS ARE GIVEN IN UNIT OF MICROGRAMS PER LITER.
6. J INDICATES THAT THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED QUANTITY. U INDICATES THAT THE ASSOCIATED NUMERICAL VALUE IS THE SAMPLE QUANTITATION LIMIT.

LEGEND

1100 — GROUND SURFACE CONTOUR

APPROXIMATE BOUNDARY OF FORMER DRUM DISPOSAL AREA, AND EXTENT OF DRUM DISPOSAL EXCAVATION

APPROXIMATE LOCATION OF LNAPL INTERCEPTOR TRENCHES

MW-602D — BEDROCK WELL

MW-601S — OVERBURDEN WELL

STREAM FLOW DIRECTION

REV. NO.	DESCRIPTION	BY	DATE

PROJ MGR: MBA
DESIGNED BY: ANP
REVIEWED BY: SRL

OPERATOR: MA
CHECKER: ATD
DATE: AUG 2010

GRAPHIC SCALE: 1" = 120'
0 60 120 240

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TROY MILLS LANDFILL SUPERFUND SITE
TROY, NEW HAMPSHIRE

DISTRIBUTION OF DISSOLVED GASES IN GROUNDWATER

PROJECT NO.
04.0024466.43

FIGURE NO.
12

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FILE: Z:\04Jobs\0024400s\04.0024466.00\04.0024466.28 – October 2009 Troy Sampling Round\CAD\FIGURE 8.dwg BY: jonathan.kalafatis DATE: 02 Sep 2010 – 1:27pm

TABLES

TABLE 3 - WELL CONSTRUCTION INFORMATION
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well Designation	**Well Type (2-in, 1.5-in etc)**	**Measuring Point**	**Height of Stickup of Measuring Point** (ft)	**Bladder Pump Model**	**Bladder Length in feet (L) / Diameter in inches (D) / & Capacity in mg/L (C)**	**Screened Geologic Unit**	**Screen Interval** (ft, referenced to measuring point)	**Depth to Well Bottom** (ft, referenced to measuring point)	**Historic Low Water Level** (ft, referenced to measuring point)	**Depth of Bladder Pump Intake** (ft, referenced to measuring point)	**Pump Intake Distance from Top of Screen** (ft, referenced to measuring point)	**Distance Between Pump Intake and Bottom of Well** (ft, referenced to measuring point)
Wells With Water Level Measurements Only												
TRY_P-1	2-in PVC	PVC	1.74	---	---	---	---	---	---	---	---	---
TRY_M-1	1 1/2-in PVC	PVC	0.64	---	---	---	---	---	---	---	---	---
TRY_M-3	1 1/2-in PVC	PVC	0.95	---	---	Overburden	7.5-31.4	31.4	6.76	---	---	---
TRY_M-5	1 1/2-in PVC	PVC	2.25	---	---	---	---	---	---	---	---	---
TRY_M-6	2-in PVC	Casing	1.99	---	---	---	---	---	---	---	---	---
TRY_M-7D	1 1/2-in PVC	PVC	1.49	---	---	Deep Bedrock	50.8-80.8	80.8	6.12	---	---	---
TRY_MW-102	2-in PVC	Casing	2.89	---	---	Predominantly Overburden	21.2-36.2**	---	---	---	---	---
TRY_MW-108	1 1/2-in PVC	Casing	3.25	---	---	Deep Bedrock	84.3-134.3**	---	---	Obstruction in Well	---	---
TRY_MW-201D	2-in PVC	PVC	1.98	---	---	---	---	---	---	---	---	---
TRY_MW-201P	4-in PVC	Casing	2.07	---	---	---	---	---	---	---	---	---
TRY_MW-202S	2-in PVC	PVC	1.64	---	---	Overburden	6.6 to 13.6	13.6	10.7/8	---	---	---
TRY_MW-202D	2-in PVC	Casing	1.84	---	---	---	---	---	---	---	---	---
TRY_MW-202P	4-in PVC	PVC	1.96	---	---	---	---	---	---	---	---	---
TRY_MW-502	2-in PVC	PVC	2.47	---	---	Overburden	---	---	---	---	---	---
TRY_MW-504	2-in PVC	PVC	2.50	---	---	---	---	---	---	---	---	---
TRY_MW-505	2-in PVC	PVC	2.56	---	---	Overburden	6.6-16.6**	---	---	---	---	---
TRY_MW-506	2-in PVC	PVC	3.19	---	---	---	---	---	---	---	---	---
TRY_MW-507	2-in PVC	PVC	2.74	---	---	Overburden	8-13**	13.0**	6.93	---	---	---
TRY_MW-603	2-in PVC	PVC	2.16	---	---	Bedrock	---	5.2-15.2	---	---	---	---
TRY_MW-201S	1 1/2-in PVC	PVC	2.24	---	---	Overburden	---	---	---	Product Thickness Measurement only	---	---
Wells Currently Sampled That Have Screen Lengths Greater than 10 feet												
TRY_M-2	1 1/2-in PVC	PVC	0.75	QED T1300	3.8-ft L, 1-in D, 220-mL C	Overburden	7.5-43.9	43.9	5.35	25.7	18.2	18.2
TRY_MW-101	1 1/2-in PVC	Casing	1.18	Geotech Geo.85SS24	2.1-ft L, 0.58-in D, 59.6 mL C	Predominantly Overburden	32-82	82	29.81	57.0	25.0	25.0
TRY_MW-104S	2-in PVC	PVC	2.17	QED T1250	1.2-ft L, 1.5-in D, 100-mL C	Overburden	5-17**/6	17.7**/6	4.20	14.7	9.7	3.0**/7
TRY_MW-104D	2-in PVC	PVC	2.48	QED T1250	1.2-ft L, 1.5-in D, 100-mL C	Overburden	37.1-52.1**	52.14	4.18	48	10	4.0
TRY_MW-105S	2-in PVC	PVC	---	QED T1250	1.2-ft L, 1.5-in D, 100-mL C	Overburden	6.5-19.5**	22	---	18.5	12	3.5
TRY_MW-105D	2-in PVC	PVC	1.89	(Peristaltic Pump)	---	Deep Bedrock	48.5-88.2**	---	---	---	---	---
TRY_MW-301	2-in PVC	PVC	1.77	QED T1300	3.8-ft L, 1-in D, 220-mL C	Overburden	27.8-42.8	42.8	33.72	41.4	13.6	1.4
TRY_MW-601S	2-in PVC	PVC	2.69	QED T1250	1.2-ft L, 1.5-in D, 100-mL C	Overburden	14.3-29.3	29.3	21.02	27.8	13.5	1.5
TRY_MW-602S	2-in PVC	PVC	2.30	QED T1250	1.2-ft L, 1.5-in D, 100-mL C	Overburden	21-36	36	22.60	34.4	13.4	1.4
TRY_MW-701	2-in PVC	PVC	3.18	QED T1250	1.2-ft L, 1.5-in D, 100-mL C	Deep Bedrock	18.3-78.3	78.3	8.78	48.3	30	30
TRY_MW-702D	2-in PVC	PVC	2.44	(Kemmerer Sampler)	---	Deep Bedrock	19.4-46.4**/6	---	---	---	---	---

TABLE 3 - WELL CONSTRUCTION INFORMATION
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well Designation	**Well Type (2-in, 1.5-in etc)**	**Measuring Point**	**Height of Stickup of Measuring Point** (ft)	**Bladder Pump Model**	**Bladder Length in feet (L) / Diameter in inches (D) / & Capacity in mg/L (C)**	**Screened Geologic Unit**	**Screen Interval** (ft, referenced to measuring point)	**Depth to Well Bottom** (ft, referenced to measuring point)	**Historic Low Water Level** (ft, referenced to measuring point)	**Depth of Bladder Pump Intake** (ft, referenced to measuring point)	**Pump Intake Distance from Top of Screen** (ft, referenced to measuring point)	**Distance Between Pump Intake and Bottom of Well** (ft, referenced to measuring point)
Wells Currently Sampled With Screen Lengths Equal to or Less than 10 feet												
TRY_M-7	1 1/2-in PVC	PVC	1.61	QED T1300	3.8-ft L, 1-in D, 220-mL C	Overburden	7.8-17.3	17.3	8.71	15.8	8.0	1.5
TRY_MW-201M	1 1/2-in PVC	PVC	2.81	QED T1300	3.8-ft L, 1-in D, 220-mL C	Overburden	26.6-36.6	36.6	9.53	34.6	8.0	2.0
TRY_MW-204	2-in PVC	PVC	2.6	QED T1250	1.2-ft L, 1.5-in D, 100-mL C	Overburden	22.8-32.8	32.8	19.95	31.3	8.5	1.5
TRY_MW-205	2-in PVC	PVC	2.07	QED T1250	1.2-ft L, 1.5-in D, 100-mL C	Overburden	29.1-39.1	39.1	30.73	37.6	8.5	1.5
TRY_MW-501	2-in PVC	PVC	2.69	(non-dedicated bailer)	---	Overburden	5.6-12	12	9.33	---	---	---
TRY_MW-508	2-in PVC	Casing	3.40	(non-dedicated bailer)	---	Overburden	8.4-13.9	13.9	TBD	---	---	---
TRY_MW-601D	2-in PVC	PVC	2.23	QED T1250	1.2-ft L, 1.5-in D, 100-mL C	Overburden	52.1-62.1	62.1	22.22	57.1	5.0	5.0
TRY_MW-602B	2-in PVC	PVC	2.12	QED T1250	1.2-ft L, 1.5-in D, 100-mL C	Bedrock	37.5-47.5	47.5	19	42.5	5.0	5.0
TRY_MW-702S	2-in PVC	PVC	2.30	(non-dedicated bailer)	---	Overburden	3.3-8.3**/6	8.9**/6	5.66	---	---	---

Notes:
1. "ft bgs" indicates depth in feet below ground surface. "TBD" indicates to be determined.
2. "**" indicates downhole information was not verified during the October 8, 2008 camera survey.
3. Historic "low" water level is based on water level data compiled from December 2006, May and December 2007, and June/July 2008 water level measurements. The historic low water level refers to the lowest recorded water level measurement. An exception is TRY_501, where the second lowest value was used since the historic low indicates that the well was dry.
4. "-" indicates that data was not obtained; "n/a" indicates not applicable.
5. "---" = GZA included every known monitoring point within the above table. The information for numerous locations have been left blank as GZA does not have the data for those monitoring locations.
6. GZA notes that there appears to be a minor discrepancy between the historical information regarding the bottom of screen/well and that which was measured in July 2008 by GZA in three wells (TRY_MW-702S, TRY_MW-702D, & TRY_MW-104S). Both sets of information are included in this table.
7. The distance between pump intake and bottom of the well is calculated using the Depth to Well Bottom information.
8. During the June sampling round, MW-105S was not sampled, but a water level was collected and MW-202S was sampled. During the October sampling round, MW-105S was sampled and MW-202S was not sampled, but a water level was collected. The wells are arranged in this table according to how they were sampled during the October round.

TABLE 6 - GROUNDWATER LEVEL MEASUREMENTS AND ELEVATION DATA
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well Designation	Screened Geologic Unit	Measuring Point	Measuring Point Elevation	November 2006		May 2007		June 2008		November 2008		June 2009		October 2009	
				DTW (feet)	ELEV. (feet)	DTW (feet)	ELEV. (feet)	DTW (feet)	ELEV. (feet)	DTW (feet)	ELEV. (feet)	DTW (feet)	ELEV. (feet)	DTW (feet)	ELEV. (feet)
Wells With Water Level Measurements Only															
TRY_P-1	---	PVC	1073.44	---	---	---	---	12.81	1060.63	12.7	1060.74	12.46	1060.98	13.67	1059.77
TRY_M-1	---	PVC	1062.24	---	---	---	---	8.34	1053.90	7.57	1054.67	8.14	1054.10	8.76	1053.48
TRY_M-3	Overburden	PVC	1037.65	6.61	1031.04	6.1	1031.55	6.8	1030.85	6.32	1031.33	6.59	1031.06	6.50	1031.15
TRY_M-5	---	PVC	1103.85	---	---	---	---	16.15	1087.70	16.7	1087.15	15.66	1088.19	16.50	1087.35
TRY_M-6	---	Casing	1040.49	---	---	---	---	10.65	1029.84	10.31	1030.18	10.38	1030.11	10.57	1029.92
TRY_M-7D	Deep Bedrock	PVC	1036.39	4.54	1031.85	4.39	1032.00	5.58	1030.81	4.31	1032.08	2.89	1033.50	4.65	1031.74
TRY_MW-102	Predominantly Overburden	Casing	1093.89	24.99	1068.90	---	---	22.07	1071.82	23.93	1069.96	21.95	1071.94	23.65	1070.24
TRY_MW-108	Deep Bedrock	Casing	1082.95	36.16	1046.79	34.52	1048.43	35.61	1047.34	35.85	1047.10	35.9	1047.05	36.02	1046.93
TRY_MW-201D	---	PVC	1050.08	10.52	1039.56	---	---	10.59	1039.49	10.44	1039.64	10.6	1039.48	10.68	1039.40
TRY_MW-201P	---	Casing	1048.57	---	---	---	---	7.99	1040.58	9.4	1039.17	7.79	1040.78	8.02	1040.55
TRY_MW-202S	Overburden	PVC	1051.64	---	---	---	---	10.97	1040.67	10.72	1040.92	10.79	1040.85	11.18	1040.46
TRY_MW-202D	---	Casing	1051.84	---	---	---	---	10.14	1041.70	9.78	1042.06	10.12	1041.72	10.43	1041.41
TRY_MW-202P	---	PVC	1053.36	---	---	---	---	9.79	1043.57	7.98	1045.38	9.49	1043.87	9.97	1043.39
TRY_MW-502	Overburden	PVC	1057.57	14.7	1042.87	---	---	14.82	1042.75	14.99	1042.58	14.91	1042.66	15.13	1042.44
TRY_MW-504	---	PVC	1053.90	---	---	---	---	7.46	1046.44	6.55	1047.35	7.42	1046.48	7.51	1046.39
TRY_MW-505	Overburden	PVC	1065.16	6.43	1058.73	5.82	1059.34	7.24	1057.92	6.69	1058.47	7.11	1058.05	7.81	1057.35
TRY_MW-506	---	PVC	1076.89	---	---	---	---	12.27	1064.62	12.25	1064.64	11.85	1065.04	13.24	1063.65
TRY_MW-507	Overburden	PVC	1076.54	7.36	1069.18	---	---	7.76	1068.78	---	---	7.28	1069.26	9.15	1067.39
TRY_MW-603	Bedrock	PVC	1104.16	5.43	1098.73	---	---	7.76	1096.40	6.71	1097.45	7.04	1097.12	9.22	1094.94
TRY_MW-201S	Overburden	PVC	1051.64	10.62	1041.02	---	---	10.6	1041.04	LNAPL	---	LNAPL	---	LNAPL	---
Wells Currently Sampled That Have Screen Lengths Greater Than 10 Feet															
TRY_M-2	Overburden	PVC	1044.35	5.36	1038.99	4.85	1039.50	5.74	1038.61	5.23	1039.12	5.49	1038.86	5.54	1038.81
TRY_MW-101	Predominantly Overburden	Casing	1077.48	31.25	1046.23	29.51	1047.97	29.11	1048.37	29.94	1047.54	29.76	1047.72	29.48	1048.00
TRY_MW-104S	Overburden	PVC	1032.97	3.93	1029.04	---	---	4.39	1028.58	4.02	1028.95	4.17	1028.80	3.93	1029.04
TRY_MW-104D	Overburden	PVC	1033.08	3.93	1029.15	---	---	4.24	1028.84	3.89	1029.19	4.18	1028.90	3.94	1029.14
TRY_MW-105S	Overburden	PVC	---	---	---	---	---	11.58	---	10.94	---	10.96	---	10.45	---
TRY_MW-105D	Deep Bedrock	PVC	1036.49	---	---	11.45	1025.04	12.65	1023.84	---	---	11.52	1024.97	10.21	1026.28
TRY_MW-301	Overburden	PVC	1080.77	35.86	1044.91			34.14	1046.63	34.71	1046.06	34.56	1046.21	34.85	1045.92
TRY_MW-601S	Overburden	PVC	1070.89	21.66	1049.23	20.53	1050.36	21.29	1049.60	21.67	1049.22	20.85	1050.04	21.57	1049.32
TRY_MW-602S	Overburden	PVC	1084.60	26.13	1058.47	21.09	1063.51	21.07	1063.53	24.26	1060.34	21.38	1063.22	24.22	1060.38
TRY_MW-701	Deep Bedrock	PVC	1106.28	---	---	5.65	1100.63	9.99	1096.29	7.71	1098.57	8.64	1097.64	10.70	1095.58
TRY_MW-702D	Deep Bedrock	PVC	1036.34	---	---	3.96	1032.38	6.2	1030.14	5.71	1030.63	5.30	1031.04	6.51	1029.83
Wells Currently Sampled With Screen Lengths Equal To Or Less Than 10 Feet															
TRY_M-7	Overburden	PVC	1037.41	8.46	1028.95	8.5	1028.91	8.76	1028.65	8.72	1028.69	8.51	1028.90	8.53	1028.88
TRY_MW-201M	Overburden	PVC	1049.91	9.53	1040.38	9.19	1040.72	9.52	1040.39	9.53	1040.38	9.37	1040.54	10.50	1039.41
TRY_MW-204	Overburden	PVC	1081.80	20.38	1061.42	18.85	1062.95	19.53	1062.27	20.39	1061.41	18.93	1062.87	20.69	1061.11
TRY_MW-205	Overburden	PVC	1087.97	33.42	1054.55	29.94	1058.03	29.68	1058.29	31.74	1056.23	29.71	1058.26	31.06	1056.91
TRY_MW-501	Overburden	PVC	1040.49	6.57	1033.92	9.33	1031.16	6.58	1033.91	6.38	1034.11	6.58	1033.91	6.43	1034.06
TRY_MW-508	Overburden	Casing	1079.50	---	---	---	---	11.65	1067.85	6.19	1073.31	7.17	1072.33	8.58	1070.92
TRY_MW-601D	Overburden	PVC	1070.43	23.1	1047.33	21.66	1048.77	22.38	1048.05	22.76	1047.67	21.84	1048.59	22.81	1047.62
TRY_MW-602B	Bedrock	PVC	1083.92	21.39	1062.53	17.82	1066.10	18.39	1065.53	20.34	1063.58	18.28	1065.64	20.61	1063.31
TRY_MW-702S	Overburden	PVC	1036.60	---	---	4.57	1032.03	6.61	1029.99	6.03	1030.57	5.58	1031.02	6.82	1029.78

Notes:

1. Depth to groundwater (DTW) measurements are referenced to top of polyvinyl chloride (TOPVC) risers or top of casing (TOC) at groundwater monitoring wells as indicated.
2. Depth to groundwater measurements were collected by GZA field personnel.
3. A survey of the site wells was conducted in February 2005 by Conklin & Soroka of Cheshire, Connecticut. The benchmark point used for this survey was monitoring well TRY_MW-3; its elevation was established as 1037.65 (TOPVC) according to the plan titled "Topographic Survey Depicting Monitoring Well Locations, Land of Troy Mills Landfill." The 700-series wells were drilled in November 2006 by NH Boring after the initial elevation survey was conducted. The elevations of these wells were measured by GZA personnel using already existing on-site wells as reference points.
4. The horizontal datum used to identify site monitoring wells is NAD83/96 per NHDOT Base Station, following the NH State Plane projection, in units of US Survey feet.

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen	NH AGQS	ROD ICL	TRY_M-2 Overburden									TRY_M-7 Overburden									
Sampling Event Date			**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**	**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**	**Oct-09 DUP**
VOCs of Concern (µg/L)																					
Tetrachloroethene	5	5	<2	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	ns	<0.4	ns	<2.0	<2.0	<2.0	<2.0	ns
Trichloroethene	5	5	<2	<1.0	ns	<2.0	**3.2**	<2.0	**2.2**	<2.0	<2.0	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
cis-1,2-Dichloroethene	70	70	**68**	**11**	ns	**11**	**23**	<2.0	**16**	**2.9**	**8.4**	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
Vinyl Chloride	2	2	<2	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
1,2,4-Trimethylbenzene	330	50	**217E**	**48**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
1,3,5-Trimethylbenzene	330	50	**57**	**2.6**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
2-Butanone(MEK)	4,000	170		<1.0	ns	<10	<10	<10	<10	<10	<10		<1.0	ns	<10	ns	<10	<10	<10	<10	ns
Benzene	5	5	**3.8**	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	ns	<0.3	ns	<2.0	<2.0	<2.0	<2.0	ns
Naphthalene	20	20	**30**	**8.7**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
n-Butylbenzene	260	50	ns	**6.9**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
n-Propylbenzene	260	50	**27**	**9.6**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
p-Isopropyltoluene	260	50	**11**	**2.4**	ns	<2.0	**2.8**	<2.0	<2.0	<2.0	<2.0	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
Tetrahydrofuran(THF)	154	154	**16**	**2.8**	ns	<9	<10	<10	<10	<10	<10	<10	<1.0	ns	<10	ns	<10	<10	<10	<10	ns
Toluene	1,000	1,000	<2	**1.5**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
Additional VOCs (µg/L)																					
1,1,1-Trichloroethane	200	na	<2	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**3.6**	**3.5**	**4.0**	**4.5**	ns	**2.4**	**2.8**	**2.3**	**2.2**	ns
1,1-Dichloroethane	81	na	<2	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**10**	<1.0	**8.0**	**7.8**	ns	**11**	**10**	**8.1**	**10**	ns
1,1-Dichloroethene	7	na	<2	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	**3.0**	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
1,2,4-Trichlorobenzene	70	na	<2	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
1,2-Dichloroethane	5	na	<2	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	<2.0	<0.4	ns	<2.0	<2.0	<2.0	<2.0	ns
1,4-Dichlorobenzene	75	na	<2	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
2-Chlorotoluene	100	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
4-Methyl-2-pentanone (MIBK)	2,000	na	<10	<1.0	ns	<10	<10	<10	<10	<10	<10	<10	<1.0	<2.0	<10	ns	<10	<10	<10	<10	ns
Acetone	6,000	na	<10	<1.0	ns	<10	<10	<10	<10	<10	<10	<10	<1.0	<10	<10	ns	<10	<10	<10	<10	ns
Ethylbenzene	700	na	<2	**13**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	<10	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
Isopropylbenzene	800	na	**20**	**8.5**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
Methylene Chloride	5	na	<2	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
sec-Butylbenzene	260	na	**11.0**	**8.9**	ns	**2**	**7.0**	<2.0	**2.9**	**2.8**	**2.0**	**<2**	<1.0	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
t-Butanol (TBA)	40	na	<10	ns	ns	<10	<10	<10	<10	<10	<10	<10	ns	<10	<10	ns	<10	<10	<10	**16**	ns
t-Butylbenzene	260	na	**3**	**2.8**	ns	<2.0	**2.1**	<2.0	<2.0	<2.0	<2.0	<2	<1.0	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
Trichlorofluoromethane	2,000	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	**2.0**	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
m/p-Xylene	na	na	**55**	**3.8**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<2.0	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
o-Xylene	na	na	<2	**2.0**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2	<1.0	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns
Total VOCs (µg/L)	na	na	**518.8**	**132.5**	ns	**13.0**	**38.1**	ND	**21.1**	**5.7**	**10.4**	**13.6**	**8.5**	**32.0**	**12.3**	ns	**13.4**	**12.8**	**10.4**	**28.2**	ns
1,4-Dioxane (µg/L)																					
1,4-Dioxane	3	3	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**2.2**	ns	ns	**2.7**	**2.9**
SVOCs of Concern (µg/L)																					
Benzo(a)pyrene	0.20	0.20	<10	<5	ns	<10	<10	<10	<10	<10	<10	<10	<5	ns	<10	ns	<10	<10	<10	<10	ns
Benzo(b)fluoranthene	0.05	0.05	<10	<5	ns	<10	<10	<10	<10	<10	<10	<10	<5	ns	<10	ns	<10	<10	<10	<10	ns
Bis(2-ethylhexyl) phthalate	6	6	<10	<5	ns	**27**	<10	**21**	<5.0	<5.0	<5.0	<10	<5	ns	<10	ns	<5.0	<5.0	<5.0	<5.0	ns
Dibenzo(a,h)anthracene	0.01	0.01	<10	<5	ns	<10	<10	<10	<10	<10	<10	<10	<5	ns	<10	ns	<10	<10	<10	<10	ns
Naphthalene	20	20	**30**	**5**	ns	<10	<10	<10	<10	<10	<10	<2	<5	ns	<10	ns	<10	<10	<10	<10	ns
Pentachlorophenol	1	1	<25	<5	ns	<20	<20	<20	<20	<20	<20	<25	<5	ns	<20	ns	<20	<20	<20	<20	ns
Additional SVOCs (µg/L)																					
3 & 4-Methylphenol	40	na	<10	**16**	ns	<10	<10	<10	<10	<10	<10	<10	<10	ns	<10	ns	<10	<10	<10	<10	ns
Di-n-butylphthalate	na	na	<10	<5	ns	<10	<10	<10	<10	<10	<10	<10	<5	ns	<10	ns	<10	<10	<10	<10	ns
Di-n-octylphalate	na	na	<10	<5	ns	<10	<10	<10	<10	<10	<10	<10	<5	ns	<10	ns	<10	<10	<10	<10	ns
Total SVOCs (µg/L)	na	na	**30**	**21**	ns	**27**	ND	**21**	ND	ND	ND	ND	ND	ns	ND	ns	ND	ND	ND	ND	ns
Metals of Concern (mg/L)																					
Arsenic	0.01	0.01	ns	<0.200	ns	**0.0030**	**0.0029**	**0.0029**	ns	ns	ns	ns	<0.200	<0.0010	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns
Manganese	0.84	0.3	ns	**5.50**	ns	**4.270**	**3.430**	**2.77**	**4.05**	**2.73**	**3.05**	**3.69**	**1.2**	**1.810**	**3.320**	**1.500**	**0.839**	**2.85**	**1.97**	**2.92**	ns
Additional Metals (mg/L)																					
Barium	2	na	ns	<0.030	ns	**0.0132**	**0.0218**	**0.0128**	ns	ns	ns	ns	<0.030	**0.0378**	**0.0528**	**0.0425**	**0.0420**	ns	ns	ns	ns
Cadmium	0.005	na	ns	<0.030	ns	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns	<0.030	<0.0020	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns
Chromium	0.1	na	ns	<0.030	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	<0.030	<0.0050	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns
Lead	0.015	na	ns	<0.100	ns	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	<0.100	<0.0010	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns
Selenium	0.05	na	ns	<0.100	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	<0.100	<0.0050	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns
Iron	na	na	ns	**43.00**	ns	**30.70**	**21.70**	**30.80**	ns	ns	ns	<0.05	<0.100	ns	<0.050	<0.050	<0.050	ns	ns	ns	ns
MNA - Laboratory																					
Methane (µg/L)	na	na	ns	ns	ns	**400**	**610**	**420**	**870**	**39**	**1,200**	ns	ns	ns	**31**	**13**	ns	**12**	**800**	**57**	ns
Ethane (µg/L)	na	na	ns	ns	ns	<10	<10	<0.025	**0.029**	< 0.025	0.014 J	ns	ns	ns	<10	<10	ns	**0.003**	**0.012 J**	<0.025	ns
Ethene (µg/L)	na	na	ns	ns	ns	<10	<10	**0.016**	**0.052**	**0.030**	**0.056**	ns	ns	ns	<10	<10	ns	**0.011**	**0.120**	**0.056**	ns
Alkalinity (mg/L)	na	na	ns	**140**	ns	**77.7**	ns	**92.9**	**107**	**53.0**	**62.0**	ns	**60**	ns	**75.4**	ns	**87.9**	**85.2**	**85.6**	**94.0**	ns
Chloride (mg/L)	na	na	ns	**10**	ns	**3.0**	**3.0**	**4.7**	<3.0	<3.0	<3.0	ns	**2.8**	ns	**10**	**9**	**9.0**	**9.3**	**7.8**	**7.9**	ns
Nitrite-Nitrogen (mg/L)	1	na	ns	<0.03	ns	<0.25	<0.05	<0.050	<0.050	ns	ns	ns	<0.03	ns	<0.05	<0.050	<0.050	<0.050	ns	ns	ns
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	ns	ns	ns	<0.5	<0.05	<0.050	<0.050	ns	ns	ns	ns	ns	**0.38**	**0.36**	**0.25**	**0.38**	ns	ns	ns
Nitrate-Nitrogen (mg/L)	10	na	ns	<0.02	ns	<0.25	<0.05	<0.050	<0.050	ns	ns	ns	**0.93**	ns	**0.36**	**0.36**	**0.24**	**0.37**	ns	ns	ns
Sulfate, as SO4 (mg/L)	500	na	ns	ns	ns	**7.8**	**10**	**15**	**9.2**	**7.0**	**9.1**	ns	ns	ns	**34**	**31**	**42**	**52**	**47**	**47**	ns
Total Organic Carbon (mg/L)	na	na	ns	**6.8**	ns	**7.1**	**13**	**9.5**	**6.5**	**5.9**	**8.3**	ns	**1.8**	ns	**11**	**12**	**16**	ns	**9.1**	**2.5**	ns
Carbon Dioxide (mg/L)	na	na	ns	ns	ns	**120**	ns	**100**	**130**	**300**	**120**	ns	ns	ns	**350**	ns	ns	**340**	**84**	**330**	ns
Volatile Fatty Acids																					
Acetic acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	**1.2 J**	ns	<1	ns	<1	ns	ns	<1.0	ns	<1.0 UJ	ns
Butyric acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	**0.5 J**	ns	<1	ns	<1	ns	ns	<1.0	ns	<1.0 UJ	ns
Lactic acid and HIBA (mg/L)	na	na	ns	<25	ns	<25	ns	<25.0	<25.0	ns	<25.0 UJ	ns	<25	ns	<25	ns	ns	<25.0	ns	<25.0 UJ	ns
Pentanoic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Propionic acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	**1 J**	ns	<1	ns	<1	ns	ns	<1.0	ns	<1.0 UJ	ns
Pyruvic acid (mg/L)	na	na	ns	<10	ns	<10	ns	<10.0	<10.0	ns	**1.8 J**	ns	<10	ns	<10	ns	ns	<10.0	ns	<10.0 UJ	ns
MNA - Field Screening																					
pH	na	na	ns	**6.38**	ns	**6.35**	**5.17**	**6.15**	**6.3**	**6.1**	**6.4**	ns	**7.98**	ns	**5.71**	**8.08**	**5.76**	**5.7**	**5.2**	**5.9**	ns
ORP (mV)	na	na	ns	**293.3**	ns	**-50.8**	**12.2**	**-73.9**	**-31**	**9 J***	**-50**	ns	ns	ns	**279**	**69**	**278**	**245**	**1.32 J***	**116**	ns
Specific Conductance (µS/cm)	na	na	ns	**271**	ns	**210**	**240**	**246**	**242**	**175**	**199**	ns	**188**	ns	**214**	**80**	**206**	**297**	**290**	**292**	ns
Dissolved Oxygen (mg/L)	na	na	ns	**0.2**	ns	**0.3**	**2.2**	**0.22**	**0.21**	**0.2**	**0.7**	ns	**1.2**	ns	**0.1**	**1.7**	**0.55**	**0.2**	**0.4**	**0.3**	ns
Turbidity (ntu)	na	na	ns	**1.4**	ns	**1.9**	**>1100**	**2.5**	<1	**3**	<1	ns	**0.1**	ns	**0.0**	**50.8**	**1.11**	<1	<1	<1	ns
Temperature (°C)	na	na	ns	ns	ns	ns	ns	ns	ns	**9**	**11**	ns	ns	ns	ns	ns	ns	ns	**9**	**10**	ns
Ferrous Iron (mg/L)	na	na	ns	ns	ns	ns	ns	ns	**1.46**	**2.6**	**1.60**	ns	ns	ns	ns	ns	ns	ns	**0.05**	**0.01**	ns
Nitrate (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	0.0	**0.4**	ns	ns	ns	ns	ns	ns	ns	**0.5**	**0.3**	ns

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen	NH AGQS	ROD ICL	TRY_MW-101 Overburden/Bedrock									TRY_MW-102 Overburden										
Sampling Event Date			**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**	**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**	**Jun-10, 28.5**	**Jun-10, 28.5 DUP**
VOCs of Concern (µg/L)																						
Tetrachloroethene	5	5	<2	<1.0	ns	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
Trichloroethene	5	5	<2	<1.0	ns	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
cis-1,2-Dichloroethene	70	70	<2	**8.0**	***ns***	**4.3**	**8.1**	**2.5**	**2.8**	**4.0**	**2.7**	ns	<1.0	ns	<10	ns	ns	ns	ns	ns	<2.0	<2.0
Vinyl Chloride	2	2	<2	<1.0	ns	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
1,2,4-Trimethylbenzene	330	50	**44**	**80**	ns	**201**	**347**	**181**	**183**	**30**	**169**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
1,3,5-Trimethylbenzene	330	50	**13**	**25**	ns	**65**	**114**	**55**	**47**	**11**	**42**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
2-Butanone(MEK)	4,000	170		<1.0	ns	<20	<20	<10	<10	<10	<10	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns		
Benzene	5	5	<2	**2.2**	ns	<4.0	<4.0	<2.0	**2.2**	<2.0	**2.0**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
Naphthalene	20	20	**4.5**	**5.5**	ns	**10**	**18**	**8.0**	**11**	**5.0**	**14 J***	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
n-Butylbenzene	260	50	ns	**3.1**	ns	<4.0	<4.0	**30**	**30**	**22**	**31**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
n-Propylbenzene	260	50	**14**	**7.1**	ns	**28**	**51**	**51**	**58**	**39**	**49**	ns	<1.0	ns	<10	ns	ns	ns	ns	ns	<2.0	<2.0
p-Isopropyltoluene	260	50	**6.6**	**2.9**	ns	**9.8**	**23**	**20**	**26**	**11**	**22**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
Tetrahydrofuran(THF)	154	154	**26**	**7.8**	ns	<20	<20	<10	<10	<10	<10	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<10	<10
Toluene	1,000	1,000	**3**	**6.6**	ns	<4.0	<4.0	**4.9**		<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
Additional VOCs (µg/L)																						
1,1,1-Trichloroethane	200	na	**7.9**	<1.0	ns	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
1,1-Dichloroethane	81	na	<2	**10**	ns	<4.0	**5.0**	**3.2**	**3.4**	<2.0	**3.0**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
1,1-Dichloroethene	7	na	<2	<1.0	ns	**5.6**	<4.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
1,2,4-Trichlorobenzene	70	na	<2	<1.0	ns	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
1,2-Dichloroethane	5	na	<2	<1.0	ns	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
1,4-Dichlorobenzene	75	na	<2	<1.0	ns	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
2-Chlorotoluene	100	na	ns	<1.0	ns	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
4-Methyl-2-pentanone (MIBK)	2,000	na	<10	<1.0	ns	<20	<20	<10	<10	<10	<10	ns	<1.0	ns	<10	ns	ns	ns	ns	ns	<10	<10
Acetone	6,000	na	<10	<1.0	ns	<20	<20	<10	<10	<10	<10	ns	<1.0	ns	<10	ns	ns	ns	ns	ns	<10	<10
Ethylbenzene	700	na	<2	**49**	ns	**110**	**141**	**97**	**108**	**65**	**92**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
Isopropylbenzene	800	na	**12**	**9.2**	ns	**24**	**45**	**38**	**39**	**28**	**36**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
Methylene Chloride	5	na	<2	<1.0	ns	<4.0	<4.0	<2.0	<2.0	**2.1**	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
sec-Butylbenzene	260	na	**9.6**	**2.4**	ns	**8**	**20**	**27**	**27**	**23**	**28**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
t-Butanol (TBA)	40	na	<10	ns	ns	<20	<20	<10	<10	<10	<10	ns	ns	ns	**11**	ns	ns	ns	ns	ns	<10	<2.0
t-Butylbenzene	260	na	**2.3**	<1.0	ns	<4.0	**4.3**	**4.9**	**5**	**4.1**	**5.4**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
Trichlorofluoromethane	2,000	na	ns	<1.0	ns	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
m/p-Xylene	na	na	**11**	**50**	ns	**88**	**144**	**30**	**28**	**7.9**	**42**	ns	<2.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
o-Xylene	na	na	<2	**49**	ns	**49**	**93**	**9.5**	**4.1**	<2.0	**28**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns	<2.0	<2.0
Total VOCs (µg/L)	na	na	**153.9**	**317.8**	ND	**602.2**	**1,013.4**	**562.0**	**574.5**	**252.1**	**566.1**	ns	ND	ns	11.0	ns	ns	ns	ns	ns	ND	ND
1,4-Dioxane (µg/L)																						
1,4-Dioxane	3	3	ns	ns	ns	<2.0	ns	<2.0	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
SVOCs of Concern (µg/L)																						
Benzo(a)pyrene	0.20	0.20	<10	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns	<10	<10
Benzo(b)fluoranthene	0.05	0.05	<10	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns	<10	<10
Bis(2-ethylhexyl) phthalate	6	6	<10	**6**	ns	<10	<10	<5.0	<5.0	<5.0	<5.0	ns	<5	ns	<10	ns	ns	ns	ns	ns	<5	**9.3**
Dibenzo(a,h)anthracene	0.01	0.01	<10	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns	<10	<10
Naphthalene	20	20	**4.5**	<5	ns	<10	**13**	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns	<10	<10
Pentachlorophenol	1	1	<25	<5	ns	<25	<20	<20	<20	<20	<20	ns	<5	ns	<20	ns	ns	ns	ns	ns	<20	<20
Additional SVOCs (µg/L)																						
3 & 4-Methylphenol	40	na	<10	<10	ns	<10	<10	<10	<10	<10	<10	ns	<10	ns	<10	ns	ns	ns	ns	ns	<10	<10
Di-n-butylphthalate	na	na	<10	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns	<10	<10
Di-n-octylphalate	na	na	<10	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns	<10	<10
Total SVOCs (µg/L)	na	na	5	**6**	***ns***	ND	**13**	ND	ND	ND	ND	ns	ND	ns	ND	ns	ns	ns	ns	ns	ND	**9.3**
Metals of Concern (mg/L)																						
Arsenic	0.01	0.01	ns	<0.200	ns	**0.0021**	**0.0031**	**0.0016**	ns	ns	ns	ns	<0.200	ns	<0.0010	ns	ns	ns	ns	ns	<0.0010	<0.0010
Manganese	0.84	0.3	ns	**2.10**	ns	**2.23**	**2.50**	**2.62**	**2.89**	**2.54**	**2.25**	ns	**1.10**	ns	**3.15**	ns	ns	ns	ns	ns	**3.58**	**3.64**
Additional Metals (mg/L)																						
Barium	2	na	ns	<0.030	ns	0.0277	0.0266	0.0253	ns	ns	ns	ns	**0.041**	ns	**0.0434**	ns	ns	ns	ns	ns	**0.0332**	**0.0332**
Cadmium	0.005	na	ns	<0.030	ns	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns	<0.030	ns	<0.0020	ns	ns	ns	ns	ns	<0.0020	<0.0020
Chromium	0.1	na	ns	<0.030	ns	0.0017	<0.0050	<0.0050	ns	ns	ns	ns	<0.030	ns	0.0064	ns	ns	ns	ns	ns	<0.0050	<0.0050
Lead	0.015	na	ns	<0.100	ns	0.0001	<0.0010	<0.0010	ns	ns	ns	ns	<0.100	ns	<0.0010	ns	ns	ns	ns	ns	<0.0010	<0.0010
Selenium	0.05	na	ns	<0.100	ns	0.0018	<0.0050	<0.0050	ns	ns	ns	ns	<0.100	ns	<0.0050	ns	ns	ns	ns	ns	<0.0050	<0.0050
Iron	na	na	ns	**99**	ns	**114**	**121**	**124**	ns	ns	ns	ns	**57.7**	ns	**57.7**	ns	ns	ns	ns	ns	**62.4**	**63.0**
MNA - Laboratory																						
Methane (µg/L)	na	na	ns	ns	ns	**3,000**	**2,300**	**1,100**	**2,200**	**1,500**	**3,600**	ns	ns	ns	**1100**	ns	ns	ns	ns	ns	**2,200**	**2,700**
Ethane (µg/L)	na	na	ns	ns	ns	<50	<20	**0.015**	**0.016**	**0.021 J**	**0.036**	ns	ns	ns	<10	ns	ns	ns	ns	ns	**0.027**	**0.033**
Ethene (µg/L)	na	na	ns	ns	ns	<50	<20	**0.062**	**0.072**	**0.110**	**0.095**	ns	ns	ns	<10	ns	ns	ns	ns	ns	**0.044**	**0.073**
Alkalinity (mg/L)	na	na	ns	**270**	ns	**228**	ns	**233**	**298**	**196**	**232**	ns	**62**	ns	**37.8**	ns	ns	ns	ns	ns	**133**	**133**
Chloride (mg/L)	na	na	ns	**3.2**	ns	**19**	**16**	**16**	**9.5**	**5.4**	**4.5**	ns	**13**	ns	**19**	ns	ns	ns	ns	ns	**7.8**	**7.9**
Nitrite-Nitrogen (mg/L)	1	na	ns	<0.3	ns	**0.06**	**0.07**	**0.067**	**0.077**	ns	ns	ns	<0.03	ns	<0.25	ns	ns	ns	ns	ns	**0.053**	**0.053**
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	ns	ns	ns	<1	<0.050	<0.050	ns	ns	ns	ns	ns	ns	<0.5	ns	ns	ns	ns	ns	<0.050	**0.064**
Nitrate-Nitrogen (mg/L)	10	na	ns	**0.32**	ns	<0.5	<0.050	<0.050	ns	ns	ns	ns	**3.6**	ns	<0.25	ns	ns	ns	ns	ns	<0.050	<0.050
Sulfate, as SO4 (mg/L)	500	na	ns	ns	ns	**1.3**	**2.0**	**9.3**	**6.3**	**16**	**3.8**	ns	ns	ns	**41**	ns	ns	ns	ns	ns	**25**	**25**
Total Organic Carbon (mg/L)	na	na	ns	**22**	ns	**44**	**38**	**29**	**54**	**31**	**43**	ns	**7.7**	ns	**20**	ns	ns	ns	ns	ns	**17**	**17**
Carbon Dioxide (mg/L)	na	na	ns	ns	ns	**340**	ns	**320**	**380**	**330**	**340**	ns	ns	ns	**340**	ns	ns	ns	ns	ns	**390**	**420**
Volatile Fatty Acids																						
Acetic acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	ns	ns	ns	ns	ns	<1	<1
Butyric acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	ns	ns	ns	ns	ns	<1	<1
Lactic acid and HIBA (mg/L)	na	na	ns	<25	ns	<25	ns	<25.0	<25.0	ns	<25.0 UJ	ns	<25	ns	<25	ns	ns	ns	ns	ns	<25	<25
Pentanoic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Propionic acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	ns	ns	ns	ns	ns	<1	<1
Pyruvic acid (mg/L)	na	na	ns	<10	ns	<10	ns	<10.0	<10.0	ns	<10.0 UJ	ns	<10	ns	<10	ns	ns	ns	ns	ns	<10	<10
MNA - Field Screening																						
pH	na	na	ns	**6.48**	ns	**6.39**	**6.91**	**6.21**	**6.1**	**6.3**	**6.6**	ns	**5.54**	ns	**5.75**	ns	ns	ns	ns	ns	**5.8**	ns
ORP (mV)	na	na	ns	**300**	ns	**-46**	**-106.2**	**-58.6**	**-56**	**-64**	**-76**	ns	**134.8**	ns	**64.8**	ns	ns	ns	ns	ns	**63**	ns
Specific Conductance (µS/cm)	na	na	ns	**645**	ns	**509**	**720**	**720**	**780**	**675**	**671**	ns	**310**	ns	**287**	ns	ns	ns	ns	ns	**367**	ns
Dissolved Oxygen (mg/L)	na	na	ns	**0.5**	ns	**3.2**	**0.2**	**0.47**	**0.6**	**0.9**	**1.4**	ns	**0.7**	ns	**0.5**	ns	ns	ns	ns	ns	**0.4**	ns
Turbidity (ntu)	na	na	ns	**16.6**	ns	**5.9**	**51.9**	**6.18**	<1	**5**	**1**	ns	**1.4**	ns	**8.1**	ns	ns	ns	ns	ns	**6**	ns
Temperature (°C)	na	na	ns	ns	ns	ns	ns	ns	ns	**12**	**11**	ns	ns	ns	ns	ns	ns	ns	ns	ns	**13**	ns
Ferrous Iron (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**1.01**	**2.74**	**1.68**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Nitrate (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**0.1**	**0.4 J***	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen	NH AGQS	ROD ICL	TRY_MW-104S Overburden									TRY_MW-104D Overburden								
Sampling Event Date			**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**	**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**
VOCs of Concern (µg/L)																				
Tetrachloroethene	5	5	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<0.4	ns	ns	ns	ns	ns
Trichloroethene	5	5	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
cis-1,2-Dichloroethene	70	70	**12**	<1.0	ns	**6.8**	ns	**4.0**	**6.5**	**2.5**	**4.2**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
Vinyl Chloride	2	2	<2	<1.0	ns	<2.0	ns	**4.1**	**2.7**	**2.2**	**3.8**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
1,2,4-Trimethylbenzene	330	50	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
1,3,5-Trimethylbenzene	330	50	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
2-Butanone(MEK)	4,000	170		<1.0	ns	<10	ns	<10	<10	<10	<10	ns	<1.0	ns	<10	ns	ns	ns	ns	ns
Benzene	5	5	<2	**1.4**	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<0.3	ns	ns	ns	ns	ns
Naphthalene	20	20	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
n-Butylbenzene	260	50	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
n-Propylbenzene	260	50	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
p-Isopropyltoluene	260	50	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
Tetrahydrofuran(THF)	154	154	<10	<1.0	ns	<10	ns	<10	<10	<10	<10	ns	<1.0	ns	<10	ns	ns	ns	ns	ns
Toluene	1,000	1,000	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
Additional VOCs (µg/L)																				
1,1,1-Trichloroethane	200	na	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
1,1-Dichloroethane	81	na	<2	**4.7**	ns	<2.0	ns	<2.0	**2.1**	<2.0	**2.3**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
1,1-Dichloroethene	7	na	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
1,2,4-Trichlorobenzene	70	na	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
1,2-Dichloroethane	5	na	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<0.4	ns	ns	ns	ns	ns
1,4-Dichlorobenzene	75	na	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
2-Chlorotoluene	100	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
4-Methyl-2-pentanone (MIBK)	2,000	na	<10	<1.0	ns	<10	ns	<10	<10	<10	<10	ns	<1.0	ns	<10	ns	ns	ns	ns	ns
Acetone	6,000	na	<10	<1.0	ns	<10	ns	<10	<10	<10	<10	ns	<1.0	ns	<10	ns	ns	ns	ns	ns
Ethylbenzene	700	na	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
Isopropylbenzene	800	na	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
Methylene Chloride	5	na	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
sec-Butylbenzene	260	na	<2	**2.4**	ns	<2.0	ns	<2.0	<2.0	<2.0	**2.2**	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
t-Butanol (TBA)	40	na	<10	ns	ns	<10	ns	<10	<10	<10	<10	ns	ns	ns	<10	ns	ns	ns	ns	ns
t-Butylbenzene	260	na	<2	**1.7**	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
Trichlorofluoromethane	2,000	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
m/p-Xylene	na	na	<2	<2.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<2.0	ns	<2.0	ns	ns	ns	ns	ns
o-Xylene	na	na	<2	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	ns	ns	ns	ns	ns
Total VOCs (µg/L)	na	na	**12.0**	**10.2**	ns	**6.8**	ns	**8.1**	**11.3**	**4.7**	**12.5**	ns	ND	ns	ND	ns	ns	ns	ns	ns
1,4-Dioxane (µg/L)																				
1,4-Dioxane	3	3	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	<2.0
SVOCs of Concern (µg/L)																				
Benzo(a)pyrene	0.20	0.20	<10	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns
Benzo(b)fluoranthene	0.05	0.05	<10	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns
Bis(2-ethylhexyl) phthalate	6	6	<10	<5	ns	<10	ns	<5.0	<5.0	<5.0	<5.0	ns	<5	ns	<10	ns	ns	ns	ns	ns
Dibenzo(a,h)anthracene	0.01	0.01	<10	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns
Naphthalene	20	20	<2	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns
Pentachlorophenol	1	1	<25	<5	ns	<20	ns	<20	<20	<20	<20	ns	<5	ns	<20	ns	ns	ns	ns	ns
Additional SVOCs (µg/L)																				
3 & 4-Methylphenol	40	na	<10	<10	ns	<10	ns	<10	<10	<10	<10	ns	<10	ns	<10	ns	ns	ns	ns	ns
Di-n-butylphthalate	na	na	<10	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns
Di-n-octylphalate	na	na	<10	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	ns	ns	ns	ns	ns
Total SVOCs (µg/L)	na	na	ND	ND	ns	ND	ns	ND	ND	ND	ND	ns	ND	ns	ND	ns	ns	ns	ns	ns
Metals of Concern (mg/L)																				
Arsenic	0.01	0.01	ns	<0.200	ns	<0.0010	ns	0.0010	ns	ns	ns	ns	<0.200	ns	**0.0011**	ns	ns	ns	ns	ns
Manganese	0.84	0.3	ns	**19**	ns	**14.2**	ns	**6.63**	**13.7**	**9.13**	**14.9**	ns	**0.630**	ns	**0.409**	ns	ns	ns	ns	ns
Additional Metals (mg/L)																				
Barium	2	na	ns	**0.041**	ns	**0.0199**	ns	**0.0286**	ns	ns	ns	ns	**0.041**	ns	0.0063	ns	ns	ns	ns	ns
Cadmium	0.005	na	ns	<0.030	ns	<0.0020	ns	<0.0020	ns	ns	ns	ns	<0.030	ns	<0.0020	ns	ns	ns	ns	ns
Chromium	0.1	na	ns	<0.030	ns	<0.0050	ns	<0.0050	ns	ns	ns	ns	<0.030	ns	<0.0050	ns	ns	ns	ns	ns
Lead	0.015	na	ns	<0.100	ns	<0.0010	ns	<0.0010	ns	ns	ns	ns	<0.100	ns	<0.0010	ns	ns	ns	ns	ns
Selenium	0.05	na	ns	<0.100	ns	<0.0050	ns	<0.0050	ns	ns	ns	ns	<0.100	ns	<0.0050	ns	ns	ns	ns	ns
Iron	na	na	ns	**1.1**	ns	**37.5**	ns	**36.4**	ns	ns	ns	ns	**0.10**	ns	**0.55**	ns	ns	ns	ns	ns
MNA - Laboratory																				
Methane (µg/L)	na	na	ns	ns	ns	**590**	ns	**1,100**	**1,100**	ns	**2,800**	ns	ns	ns	**10**	ns	ns	ns	ns	ns
Ethane (µg/L)	na	na	ns	ns	ns	<10	ns	**0.007**	**0.049**	ns	**0.039**	ns	ns	ns	<10	ns	ns	ns	ns	ns
Ethene (µg/L)	na	na	ns	ns	ns	<10	ns	**0.110**	**0.085**	ns	**0.170**	ns	ns	ns	<10	ns	ns	ns	ns	ns
Alkalinity (mg/L)	na	na	ns	**270**	ns	**131**	ns	**168**	**138**	ns	**191**	ns	**46**	ns	**46.9**	ns	ns	ns	ns	ns
Chloride (mg/L)	na	na	ns	**2.9**	ns	**10**	ns	**8.8**	**6.3**	ns	**3.9**	ns	**0.1**	ns	<3	ns	ns	ns	ns	ns
Nitrite-Nitrogen (mg/L)	1	na	ns	<0.03	ns	<0.25	ns	ns	ns	ns	ns	ns	<0.03	ns	<0.50	ns	ns	ns	ns	ns
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	ns	ns	ns	<0.5	ns	ns	ns	ns	ns	ns	ns	ns	<0.10	ns	ns	ns	ns	ns
Nitrate-Nitrogen (mg/L)	10	na	ns	**0.06**	ns	<0.25	ns	ns	ns	ns	ns	ns	<0.050	ns	<0.50	ns	ns	ns	ns	ns
Sulfate, as SO4 (mg/L)	500	na	ns	ns	ns	**8**	ns	**1.3**	**2.3**	ns	**2.6**	ns	ns	ns	**6.0**	ns	ns	ns	ns	ns
Total Organic Carbon (mg/L)	na	na	ns	**7.3**	ns	**17**	ns	**20**	**16**	ns	**26**	ns	**0.5**	ns	**1.3**	ns	ns	ns	ns	ns
Carbon Dioxide (mg/L)	na	na	ns	ns	ns	**99**	ns	**110**	**140**	ns	**230**	ns	ns	ns	**2.7**	ns	ns	ns	ns	ns
Volatile Fatty Acids																				
Acetic acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	**0.9**	ns	<1.0 UJ	ns	<1	ns	<1	ns	ns	ns	ns	ns
Butyric acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	ns	ns	ns	ns	ns
Lactic acid and HIBA (mg/L)	na	na	ns	<25	ns	<25	ns	<25.0	<25.0	ns	<25.0 UJ	ns	<25	ns	<25	ns	ns	ns	ns	ns
Pentanoic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Propionic acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	**0.6 J**	ns	<1	ns	<1	ns	ns	ns	ns	ns
Pyruvic acid (mg/L)	na	na	ns	<10	ns	<10	ns	<10.0	<10.0	ns	<10.0 UJ	ns	<10	ns	<10	ns	ns	ns	ns	ns
MNA - Field Screening																				
pH	na	na	ns	**6.3**	ns	**6.54**	ns	**6.06**	**6.4**	**6.9**	**6.4**	ns	**7.1**	ns	**7.86**	ns	ns	ns	ns	**7.7**
ORP (mV)	na	na	ns	**161.8**	ns	**-38.3**	ns	**-97.8**	**-39**	**15**	**18**	ns	**90.4**	ns	**221.2**	ns	ns	ns	ns	**-64**
Specific Conductance (µS/cm)	na	na	ns	**416**	ns	**352**	ns	**378**	**377**	**376**	**405**	ns	**181**	ns	**103**	ns	ns	ns	ns	**107**
Dissolved Oxygen (mg/L)	na	na	ns	**0.2**	ns	**0.2**	ns	**0.18**	**0.1**	**1.1**	**0.2**	ns	**0.6**	ns	**0.8**	ns	ns	ns	ns	**0.4**
Turbidity (ntu)	na	na	ns	**0.7**	ns	**6.4**	ns	**13.2**	**1**	**3**	<1	ns	**1.2**	ns	**4.7**	ns	ns	ns	ns	**8**
Temperature (°C)	na	na	ns	ns	ns	ns	ns	ns	ns	**11**	**12**	ns	ns	ns	ns	ns	ns	ns	ns	**12**
Ferrous Iron (mg/L)	na	na	ns	ns	ns	ns	ns	ns	**1.29**	ns	**0.86**	ns	ns	ns	ns	ns	ns	ns	ns	ns
Nitrate (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	**0.4**	ns	ns	ns	ns	ns	ns	ns	ns	ns

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen	NH AGQS	ROD ICL	TRY_MW-105S Overburden									TRY_MW-105D Bedrock								
Sampling Event Date			**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**	**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**
VOCs of Concern (µg/L)																				
Tetrachloroethene	5	5	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
Trichloroethene	5	5	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
cis-1,2-Dichloroethene	70	70	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
Vinyl Chloride	2	2	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
1,2,4-Trimethylbenzene	330	50	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
1,3,5-Trimethylbenzene	330	50	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
2-Butanone(MEK)	4,000	170	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Benzene	5	5	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
Naphthalene	20	20	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
n-Butylbenzene	260	50	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
n-Propylbenzene	260	50	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
p-Isopropyltoluene	260	50	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
Tetrahydrofuran(THF)	154	154	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Toluene	1,000	1,000	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
Additional VOCs (µg/L)																				
1,1,1-Trichloroethane	200	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
1,1-Dichloroethane	81	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
1,1-Dichloroethene	7	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
1,2,4-Trichlorobenzene	70	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
1,2-Dichloroethane	5	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
1,4-Dichlorobenzene	75	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
2-Chlorotoluene	100	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
4-Methyl-2-pentanone (MIBK)	2,000	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Acetone	6,000	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Ethylbenzene	700	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
Isopropylbenzene	800	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
Methylene Chloride	5	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
sec-Butylbenzene	260	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
t-Butanol (TBA)	40	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
t-Butylbenzene	260	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
Trichlorofluoromethane	2,000	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
m/p-Xylene	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
o-Xylene	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
Total VOCs (µg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	ND	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	ND
1,4-Dioxane (µg/L)																				
1,4-Dioxane	3	3	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<2.0
SVOCs of Concern (µg/L)																				
Benzo(a)pyrene	0.20	0.20	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Benzo(b)fluoranthene	0.05	0.05	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Bis(2-ethylhexyl) phthalate	6	6	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<5.0	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<5.0
Dibenzo(a,h)anthracene	0.01	0.01	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Naphthalene	20	20	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Pentachlorophenol	1	1	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<20	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<20
Additional SVOCs (µg/L)																				
3 & 4-Methylphenol	40	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Di-n-butylphthalate	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Di-n-octylphalate	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<10
Total SVOCs (µg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	ND	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	ND
Metals of Concern (mg/L)																				
Arsenic	0.01	0.01	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Manganese	0.84	0.3	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**34.4**	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**2.39**
Additional Metals (mg/L)																				
Barium	2	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Cadmium	0.005	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Chromium	0.1	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Lead	0.015	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Selenium	0.05	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Iron	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
MNA - Laboratory																				
Methane (µg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Ethane (µg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Ethene (µg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Alkalinity (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Chloride (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Nitrite-Nitrogen (mg/L)	1	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Nitrate-Nitrogen (mg/L)	10	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Sulfate, as SO4 (mg/L)	500	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Total Organic Carbon (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Carbon Dioxide (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Volatile Fatty Acids																				
Acetic acid (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Butyric acid (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Lactic acid and HIBA (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Pentanoic acid (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Propionic acid (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Pyruvic acid (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
MNA - Field Screening																				
pH	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**6.1**	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**6.4**
ORP (mV)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**161**	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**-24**
Specific Conductance (µS/cm)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**366**	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**193**
Dissolved Oxygen (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**0.7**	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**1.8**
Turbidity (ntu)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	<1	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**7**
Temperature (°C)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**11**	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**9**
Ferrous Iron (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*
Nitrate (mg/L)	na	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen	NH AGQS	ROD ICL	TRY_MW-201M Overburden										TRY_MW-202S Overburden									
Sampling Event Date			**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**May-07 DUP**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**	**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Jun-09 DUP**	**Oct-09**
VOCs of Concern (µg/L)																						
Tetrachloroethene	5	5	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
Trichloroethene	5	5	**7**	**7.9**	ns	**6.2**	<4.0	<4.0	<2.0	<2.0	<10	**3.8**	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
cis-1,2-Dichloroethene	70	70	**38**	<1.0	ns	**297**	**242**	**249**	**485**	**617**	**576**	**639**	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
Vinyl Chloride	2	2	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
1,2,4-Trimethylbenzene	330	50	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
1,3,5-Trimethylbenzene	330	50	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
2-Butanone(MEK)	4,000	170		<1.0	ns	<10	<20	<20	<10	<10	<50	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Benzene	5	5	<2	**1.1**	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
Naphthalene	20	20	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	**4.4 J***	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
n-Butylbenzene	260	50	ns	<1.0	ns	<2.0	<4.0	<4.0	**30**	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
n-Propylbenzene	260	50	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
p-Isopropyltoluene	260	50	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
Tetrahydrofuran(THF)	154	154	<10	**1.9**	ns	<10	<20	<20	<10	<10	<50	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Toluene	1,000	1,000	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
Additional VOCs (µg/L)																						
1,1,1-Trichloroethane	200	na	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
1,1-Dichloroethane	81	na	**2.2**	**3.1**	ns	**5.9**	**4.5**	**4.7**	<2.0	<2.0	<10	**8.5**	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
1,1-Dichloroethene	7	na	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
1,2,4-Trichlorobenzene	70	na	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
1,2-Dichloroethane	5	na	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	**3.3**	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
1,4-Dichlorobenzene	75	na	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
2-Chlorotoluene	100	na	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
4-Methyl-2-pentanone (MIBK)	2,000	na	<10	<1.0	ns	<10	<20	<20	<10	<10	<50	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Acetone	6,000	na	<10	<1.0	ns	<10	<20	<20	<10	<10	<50	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Ethylbenzene	700	na	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
Isopropylbenzene	800	na	**5.1**	**8.6**	ns	**3.6**	**4.5**	<4.0	<2.0	<2.0	<10	**3.5**	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
Methylene Chloride	5	na	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
sec-Butylbenzene	260	na	**8.1**	**12**	ns	**7.2**	**7.2**	**5.9**	**27**	<2.0	<10	**9.0**	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
t-Butanol (TBA)	40	na	<10	ns	ns	<10	<20	<20	<10	<10	<50	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
t-Butylbenzene	260	na	<2	**2.0**	ns	<2.0	<4.0	<4.0	**4.9**	<2.0	<10	**2.8**	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
Trichlorofluoromethane	2,000	na	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
m/p-Xylene	na	na	<2	<2.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
o-Xylene	na	na	<2	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<10	<2.0	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns
Total VOCs (µg/L)	na	na	**60.4**	**36.6**	ns	**319.9**	**258.2**	**259.6**	**546.9**	**617.0**	**576.0**	**674.3**	ns	ns	ns	ns	ns	ns	ns	ND	ns	ns
1,4-Dioxane (µg/L)																						
1,4-Dioxane	3	3	ns	ns	ns	**2.3**	ns	ns	**2.3**	ns	ns	**2.5**	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns
SVOCs of Concern (µg/L)																						
Benzo(a)pyrene	0.20	0.20	<10	<5	ns	<10	<10	<10	<10	<10	<10	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Benzo(b)fluoranthene	0.05	0.05	<10	<5	ns	<10	<10	<10	<10	<10	<10	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Bis(2-ethylhexyl) phthalate	6	6	<10	<5	ns	<10	**464**	<10	<5.0	<5.0	<5.0	<5.0	ns	ns	ns	ns	ns	ns	ns	<5.0	ns	ns
Dibenzo(a,h)anthracene	0.01	0.01	<10	<5	ns	<10	<10	<10	<10	<10	<10	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Naphthalene	20	20	<2	<5	ns	<10	<10	<10	<10	<10	<10	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Pentachlorophenol	1	1	<25	<5	ns	<20	<20	<20	<20	<20	<20	<20	ns	ns	ns	ns	ns	ns	ns	<20	ns	ns
Additional SVOCs (µg/L)																						
3 & 4-Methylphenol	40	na	<10	<10	ns	<10	<10	<10	<10	<10	<10	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Di-n-butylphthalate	na	na	<10	<5	ns	<10	<10	<10	<10	<10	<10	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Di-n-octylphalate	na	na	<10	<5	ns	<10	<10	<10	<10	<10	<10	<10	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns
Total SVOCs (µg/L)	na	na	ND	ND	ns	ND	**464**	ND	ND	ND	ND	ND	ns	ns	ns	ns	ns	ns	ns	ND	ns	ns
Metals of Concern (mg/L)																						
Arsenic	0.01	0.01	ns	<0.200	ns	<0.0010	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	<0.0010	<0.0010	ns
Manganese	0.84	0.3	ns	**0.350**	ns	**0.399**	**0.481**	**0.480**	**0.452**	**0.481**	**0.523**	**0.512**	ns	ns	ns	ns	ns	ns	ns	**0.128 J***	**0.091 J***	ns
Additional Metals (mg/L)																						
Barium	2	na	ns	<0.030	ns	**0.0277**	**0.0431**	**0.0437**	**0.0314**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**0.3441**	**0.2792**	ns
Cadmium	0.005	na	ns	<0.030	ns	<0.0020	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	<0.0020	<0.0020	ns
Chromium	0.1	na	ns	<0.030	ns	<0.0050	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	<0.0050	<0.0050	ns
Lead	0.015	na	ns	<0.100	ns	<0.0010	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**0.0018**	**0.0013**	ns
Selenium	0.05	na	ns	<0.100	ns	<0.0050	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	<0.0050	<0.0050	ns
Iron	na	na	ns	**7.20**	ns	**7.63**	**7.91**	**7.91**	**9.19**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**7.66 J***	**5.25 J***	ns
MNA - Laboratory																						
Methane (µg/L)	na	na	ns	ns	ns	**160**	**160**	**140**	**310**	**550**	**510**	**610**	ns	ns	ns	ns	ns	ns	ns	**2.2**	ns	ns
Ethane (µg/L)	na	na	ns	ns	ns	<10	<10	<10	**0.019**	**0.029**	**0.025 J**	**0.026**	ns	ns	ns	ns	ns	ns	ns	**0.130**	ns	ns
Ethene (µg/L)	na	na	ns	ns	ns	<10	<10	<10	**0.094**	**0.130**	**0.140**	**0.170**	ns	ns	ns	ns	ns	ns	ns	**0.076**	ns	ns
Alkalinity (mg/L)	na	na	ns	**130**	ns	**136**	ns	ns	**140**	**143**	**156**	**160**	ns	ns	ns	ns	ns	ns	ns	**129**	ns	ns
Chloride (mg/L)	na	na	ns	**0.83**	ns	<3.0	**3**	**3**	<3.0	<3.0	<3.0	<3.0	ns	ns	ns	ns	ns	ns	ns	<3.0	ns	ns
Nitrite-Nitrogen (mg/L)	1	na	ns	<0.03	ns	<0.50	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	ns	ns	ns	<0.10	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Nitrate-Nitrogen (mg/L)	10	na	ns	<0.050	ns	<0.50	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Sulfate, as SO4 (mg/L)	500	na	ns	ns	ns	**7.0**	**7.0**	**8.0**	**6.4**	**7.2**	**6.7**	**6.2**	ns	ns	ns	ns	ns	ns	ns	**14**	ns	ns
Total Organic Carbon (mg/L)	na	na	ns	**0.9**	ns	**5.0**	**6.8**	**6.2**	**3.7**	**5.5**	**4.6**	**8.8**	ns	ns	ns	ns	ns	ns	ns	**3.0**	ns	ns
Carbon Dioxide (mg/L)	na	na	ns	ns	ns	**35**	ns	ns	**31**	**43**	**46**	**57**	ns	ns	ns	ns	ns	ns	ns	**49**	ns	ns
Volatile Fatty Acids																						
Acetic acid (mg/L)	na	na	ns	ns	ns	<1	ns	ns	<1.0	<1.0	ns	<1.0 UJ	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Butyric acid (mg/L)	na	na	ns	<1	ns	<1	ns	ns	<1.0	<1.0	ns	<1.0 UJ	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Lactic acid and HIBA (mg/L)	na	na	ns	<25	ns	<25	ns	ns	<25.0	<25.0	ns	**2.5 J**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Pentanoic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Propionic acid (mg/L)	na	na	ns	<1	ns	<1	ns	ns	<1.0	<1.0	ns	<1.0 UJ	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Pyruvic acid (mg/L)	na	na	ns	<10	ns	<10	ns	ns	<10.0	<10.0	ns	<10.0 UJ	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
MNA - Field Screening																						
pH	na	na	ns	**6.93**	ns	**6.98**	**6.82**	ns	**6.69**	**6.9**	**6.9**	**7.0**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
ORP (mV)	na	na	ns	**107.1**	ns	**-110.9**	**-96**	ns	**-92.4**	**-106**	**-89**	**-81**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Specific Conductance (µS/cm)	na	na	ns	**502**	ns	**204**	**198**	ns	**291**	**316**	**333**	**349**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Dissolved Oxygen (mg/L)	na	na	ns	**0.2**	ns	**0.3**	**3.5**	ns	**0.43**	**0.3**	**0.8**	**0.3**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Turbidity (ntu)	na	na	ns	**0.2**	ns	**0.9**	**>1100**	ns	**6.47**	**19**	**6**	**2**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Temperature (°C)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	**11**	**10**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Ferrous Iron (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**3.42**	**1.10**	**0.44**	ns	ns	ns	ns	ns	ns	ns	**0.05**	ns	ns
Nitrate (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	**0.2**	**2.3 J***	ns	ns	ns	ns	ns	ns	ns	**0.8**	ns	ns

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen	NH AGQS	ROD ICL	TRY_MW-204 Overburden									TRY_MW-205 Overburden												
Sampling Event Date			Aug-04	Oct-05	Jun-06	Dec-06	May-07	Jun-08	Dec-08	Jun-09	Oct-09	Aug-04	Oct-05	Jun-06	Dec-06	Dec-06 DUP	May-07	Jun-08	Dec-08	Dec-08 DUP	Jun-09	Jun-09 DUP	Oct-09	Oct-09 DUP
VOCs of Concern (µg/L)																								
Tetrachloroethene	5	5	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
Trichloroethene	5	5	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
cis-1,2-Dichloroethene	70	70	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
Vinyl Chloride	2	2	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
1,2,4-Trimethylbenzene	330	50	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	**83**	ns	**195**	**201**	**294**	**314**	**159**	**172**	**444**	**435**	**477**	**522**
1,3,5-Trimethylbenzene	330	50	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	**33**	ns	**77**	**73**	**92**	**186**	**120**	**125**	**223**	**216**	**154**	**183**
2-Butanone(MEK)	4,000	170	ns	<1.0	ns	<10	<2.0	<10	<10	<10	<10	ns	<1.0	ns	<20	<20	<20	<10	<10	<10	<10	<10	<50	<50
Benzene	5	5	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	**2.6**	**2.6**	<2.0	<2.0	<10	<10
Naphthalene	20	20	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	**13**	ns	**19**	**19**	**28**	**55**	**59**	**61**	**44**	**43**	**40**	**45**
n-Butylbenzene	260	50	ns	**9.4**	ns	<2.0	**6.7**	**3.0**	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	ns	**34**	<2.0	<2.0	<2.0	<2.0	<10	<10
n-Propylbenzene	260	50	ns	**4.8**	ns	<2.0	**2.7**	<2.0	<2.0	<2.0	<2.0	ns	**11**	ns	**16**	**16**	**30**	**45**	**60**	**62**	**34**	**34**	**49**	**55**
p-Isopropyltoluene	260	50	ns	**1.0**	ns	<2.0	<2.0	**4.1**	<2.0	<2.0	<2.0	ns	**2.9**	ns	**9.2**	**8.5**	**17**	**26**	**11**	**12**	**29**	**28**	**31**	**33**
Tetrahydrofuran(THF)	154	154	ns	**8.5**	ns	<10	<2.0	<10	<10	<10	<10	ns	<1.0	ns	**10**	<20	<20	<10	<10	<10	<10	<10	<50	<50
Toluene	1,000	1,000	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	**12.0**	ns	**40**	**80**	**117**	<2.0	**6.3**	**6.8**	<2.0	<2.0	<10	<10
Additional VOCs (µg/L)																								
1,1,1-Trichloroethane	200	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
1,1-Dichloroethane	81	na	ns	<1.0	ns	<10	<10	<2.0	<2.0	<2.0	<2.0	ns	**2.7**	ns	**3.8**	<4.0	<4.0	<2.0	**3.5**	**3.5**	<2.0	<2.0	<10	<10
1,1-Dichloroethene	7	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
1,2,4-Trichlorobenzene	70	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
1,2-Dichloroethane	5	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
1,4-Dichlorobenzene	75	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
2-Chlorotoluene	100	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
4-Methyl-2-pentanone (MIBK)	2,000	na	ns	<1.0	ns	**5.9**	<2.0	<10	<10	<10	<10	ns	<1.0	ns	<10	<20	<20	<10	<10	<10	<10	<10	<50	<50
Acetone	6,000	na	ns	<1.0	ns	**6.1**	<2.0	<10	<10	<10	<10	ns	<1.0	ns	<10	<20	<20	<10	**12**	**13**	<10	<10	<50	<50
Ethylbenzene	700	na	ns	**1.6**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	**39**	ns	**55**	**55**	**74**	**93**	**127**	**130**	**78**	**77**	**123**	**122**
Isopropylbenzene	800	na	ns	**13**	ns	<2.0	**10**	**3.9**	**5.1**	**2.7**	**4.2**	ns	**21**	ns	**13**	**12**	**25**	**36**	**46**	**47**	**23**	**24**	**39**	**40**
Methylene Chloride	5	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
sec-Butylbenzene	260	na	ns	**9.7**	ns	<2.0	**8.1**	**6.7**	**7.7**	**4.7**	**6.5**	ns	**3.3**	ns	**5**	**4.5**	**15**	**23**	**25**	**26**	**20**	**20**	**22**	**23**
t-Butanol (TBA)	40	na	ns	ns	ns	<2.0	<2.0	<10	<10	<10	<10	ns	ns	ns	<10	<20	<20	<10	<10	<10	<10	<10	<50	<50
t-Butylbenzene	260	na	ns	**1.5**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	**2.2**	ns	**2.2**	<4.0	<4.0	**6**	**7.4**	**7.5**	<2.0	<2.0	<10	<10
Trichlorofluoromethane	2,000	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<10
m/p-Xylene	na	na	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	**27**	ns	**42**	**47**	**96**	**88**	**101**	**108**	**141**	**137**	**185**	**189**
o-Xylene	na	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	**21**	ns	**39**	**40**	**68**	**43**	**46**	**50**	**62**	**61**	**115**	**114**
Total VOCs (µg/L)	na	na	ns	**49.5**	ns	**12.0**	**27.5**	**17.7**	**12.8**	**7.4**	**10.7**	ns	**271.1**	ns	**526.2**	**556.0**	**856.0**	**949.0**	**785.8**	**826.4**	**1,096.0**	**1,075.0**	**1,235.0**	**1,326.0**
1,4-Dioxane (µg/L)																								
1,4-Dioxane	3	3	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<2.0	ns	ns	ns	ns	ns	ns
SVOCs of Concern (µg/L)																								
Benzo(a)pyrene	0.20	0.20	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<50	<40	<500	<10	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	0.05	0.05	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<50	<40	<500	<10	<10	<10	<10	<10	<10	<10
Bis(2-ethylhexyl) phthalate	6	6	ns	<5	ns	<10	<10	<5.0	<5.0	<5.0	**28**	ns	**510**	ns	**316**	**227**	**5070**	**35**	**49**	**38**	**10.0**	**7.8**	**37**	**40**
Dibenzo(a,h)anthracene	0.01	0.01	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<50	<40	<500	<10	<10	<10	<10	<10	<10	<10
Naphthalene	20	20	ns	5.0	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<50	<40	**901**	**32**	**40**	**30**	**26**	**25**	**26**	**21**
Pentachlorophenol	1	1	ns	<5	ns	<20	<20	<20	<20	<20	<20	ns	<5	ns	<100	<80	<1000	<20	<20	<20	<20	<20	<20	<20
Additional SVOCs (µg/L)																								
3 & 4-Methylphenol	40	na	ns	<10	ns	<10	<10	<10	<10	<10	<10	ns	<10	ns	<50	<40	<500	<10	<10	<10	<10	<10	<10	<10
Di-n-butylphthalate	na	na	ns	<5	ns	<10	<10	**11**	<10	<10	<10	ns	<5	ns	<50	<40	<500	<10	<10	<10	<10	<10	<10	<10
Di-n-octylphalate	na	na	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	**72**	ns	<50	<40	**852**	<10	<10	<10	<10	<10	<10	<10
Total SVOCs (µg/L)	na	na	ns	**5**	ns	ND	ND	**11**	ND	ND	**28**	ns	**582**	ns	**316**	**227**	**6,823**	**67**	**89**	**68**	**36**	**33**	**63**	**61**
Metals of Concern (mg/L)																								
Arsenic	0.01	0.01	ns	<0.200	ns	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	<0.200	ns	**0.0029**	**0.0031**	**0.0044**	**0.0044**	ns	ns	ns	ns	ns	ns
Manganese	0.84	0.3	ns	**8.5**	ns	**14.1**	**14.5**	**14.1**	**13.8**	**11.1**	**10.3**	ns	**1.10**	ns	**1.48**	**1.48**	**1.78**	**1.78**	**2.01**	**1.99**	**1.60**	**1.60**	**1.69**	**1.71**
Additional Metals (mg/L)																								
Barium	2	na	ns	<0.030	ns	**0.0118**	**0.0112**	**0.0084**	ns	ns	ns	ns	**0.0650**	ns	**0.0912**	**0.0897**	**0.0721**	**0.0833**	ns	ns	ns	ns	ns	ns
Cadmium	0.005	na	ns	<0.030	ns	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns	<0.030	ns	<0.0020	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns	ns	ns
Chromium	0.1	na	ns	<0.030	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	<0.030	ns	<0.0050	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns	ns
Lead	0.015	na	ns	<0.100	ns	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	<0.100	ns	<0.0010	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	ns	ns
Selenium	0.05	na	ns	<0.100	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	<0.100	ns	<0.0050	**0.0052**	0.0108	0.0153	ns	ns	ns	ns	ns	ns
Iron	na	na	ns	**11**	ns	**12.3**	**11.5**	**25.80**	ns	ns	ns	ns	**39.0**	ns	**36.8**	**38.7**	**94.0**	**124**	ns	ns	ns	ns	ns	ns
MNA - Laboratory																								
Methane (µg/L)	na	na	ns	ns	ns	**1,200**	**1,700**	ns	**3,600**	**2,300**	**4,100**	ns	ns	ns	**1,400**	**1,400**	**2,300**	**5,400**	**5,000**	**4,700**	**5,700**	**5,100**	**8,600**	**8,500**
Ethane (µg/L)	na	na	ns	ns	ns	<10	<20	ns	**0.160**	**0.055**	**0.073**	ns	ns	ns	<20	<20	<20	<0.025	**0.018**	**0.026**	< 0.025	< 0.025	**0.041**	**0.040**
Ethene (µg/L)	na	na	ns	ns	ns	<10	<20	ns	**0.039**	**0.033**	**0.037**	ns	ns	ns	<20	<20	<20	**0.021**	**0.069**	**0.099**	**0.062**	**0.052**	**0.120**	**0.110**
Alkalinity (mg/L)	na	na	ns	**74**	ns	**74**	ns	**102**	**97.8**	**75.9**	**77.3**	ns	**180**	ns	**165**	**180**	ns	**274**	**395**	**362**	**216**	**214**	**258**	**224**
Chloride (mg/L)	na	na	ns	**0.90**	ns	**25**	**12**	<3.0	<3.0	<3.0	<3.0	ns	**1.7**	ns	**13**	**13**	**13**	**14**	**10**	**9.1**	**6.9**	**7.0**	**4.6**	**4.7**
Nitrite-Nitrogen (mg/L)	1	na	ns	<0.03	ns	**0.06**	<0.050	<0.050	<0.050	ns	ns	ns	<0.03	ns	<0.05	<0.05	**0.070**	**0.0053**	**0.088**	**0.072**	ns	ns	ns	ns
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	ns	ns	ns	**4.3**	**0.87**	<0.050	<0.050	ns	ns	ns	ns	ns	<1	<1	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns
Nitrate-Nitrogen (mg/L)	10	na	ns	<0.02	ns	**4.3**	**0.84**	<0.050	<0.050	ns	ns	ns	**0.47**	ns	<0.50	**0.07**	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns
Sulfate, as SO4 (mg/L)	500	na	ns	ns	ns	**44**	**70**	**97**	**84**	**66**	**53**	ns	ns	ns	**10**	**9.9**	**11**	**7.4**	**1.7**	**1.6**	**2.9**	**2.3**	**<1.0**	**<1.0**
Total Organic Carbon (mg/L)	na	na	ns	**3.9**	ns	**16**	**23**	**22**	**11**	**33**	**15**	ns	**20**	ns	**47**	**64**	**57**	**67**	**58**	**63**	**47**	**38**	**55**	**56**
Carbon Dioxide (mg/L)	na	na	ns	ns	ns	**320**	ns	ns	**240**	**210**	**210**	ns	ns	ns	**410**	**420**	ns	**370**	**330**	**350**	**350**	**360**	**300**	**290**
Volatile Fatty Acids																								
Acetic acid (mg/L)	na	na	ns	<1	ns	<1	ns	ns	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	<1	ns	<1.0	**1.4**	**1.8**	ns	ns	<1.0 UJ	<1.0 UJ
Butyric acid (mg/L)	na	na	ns	<1	ns	<1	ns	ns	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	<1	ns	<1.0	<1.0	<1.0	ns	ns	<1.0 UJ	<1.0 UJ
Lactic acid and HIBA (mg/L)	na	na	ns	<25	ns	<25	ns	ns	<25.0	ns	**2.5 J**	ns	<25	ns	<25	<25	ns	<25.0	<25.0	<25.0	ns	ns	<25.0 UJ	**1.8 J**
Pentanoic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Propionic acid (mg/L)	na	na	ns	<1	ns	<1	ns	ns	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	<1	ns	<1.0	<1.0	<1.0	ns	ns	**0.5 J**	<1.0 UJ
Pyruvic acid (mg/L)	na	na	ns	<10	ns	<10	ns	ns	<10.0	ns	<10.0 UJ	ns	<10	ns	<10	<10	ns	<10.0	<10.0	<10.0	ns	ns	<10.0 UJ	<10.0 UJ
MNA - Field Screening																								
pH	na	na	ns	**5.97**	ns	**5.74**	**5.11**	**5.70**	**5.80**	**6.3 J***	**6.1**	ns	**6.02**	ns	**6.12**	ns	**5.98**	**6.10**	**6.1**	ns	**6.3**	ns	**6.6**	ns
ORP (mV)	na	na	ns	**350**	ns	**119.1**	**76.4**	**172.1**	**59**	**43 J***	**4**	ns	**7.2**	ns	**0.9**	ns	**-51.1**	**-55.8**	**-11**	ns	**-56**	ns	**-94**	ns
Specific Conductance (µS/cm)	na	na	ns	**234**	ns	**316**	**371**	**291**	**366**	**279**	**276**	ns	**383**	ns	**486**	ns	**613**	**765**	**787**	ns	**714**	ns	**619**	ns
Dissolved Oxygen (mg/L)	na	na	ns	**0.2**	ns	**0.2**	**3.4**	**2.3**	**0.3**	**0.3**	**0.3**	ns	**0.5**	ns	**0.1**	ns	**2.1**	**4.36**	**0.4**	ns	**0.9**	ns	**0.3**	ns
Turbidity (ntu)	na	na	ns	**0.7**	ns	**2.0**	**31.9**	**1.4**	**2**	**3**	**2**	ns	**4.2**	ns	**9.7**	ns	**501.0**	**5.9**	**5**	ns	**3**	ns	**2**	ns
Temperature (°C)	na	na	ns	ns	ns	ns	ns	ns	ns	**10**	**9**	ns	ns	ns	ns	ns	ns	ns	ns	ns	**12**	ns	**11**	ns
Ferrous Iron (mg/L)	na	na	ns	ns	ns	ns	ns	ns	**2.08**	**1.15**	**0.61**	ns	ns	ns	ns	ns	ns	ns	ns	ns	**2.94 J***	**1.33 J***	**1.11**	**1.20**
Nitrate (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**0.2**	**0.0 J***	ns	ns	ns	ns	ns	ns	ns	ns	ns	**0.1**	ns	0.0 J*	**0.4 J***

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen	NH AGQS	ROD ICL	TRY_MW-301 Overburden									TRY_MW-501 Overburden												
Sampling Event Date			Aug-04	Oct-05	Jun-06	Dec-06	May-07	Jun-08	Dec-08	Jun-09	Oct-09	Aug-04	Oct-05	Jun-06	Dec-06	May-07	Jun-08	Jun-08 DUP	Dec-08	Dec-08 DUP	Jun-09	Jun-09 DUP	Oct-09	Oct-09 DUP
VOCs of Concern (µg/L)																								
Tetrachloroethene	5	5	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Trichloroethene	5	5	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
cis-1,2-Dichloroethene	70	70	ns	**1.2**	ns	<2.0	ns	<2.0	**3.1**	<2.0	**2.4**	ns	**40**	**29**	**24**	**12**	**19**	**21**	**14**	**14**	**8.7**	**8.9**	**5.2**	**6.4**
Vinyl Chloride	2	2	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	**2.5**	**2.6**	<2.0	<2.0	<2.0	<2.0	**3.4**	**4.0**
1,2,4-Trimethylbenzene	330	50	ns	**1.1**	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	**2.1**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,3,5-Trimethylbenzene	330	50	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
2-Butanone(MEK)	4,000	170	ns	<1.0	ns	<10	ns	<10	<10	<10	<10	ns	<1.0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzene	5	5	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	**1.0**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Naphthalene	20	20	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	260	50	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	**1.0**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Propylbenzene	260	50	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	**2.8**	**2.5**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
p-Isopropyltoluene	260	50	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Tetrahydrofuran(THF)	154	154	ns	<1.0	ns	<10	ns	<10	<10	<10	<10	ns	<1.0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Toluene	1,000	1,000	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Additional VOCs (µg/L)																								
1,1,1-Trichloroethane	200	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-Dichloroethane	81	na	ns	**4.4**	ns	**4.5**	ns	**5**	**4.2**	**2.9**	**3.8**	ns	<1.0	**5.0**	<2.0	**3.3**	**4.1**	**3.9**	**2.4**	**2.4**	**2.1**	**2.1**	<2.0	<2.0
1,1-Dichloroethene	7	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	**3.2**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4-Trichlorobenzene	70	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	5	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	**2**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,4-Dichlorobenzene	75	na	ns	**1.2**	ns	<2.0	ns	**2.6**	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
2-Chlorotoluene	100	na	ns	**5.8**	ns	**6.0**	ns	**19**	**11**	**4.3**	**13**	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
4-Methyl-2-pentanone (MIBK)	2,000	na	ns	<1.0	ns	<10	ns	<10	<2.0	<10	<10	ns	<1.0	<2.0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acetone	6,000	na	ns	<1.0	ns	<10	ns	<10	<2.0	<10	<10	ns	<1.0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethylbenzene	700	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	**8.8**	**8.0**	**5.7**	**2.9**	**3.6**	**3.9**	**3.3**	**3.5**	**3.0**	**3.3**	**2.7**	**3.0**
Isopropylbenzene	800	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	**3.7**	**3.7**	**3.2**	**2.7**	**3.4**	**3.9**	**2.5**	**2.7**	**3.6**	**3.9**	**3.6**	**3.7**
Methylene Chloride	5	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
sec-Butylbenzene	260	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	**2.7**	ns	**3.1**	**3.1**	**3.0**	**2.5**	**4.7**	**5.2**	**3.3**	**3.6**	**4.4**	**4.8**	**4.6**	**4.2**
t-Butanol (TBA)	40	na	ns	ns	ns	<10	ns	<10	<10	<10	<10	ns	ns	ns	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
t-Butylbenzene	260	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	**1.6**	**1.6**	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	**2.0**	**2.0**	**2.1**	**2.1**
Trichlorofluoromethane	2,000	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
m/p-Xylene	na	na	ns	<2.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	na	na	ns	<1.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	ns	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total VOCs (µg/L)	na	na	ns	**13.7**	ns	**10.5**	ns	**26.6**	**18.3**	**7.2**	**21.9**	ns	**66.1**	**62.9**	**39.1**	**23.4**	**37.3**	**40.5**	**25.5**	**26.2**	**23.8**	**25.0**	**21.6**	**23.4**
1,4-Dioxane (µg/L)																								
1,4-Dioxane	3	3	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
SVOCs of Concern (µg/L)																								
Benzo(a)pyrene	0.20	0.20	ns	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	0.05	0.05	ns	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bis(2-ethylhexyl) phthalate	6	6	ns	<5	ns	**12**	ns	<5.0	<5.0	<5.0	<5.0	ns	**10**	ns	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	0.01	0.01	ns	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	20	20	ns	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pentachlorophenol	1	1	ns	<5	ns	<25	ns	<20	<20	<20	<20	ns	<5	ns	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Additional SVOCs (µg/L)																								
3 & 4-Methylphenol	40	na	ns	<10	ns	<10	ns	<10	<10	<10	<10	ns	<10	ns	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Di-n-butylphthalate	na	na	ns	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Di-n-octylphalate	na	na	ns	<5	ns	<10	ns	<10	<10	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Total SVOCs (µg/L)	na	na	ns	ND	ns	**12**	ns	ND	ND	ND	ND	ns	**10**	ns	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metals of Concern (mg/L)																								
Arsenic	0.01	0.01	ns	<0.200	ns	**0.0610**	ns	**0.0017**	ns	ns	ns	ns	<0.200	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	ns	ns
Manganese	0.84	0.3	ns	**7.8**	ns	**4.57**	ns	**4.32**	**4.78**	**6.35**	**6.85**	ns	**14**	**13.4**	**13.5**	**2.56**	**12.7**	**12.5**	**12**	**12.3**	**9.82**	**9.91**	**9.78**	**9.57**
Additional Metals (mg/L)																								
Barium	2	na	ns	**0.057**	ns	**0.2951**	ns	**0.0558**	ns	ns	ns	ns	**0.0450**	**0.0577**	**0.0504**	**0.535**	**0.0585**	**0.0593**	ns	ns	ns	ns	ns	ns
Cadmium	0.005	na	ns	<0.030	ns	<0.0020	ns	<0.0020	ns	ns	ns	ns	<0.030	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns	ns	ns
Chromium	0.1	na	ns	<0.030	ns	0.0394	ns	<0.0050	ns	ns	ns	ns	<0.030	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns	ns
Lead	0.015	na	ns	<0.100	ns	**0.0370**	ns	<0.0010	ns	ns	ns	ns	<0.100	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	ns	ns
Selenium	0.05	na	ns	<0.100	ns	<0.0050	ns	<0.0050	ns	ns	ns	ns	<0.100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns	ns
Iron	na	na	ns	**62**	ns	**107**	ns	**61.2**	ns	ns	ns	ns	**47**	**63.4**	**130.0**	**130**	**62**	**61.1**	ns	ns	ns	ns	ns	ns
MNA - Laboratory																								
Methane (µg/L)	na	na	ns	ns	ns	**1,600**	ns	ns	**810**	**720**	**1,400**	ns	ns	ns	**1,800**	**640**	**1,800**	**1,800**	**1,600**	**1,400**	**2,000**	**1,800**	**4,000**	**3,200**
Ethane (µg/L)	na	na	ns	ns	ns	<20	ns	ns	**0.011**	**0.011 J**	**0.015 J**	ns	ns	ns	<20	<10	**0.024**	**0.013**	**0.039**	**0.016**	**0.018 J**	**0.022 J**	**0.021 J**	**0.018 J**
Ethene (µg/L)	na	na	ns	ns	ns	<20	ns	ns	**0.027**	**0.058**	**0.061**	ns	ns	ns	<20	<10	**0.100**	**0.090**	**0.110**	**0.096**	**0.091 J**	**0.130 J**	**0.130**	**0.130**
Alkalinity (mg/L)	na	na	ns	**190**	ns	**79.7**	ns	**144**	**133**	**116**	**124**	ns	**180**	ns	**138**	ns	**181**	**180**	**150**	**152**	**152**	**150**	**150**	**173**
Chloride (mg/L)	na	na	ns	**3.1**	ns	**12**	ns	<10.0	**8.3**	**6.3**	**5.1**	ns	**4.6**	ns	**11**	**6**	**7.3**	**7.4**	**6.4**	**6.3**	**5.3**	**4.9**	**3.8**	**3.8**
Nitrite-Nitrogen (mg/L)	1	na	ns	<0.03	ns	<0.05	ns	<0.050	<0.050	ns	ns	ns	<0.03	ns	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	ns	ns	ns	<1	ns	<0.050	<0.050	ns	ns	ns	ns	ns	<0.5	<0.050	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns
Nitrate-Nitrogen (mg/L)	10	na	ns	**0.13**	ns	<0.50	ns	<0.050	<0.050	ns	ns	ns	<0.02	ns	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns
Sulfate, as SO4 (mg/L)	500	na	ns	ns	ns	**45**	ns	**39**	**42**	**37**	**35**	ns	ns	ns	**37**	**36**	**8.7**	**8.8**	**13**	**13**	**7.6**	**8.5**	**1.8**	**1.8**
Total Organic Carbon (mg/L)	na	na	ns	**16**	ns	**30**	ns	**29**	**26**	**21**	**19**	ns	**12**	ns	**19**	**31**	**24**	**23**	**20**	**21**	**20**	**23**	**24**	**20**
Carbon Dioxide (mg/L)	na	na	ns	ns	ns	**320**	ns	ns	**420**	**370**	**400**	ns	ns	ns	**210**	ns	**210**	**210**	**200**	**180**	**190**	**200**	**190**	**200**
Volatile Fatty Acids																								
Acetic acid (mg/L)	na	na	ns	<1	ns	<1	ns	ns	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	ns	<1.0	<1.0	<1.0	<1.0	ns	ns	**0.8 J**	**1.6 J**
Butyric acid (mg/L)	na	na	ns	<1	ns	<1	ns	ns	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	ns	<1.0	<1.0	<1.0	<1.0	ns	ns	<1.0 UJ	<1.0 UJ
Lactic acid and HIBA (mg/L)	na	na	ns	<25	ns	<25	ns	ns	<25.0	ns	<25.0 UJ	ns	<25	ns	<25	ns	<25.0	<25.0	<25.0	<25.0	ns	ns	<25.0 UJ	<25.0 UJ
Pentanoic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Propionic acid (mg/L)	na	na	ns	<1	ns	<1	ns	ns	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	ns	<1.0	<1.0	<1.0	<1.0	ns	ns	**1.0 J**	<1.0 UJ
Pyruvic acid (mg/L)	na	na	ns	<10	ns	<10	ns	ns	<10.0	ns	<10.0 UJ	ns	<10	ns	<10	ns	<10.0	<10.0	<10.0	<10.0	ns	ns	<10.0 UJ	<10.0 UJ
MNA - Field Screening																								
pH	na	na	ns	**6.05**	ns	**6.07**	ns	**5.92**	**6.0**	**6.4 J***	**6.2**	ns	**7.18**	ns	**6.44**	**8.53**	**6.08**	ns	ns	ns	ns	ns	ns	ns
ORP (mV)	na	na	ns	**44.5**	ns	**-10.7**	ns	**24.5**	**-32**	**21 J***	**-2**	ns	**-10.8**	ns	**-40.4**	**-36**	**-29.7**	ns	ns	ns	ns	ns	ns	ns
Specific Conductance (µS/cm)	na	na	ns	**447**	ns	**310**	ns	**426**	**463**	**464**	**485**	ns	**575**	ns	**487**	**528**	**479**	ns	ns	ns	ns	ns	ns	ns
Dissolved Oxygen (mg/L)	na	na	ns	**0.4**	ns	**0.9**	ns	**1.75**	**0.15**	**0.3**	**0.5**	ns	**0.2**	ns	**0.3**	**8.0**	**0.44**	ns	ns	ns	ns	ns	ns	ns
Turbidity (ntu)	na	na	ns	**0.7**	ns	ns	ns	**0.80**	<1	<1	<1	ns	**0.8**	ns	**9.7**	**503.0**	**0.92**	ns	ns	ns	ns	ns	ns	ns
Temperature (°C)	na	na	ns	ns	ns	ns	ns	ns	ns	**12**	**11**	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Ferrous Iron (mg/L)	na	na	ns	ns	ns	ns	ns	ns	**0.25**	**1.21**	**1.58**	ns	ns	ns	ns	ns	ns	ns	ns	ns	**10.65**	ns	**2.09 J***	**1.21 J***
Nitrate (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**0.0**	**0.6 J***	ns	ns	ns	ns	ns	ns	ns	ns	ns	**0.0**	ns	**0.4 J***	**0.6 J***

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen / Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-508 Overburden									TRY_MW-601S Overburden									
			Aug-04	Oct-05	Jun-06	Dec-06	May-07	Jun-08	Dec-08	Jun-09	Oct-09	Aug-04	Oct-05	Jun-06	Dec-06	May-07	Jun-08	Dec-08	Jun-09	Jun-09 DUP	Oct-09
VOCs of Concern (µg/L)																					
Tetrachloroethene	5	5	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<0.4	<2.0	<2.0	<2.0	<2.0	ns	<2.0
Trichloroethene	5	5	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
cis-1,2-Dichloroethene	70	70	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	**3.1**	ns	<2.0	<2.0	**2.1**	<2.0	<2.0	ns	<2.0
Vinyl Chloride	2	2	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
1,2,4-Trimethylbenzene	330	50	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
1,3,5-Trimethylbenzene	330	50	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
2-Butanone(MEK)	4,000	170	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	<1.0	ns	<10	<10	<10	<10	<10	ns	<10
Benzene	5	5	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<0.3	<2.0	<2.0	<2.0	<2.0	ns	<2.0
Naphthalene	20	20	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
n-Butylbenzene	260	50	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	**6.4**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
n-Propylbenzene	260	50	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	**1.4**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
p-Isopropyltoluene	260	50	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
Tetrahydrofuran(THF)	154	154	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	**9.9**	ns	<10	<10	<10	<10	<10	ns	<10
Toluene	1,000	1,000	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
Additional VOCs (µg/L)																					
1,1,1-Trichloroethane	200	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
1,1-Dichloroethane	81	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
1,1-Dichloroethene	7	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
1,2,4-Trichlorobenzene	70	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
1,2-Dichloroethane	5	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<0.4	<2.0	<2.0	<2.0	<2.0	ns	<2.0
1,4-Dichlorobenzene	75	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
2-Chlorotoluene	100	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
4-Methyl-2-pentanone (MIBK)	2,000	na	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	<1.0	ns	<10	<10	<10	<10	<10	ns	<10
Acetone	6,000	na	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	<1.0	ns	<10	<10	<10	<10	<10	ns	<10
Ethylbenzene	700	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
Isopropylbenzene	800	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	**12**	ns	<2.0	<2.0	**4.5**	<2.0	<2.0	ns	<2.0
Methylene Chloride	5	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
sec-Butylbenzene	260	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	**9.6**	ns	<2.0	<2.0	**10**	**3.8**	**4.0**	ns	**3.2**
t-Butanol (TBA)	40	na	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	ns	ns	<10	<10	<10	<10	<10	ns	<10
t-Butylbenzene	260	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	**1.5**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
Trichlorofluoromethane	2,000	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
m/p-Xylene	na	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
o-Xylene	na	na	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<2.0
Total VOCs (µg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ND	ND	ns	**43.9**	ns	ND	ND	**16.6**	**3.8**	**4.0**	ns	**3.2**
1,4-Dioxane (µg/L)																					
1,4-Dioxane	3	3	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns	ns	ns	ns	ns	<2.0	ns	ns	ns	ns
SVOCs of Concern (µg/L)																					
Benzo(a)pyrene	0.20	0.20	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	ns	<10
Benzo(b)fluoranthene	0.05	0.05	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	ns	<10
Bis(2-ethylhexyl) phthalate	6	6	ns	ns	ns	ns	ns	ns	ns	<5.0	<5.0	ns	<5	ns	<10	**11**	<5.0	<5.0	<5.0	ns	<5.0
Dibenzo(a,h)anthracene	0.01	0.01	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	ns	<10
Naphthalene	20	20	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	ns	<10
Pentachlorophenol	1	1	ns	ns	ns	ns	ns	ns	ns	<20	<20	ns	<5	ns	<25	<20	<20	<20	<20	ns	<20
Additional SVOCs (µg/L)																					
3 & 4-Methylphenol	40	na	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	<10	ns	<10	<10	<10	<10	<10	ns	<10
Di-n-butylphthalate	na	na	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	ns	<10
Di-n-octylphalate	na	na	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	<5	ns	<10	<10	<10	<10	<10	ns	<10
Total SVOCs (µg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ND	ND	ns	ND	ns	ND	**11**	ND	ND	ND	ns	ND
Metals of Concern (mg/L)																					
Arsenic	0.01	0.01	ns	ns	ns	ns	ns	ns	ns	<0.0010	ns	ns	<0.200	ns	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns
Manganese	0.84	0.3	ns	ns	ns	ns	ns	ns	ns	**0.057**	**0.058**	ns	**5.2**	ns	**9.85**	**9.450**	**15.7**	**14.5**	**13.8**	ns	**10.7**
Additional Metals (mg/L)																					
Barium	2	na	ns	ns	ns	ns	ns	ns	ns	**0.0529**	ns	ns	<0.030	ns	**0.0089**	**0.0525**	**0.0109**	ns	ns	ns	ns
Cadmium	0.005	na	ns	ns	ns	ns	ns	ns	ns	<0.0020	ns	ns	<0.030	ns	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns
Chromium	0.1	na	ns	ns	ns	ns	ns	ns	ns	<0.0050	ns	ns	<0.030	ns	<0.0050	0.0071	<0.0050	ns	ns	ns	ns
Lead	0.015	na	ns	ns	ns	ns	ns	ns	ns	**0.0011**	ns	ns	<0.100	ns	<0.0010	0.0027	<0.0010	ns	ns	ns	ns
Selenium	0.05	na	ns	ns	ns	ns	ns	ns	ns	<0.0050	ns	ns	<0.100	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns
Iron	na	na	ns	ns	ns	ns	ns	ns	ns	**2.45**	ns	ns	**0.055**	ns	**0.124**	**7.360**	**0.196**	ns	ns	ns	ns
MNA - Laboratory																					
Methane (µg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**0.043 J**	**0.540**	ns	ns	ns	**800**	**380**	**1,200**	**1,400**	**1,700**	ns	**1,700**
Ethane (µg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	< 0.025 UJ	<0.025	ns	ns	ns	<10	<10	**0.070**	**0.065**	**0.054**	ns	**0.045**
Ethene (µg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	< 0.025 UJ	**0.075**	ns	ns	ns	<10	<10	**0.074**	**0.069**	**0.042**	ns	**0.046**
Alkalinity (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	<1	**1.8**	ns	ns	ns	**52.6**	ns	**105**	**78.0**	**75.4**	ns	**59.2**
Chloride (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	<3.0	<3.0	ns	**1.1**	ns	**34**	**23**	**8.8**	**5.2**	<3.0	ns	<3.0
Nitrite-Nitrogen (mg/L)	1	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	<0.03	ns	<0.050	<0.05	<0.050	<0.050	ns	ns	ns
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**3.7**	**6.2**	<0.050	**0.36**	ns	ns	ns
Nitrate-Nitrogen (mg/L)	10	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	<0.02	ns	**3.7**	**6.2**	<0.050	**0.35**	ns	ns	ns
Sulfate, as SO4 (mg/L)	500	na	ns	ns	ns	ns	ns	ns	ns	**7.8**	**8.2**	ns	ns	ns	**5**	**8**	**29**	**64**	**71**	ns	**75**
Total Organic Carbon (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**1.9**	**3.6**	ns	**3.2**	ns	**10**	**16**	**11**	**19**	**12**	ns	<0.50
Carbon Dioxide (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**25 J**	**56**	ns	ns	ns	**320**	ns	**300**	**320**	**250**	ns	**260**
Volatile Fatty Acids																					
Acetic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	<1.0 UJ	ns	<1	ns	<1	ns	<1.0	<1.0	ns	ns	<1.0 UJ
Butyric acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	<1.0 UJ	ns	<1	ns	<1	ns	<1.0	<1.0	ns	ns	<1.0 UJ
Lactic acid and HIBA (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	<25.0 UJ	ns	<25	ns	<25	ns	<25.0	<25.0	ns	ns	<25.0 UJ
Pentanoic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Propionic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	<1.0 UJ	ns	<1	ns	<1	ns	<1.0	<1.0	ns	ns	**0.6 J**
Pyruvic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	<10.0 UJ	ns	<10	ns	<10	ns	<10.0	<10.0	ns	ns	<10.0 UJ
MNA - Field Screening																					
pH	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**5.61**	ns	**5.5**	**5.4**	**5.60**	ns	**5.8**	ns	**6.0**
ORP (mV)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**336**	ns	**208.8**	**228**	**321.6**	ns	**203**	ns	**108**
Specific Conductance (µS/cm)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**224**	ns	**190**	**259**	**255**	ns	**283**	ns	**279**
Dissolved Oxygen (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**0.2**	ns	**0.5**	**5.2**	**2.72**	ns	**0.9**	ns	**0.3**
Turbidity (ntu)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**0.2**	ns	**0.3**	**271.0**	**16.9**	ns	**1**	ns	<1
Temperature (°C)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	**10**	ns	**10**
Ferrous Iron (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**0.18**	**0.10**	ns	ns	ns	ns	ns	ns	**0.12**	**0.11**	ns	**0.07**
Nitrate (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**0.3**	**0.1**	ns	ns	ns	ns	ns	ns	ns	**0.3**	**0.4**	**0.1 J***

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen / Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-601D Overburden									TRY_MW-602S Overburden									
			Aug-04	Oct-05	Jun-06	Dec-06	May-07	Jun-08	Dec-08	Jun-09	Oct-09	Aug-04	Oct-05	Jun-06	Dec-06	Dec-06 DUP	May-07	Jun-08	Dec-08	Jun-09	Oct-09
VOCs of Concern (µg/L)																					
Tetrachloroethene	5	5	ns	1.4	ns	<0.4	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<0.4	<0.4	<2.0	<2.0	<2.0	<2.0	<2.0
Trichloroethene	5	5	ns	1.2	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
cis-1,2-Dichloroethene	70	70	ns	9.4	ns	8.7	11	11	15	12	14	ns	<1.0	ns	<2.0	2.1	3.6	11	9.0	<2.0	3.4
Vinyl Chloride	2	2	ns	1.6	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4-Trimethylbenzene	330	50	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	71	ns	41	57	38	<2.0	626	81	297
1,3,5-Trimethylbenzene	330	50	ns	<1.0	ns	59	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	38	49	16	112	243	15	87
2-Butanone(MEK)	4,000	170	ns	<1.0	ns	<10	<10	<10	<10	<10	<10	ns	<1.0	ns	<10	<10	<10	<10	<10	<10	<10
Benzene	5	5	ns	3.2	ns	2.6	3	2.5	2.2	<2.0	2.5	ns	<1.0	ns	<0.3	<0.3	<2.0	2.5	<2.0	<2.0	<2.0
Naphthalene	20	20	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	3.9 J*	ns	9.2	ns	<2.0	<2.0	2.7	<2.0	52	5.2	25 J*
n-Butylbenzene	260	50	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	43	ns	<2.0	8.9	6.2	<2.0	<2.0	8.1	<2.0
n-Propylbenzene	260	50	ns	12.0	ns	8.4	11	5.9	4.5	<2.0	<2.0	ns	16	ns	<2.0	<2.0	4.2	20	86	<2.0	36
p-Isopropyltoluene	260	50	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	26	ns	7.8	8.6	<2.0	<2.0	32	2.4	14
Tetrahydrofuran(THF)	154	154	ns	9.5	ns	<10	<10	<10	<10	<10	<10	ns	<1.0	ns	<10	<10	<10	<10	<10	<10	<10
Toluene	1,000	1,000	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	25	72	1040	998	53	313
Additional VOCs (µg/L)																					
1,1,1-Trichloroethane	200	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	4.7	<2.0	<2.0
1,1-Dichloroethane	81	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-Dichloroethene	7	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4-Trichlorobenzene	70	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	358	2.1	<2.0	<2.0
1,2-Dichloroethane	5	na	ns	<1.0	ns	<0.4	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<0.4	<0.4	<2.0	<2.0	<2.0	<2.0	<2.0
1,4-Dichlorobenzene	75	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
2-Chlorotoluene	100	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
4-Methyl-2-pentanone (MIBK)	2,000	na	ns	<1.0	ns	<10	<10	<10	<10	<10	<10	ns	<1.0	ns	<10	<10	<10	<10	<10	<10	<10
Acetone	6,000	na	ns	1.1	ns	<10	<10	<10	<10	<10	20	ns	2.0	ns	<10	<10	<10	<10	<10	<10	<10
Ethylbenzene	700	na	ns	51	ns	29	39	31	21	8.5	8.5	ns	32	ns	5.4	8.3	16	111	184	21	84
Isopropylbenzene	800	na	ns	18	ns	9.4	16	11	10	6.8	13	ns	13	ns	<2.0	<2.0	3.8	<2.0	58	6.3	27
Methylene Chloride	5	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
sec-Butylbenzene	260	na	ns	1.4	ns	<2.0	2.2	11	<2.0	<2.0	2.8	ns	17	ns	2.2	2.4	2.9	<2.0	28	4	19
t-Butanol (TBA)	40	na	ns	ns	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	<10	<10	<10	<10	<10	<10
t-Butylbenzene	260	na	ns	1.2	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	2.8	ns	<2.0	<2.0	<2.0	<2.0	4.9	<2.0	3.4
Trichlorofluoromethane	2,000	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
m/p-Xylene	na	na	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	88	ns	14	22	21	236	313	24	117
o-Xylene	na	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	83	ns	11	16	27	202	209	22	80
Total VOCs (µg/L)	na	na	ns	111.0	ns	117.1	82.2	72.4	52.7	27.3	64.7	ns	403.0	ns	119.4	199.3	213.4	2,092.5	2,849.7	242.0	1,105.8
1,4-Dioxane (µg/L)																					
1,4-Dioxane	3	3	ns	ns	ns	<2.0	ns	<2.0	ns	ns	ns	ns	ns	ns	<2.0	<2.0	ns	<2.0	ns	ns	ns
SVOCs of Concern (µg/L)																					
Benzo(a)pyrene	0.20	0.20	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	<10	<50	<10	<10	<10	<10
Benzo(b)fluoranthene	0.05	0.05	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	<10	<50	<10	<10	<10	<10
Bis(2-ethylhexyl) phthalate	6	6	ns	<5	ns	<10	<10	<5.0	<5.0	<5.0	<5.0	ns	<5	ns	<10	<10	403	34	38	<5.0	<5.0
Dibenzo(a,h)anthracene	0.01	0.01	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	<10	<50	<10	<10	<10	<10
Naphthalene	20	20	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	<10	<50	11	35	<10	12
Pentachlorophenol	1	1	ns	<5	ns	<25	<20	<20	<20	<20	<20	ns	<5	ns	<20	<20	<100	<20	<20	<20	<20
Additional SVOCs (µg/L)																					
3 & 4-Methylphenol	40	na	ns	<10	ns	<10	<10	<10	<10	<10	<10	ns	<10	ns	<10	<10	<50	<10	<10	<10	<10
Di-n-butylphthalate	na	na	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	<10	<50	<10	<10	<10	<10
Di-n-octylphalate	na	na	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	<5	ns	<10	<10	<50	<10	<10	<10	<10
Total SVOCs (µg/L)	na	na	ns	ND	ns	ND	ND	ND	ND	ND	ND	ns	ND	ns	ND	ND	403	45	73	ND	12
Metals of Concern (mg/L)																					
Arsenic	0.01	0.01	ns	0.0014	ns	0.0014	0.0012	0.0012	ns	ns	ns	ns	<0.200	ns	0.001	0.001	<0.0010	0.0031	ns	ns	ns
Manganese	0.84	0.3	ns	0.884	ns	0.884	0.821	0.821	0.935	0.901	0.939	ns	4.7	ns	3.93	4.05	2.910	9.42	10.3	2.18	7.79
Additional Metals (mg/L)																					
Barium	2	na	ns	<0.030	ns	0.0148	0.0161	0.013	ns	ns	ns	ns	0.36	ns	0.0573	0.0565	0.0796	0.0272	ns	ns	ns
Cadmium	0.005	na	ns	<0.030	ns	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns	<0.030	ns	<0.0020	<0.0020	<0.0020	<0.0020	ns	ns	ns
Chromium	0.1	na	ns	<0.030	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	<0.030	ns	<0.0050	<0.0050	<0.0050	<0.0050	ns	ns	ns
Lead	0.015	na	ns	<0.100	ns	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	<0.100	ns	<0.0010	<0.0010	0.0014	<0.0010	ns	ns	ns
Selenium	0.05	na	ns	<0.100	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	<0.100	ns	<0.0050	<0.0050	<0.0050	<0.0050	ns	ns	ns
Iron	na	na	ns	1.8	ns	2.26	1.72	2.32	ns	ns	ns	ns	34	ns	24.1	26.4	22.70	105	ns	ns	ns
MNA - Laboratory																					
Methane (µg/L)	na	na	ns	ns	ns	830	520	840	800	770	1,300	ns	ns	ns	840	860	880	4,700	5,200	2,600	6,500
Ethane (µg/L)	na	na	ns	ns	ns	<10	<10	0.047	0.049	0.041	0.066	ns	ns	ns	<10	<10	<20	0.075	0.094	0.050	0.084
Ethene (µg/L)	na	na	ns	ns	ns	<10	<10	0.700	0.640	0.890	1.500	ns	ns	ns	<10	<10	<20	0.100	0.160	0.330	0.430
Alkalinity (mg/L)	na	na	ns	55	ns	74.5	ns	51.2	74.4	75.9	82.7	ns	52.6	ns	125	122	ns	256	233	138	170.00
Chloride (mg/L)	na	na	ns	1.9	ns	<3	<3.0	<3.0	<3.0	<3.0	<3.0	ns	71	ns	18	18	11	8.1	6.9	<3.0	4.4
Nitrite-Nitrogen (mg/L)	1	na	ns	<0.03	ns	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	<0.03	ns	<0.050	<0.050	<0.050	<0.050	0.056	ns	ns
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	ns	ns	ns	<0.10	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns	4.5	4.1	1.2	<0.050	<0.050	ns	ns
Nitrate-Nitrogen (mg/L)	10	na	ns	<0.02	ns	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	7.9	ns	4.5	4.1	1.2	<0.050	<0.050	ns	ns
Sulfate, as SO4 (mg/L)	500	na	ns	ns	ns	4.0	4.0	8.9	4.5	3.4	2.9	ns	ns	ns	140	140	76	5.9	<1.0	18	2.6
Total Organic Carbon (mg/L)	na	na	ns	1.5	ns	4.0	4.2	4.3	6.6	3.5	3.3	ns	11	ns	27	49	45	55	35	22	27
Carbon Dioxide (mg/L)	na	na	ns	ns	ns	47	ns	14	30	29	32	ns	ns	ns	360	370	ns	240	210	170	170
Volatile Fatty Acids																					
Acetic acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	<1	ns	<1.0	2.4	ns	<1.0 UJ
Butyric acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	<1.0 UJ	ns	<1	ns	<1	<1	ns	<1.0	<1.0	ns	<1.0 UJ
Lactic acid and HIBA (mg/L)	na	na	ns	<25	ns	<25	ns	<25.0	<25.0	ns	<25.0 UJ	ns	<25	ns	<25	<25	ns	<25.0	<25.0	ns	<25.0 UJ
Pentanoic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Propionic acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	0.6 J	ns	<1	ns	<1	<1	ns	<1.0	<1.0	ns	<1.0 UJ
Pyruvic acid (mg/L)	na	na	ns	<10	ns	<10	ns	<10.0	<10.0	ns	<10.0 UJ	ns	<10	ns	<10	<10	ns	<10.0	<10.0	ns	<10.0 UJ
MNA - Field Screening																					
pH	na	na	ns	6.56	ns	6.46	6.78	6.82	6.7	6.6	6.8	ns	5.45	ns	5.87	ns	6.15	6.15	6.2	6.7 J*	6.5
ORP (mV)	na	na	ns	-25.5	ns	-1.7	-24	-58.6	-13	11	-75	ns	149.2	ns	84.9	ns	-55.4	-55.4	-55	-48 J*	-41
Specific Conductance (µS/cm)	na	na	ns	170	ns	113	106	122	163	148	169	ns	622	ns	690	ns	561	561	582	334	374
Dissolved Oxygen (mg/L)	na	na	ns	0.3	ns	0.2	4.0	0.77	0.60	0.9	0.2	ns	0.4	ns	0.5	ns	2.33	2.33	0.3	0.3	0.3
Turbidity (ntu)	na	na	ns	0.8	ns	4.4	35.6	23.6	67.0	15	4	ns	0.7	ns	1.3	ns	3.8	3.8	1	2	<1
Temperature (°C)	na	na	ns	ns	ns	ns	ns	ns	ns	14	11	ns	ns	ns	ns	ns	ns	ns	ns	10	10
Ferrous Iron (mg/L)	na	na	ns	ns	ns	ns	ns	ns	1.70	1.19	0.63	ns	ns	ns	ns	ns	ns	ns	1.74	1.01	0.74
Nitrate (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	0.0	0.7 J*	ns	ns	ns	ns	ns	ns	ns	ns	0.1	0.0 J*

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen	NH AGQS	ROD ICL	TRY_MW-602B Bedrock									TRY_MW-701 Bedrock								
Sampling Event Date			**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**	**Aug-04**	**Oct-05**	**Jun-06**	**Dec-06**	**May-07**	**Jun-08**	**Dec-08**	**Jun-09**	**Oct-09**
VOCs of Concern (µg/L)																				
Tetrachloroethene	5	5	ns	<1.0	ns	<0.4	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
Trichloroethene	5	5	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
cis-1,2-Dichloroethene	70	70	ns	**10**	ns	**3.0**	**2.1**	**2.6**	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
Vinyl Chloride	2	2	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
1,2,4-Trimethylbenzene	330	50	ns	**47**	ns	**2**	**6.8**	**23**	<2.0	**6.9**	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
1,3,5-Trimethylbenzene	330	50	ns	**11**	ns	**4.1**	**4.9**	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
2-Butanone(MEK)	4,000	170	ns	<1.0	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Benzene	5	5	ns	**1.6**	ns	<0.3	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
Naphthalene	20	20	ns	**19**	ns	**9.5**	**8.1**	**6.8**	<2.0	<2.0	**4.8 J***	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	260	50	ns	**7.4**	ns	**4.7**	**2.8**	**8.1**	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
n-Propylbenzene	260	50	ns	**9.6**	ns	**4.7**	**4.8**	**10**	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
p-Isopropyltoluene	260	50	ns	<1.0	ns	<2.0	**3**	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
Tetrahydrofuran(THF)	154	154	ns	**42**	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Toluene	1,000	1,000	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
Additional VOCs (µg/L)																				
1,1,1-Trichloroethane	200	na	ns	**1.2**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
1,1-Dichloroethane	81	na	ns	**2.0**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
1,1-Dichloroethene	7	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
1,2,4-Trichlorobenzene	70	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	5	na	ns	<1.0	ns	<0.4	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
1,4-Dichlorobenzene	75	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
2-Chlorotoluene	100	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
4-Methyl-2-pentanone (MIBK)	2,000	na	ns	<1.0	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Acetone	6,000	na	ns	<1.0	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Ethylbenzene	700	na	ns	**17**	ns	**5.2**	**5.9**	**14**	**21**	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
Isopropylbenzene	800	na	ns	**13**	ns	**6.9**	**6.8**	**11**	**10**	2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
sec-Butylbenzene	260	na	ns	**9.8**	ns	**11**	**11**	**19**	**10**	**11**	**11**	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
t-Butanol (TBA)	40	na	ns	ns	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
t-Butylbenzene	260	na	ns	**1.4**	ns	<2.0	<2.0	**2.7**	<2.0	**2.0**	**2.3**	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
Trichlorofluoromethane	2,000	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
m/p-Xylene	na	na	ns	**5.5**	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
o-Xylene	na	na	ns	<1.0	ns	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	ns	ns	ns	<2.0	ns	<2.0	<2.0	<2.0	<2.0
Total VOCs (µg/L)	na	na	ns	**197.5**	ns	**51.1**	**56.2**	**97.2**	**41.0**	**21.9**	**18.1**	ns	ns	ns	ND	ns	ND	ND	ND	ND
1,4-Dioxane (µg/L)																				
1,4-Dioxane	3	3	ns	ns	ns	<2.0	ns	<2.0	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
SVOCs of Concern (µg/L)																				
Benzo(a)pyrene	0.20	0.20	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Benzo(b)fluoranthene	0.05	0.05	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Bis(2-ethylhexyl) phthalate	6	6	ns	<5	ns	<10	<10	<5.0	<5.0	<5.0	<5.0	ns	ns	ns	<10	ns	<5.0	<5.0	<5.0	<5.0
Dibenzo(a,h)anthracene	0.01	0.01	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Naphthalene	20	20	ns	**10**	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Pentachlorophenol	1	1	ns	<5	ns	<25	<20	<20	<20	<20	<20	ns	ns	ns	<25	ns	<20	<20	<20	<20
Additional SVOCs (µg/L)																				
3 & 4-Methylphenol	40	na	ns	<10	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Di-n-butylphthalate	na	na	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Di-n-octylphalate	na	na	ns	<5	ns	<10	<10	<10	<10	<10	<10	ns	ns	ns	<10	ns	<10	<10	<10	<10
Total SVOCs (µg/L)	na	na	ns	**10**	ns	ND	ND	ND	ND	ND	ND	ns	ns	ns	ND	ns	ND	ND	ND	ND
Metals of Concern (mg/L)																				
Arsenic	0.01	0.01	ns	<0.200	ns	**0.0041**	**0.0034**	**0.0024**	ns	ns	ns	ns	ns	ns	**0.0010**	<0.0010	<0.0010	<0.0010	ns	ns
Manganese	0.84	0.3	ns	**9.3**	ns	**8.44**	**6.910**	**8.52**	**7.65**	**7.16**	**6.58**	ns	ns	ns	**0.037**	**0.023**	**0.018**	**0.025**	**0.020**	**0.020**
Additional Metals (mg/L)																				
Barium	2	na	ns	<0.030	ns	**0.0266**	**0.0269**	**0.0298**	ns	ns	ns	ns	ns	ns	**0.0101**	**0.0093**	**0.0129**	ns	ns	ns
Cadmium	0.005	na	ns	<0.030	ns	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns	ns	ns	<0.0020	<0.0020	<0.0020	ns	ns	ns
Chromium	0.1	na	ns	<0.030	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns
Lead	0.015	na	ns	<0.100	ns	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	ns	ns	<0.0010	<0.0010	<0.0010	ns	ns	ns
Selenium	0.05	na	ns	<0.100	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns
Iron	na	na	ns	**12**	ns	**8.48**	**6.3**	**9.53**	ns	ns	ns	ns	ns	ns	**0.244**	**0.088**	**<0.050**	ns	ns	ns
MNA - Laboratory																				
Methane (µg/L)	na	na	ns	ns	ns	**1,800**	**1,000**	**2,900**	**1,500**	**2,400**	**2,400**	ns	ns	ns	<10	<10	**0.083**	**1**	**1.2**	**0.072 J**
Ethane (µg/L)	na	na	ns	ns	ns	<20	<10	**0.069**	**0.090**	**0.079**	**0.082**	ns	ns	ns	<10	<10	<0.025	**0.01**	<0.025	<0.025
Ethene (µg/L)	na	na	ns	ns	ns	<20	<10	**0.056**	**0.036**	**0.049**	**0.066**	ns	ns	ns	<10	<10	<0.025	**0.036**	**0.06**	**0.017 J**
Alkalinity (mg/L)	na	na	ns	**120**	ns	**100**	ns	**108**	**96.4**	**82.1**	**87.8**	ns	ns	ns	**8**	ns	**2.3**	**5.5**	**4.5**	**4.7**
Chloride (mg/L)	na	na	ns	**2.5**	ns	**7.0**	**5.0**	**4.9**	**4.4**	**3.4**	**3.2**	ns	ns	ns	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Nitrite-Nitrogen (mg/L)	1	na	ns	<0.03	ns	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns	<0.050	<0.050	<0.050	<0.050	ns	ns
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	ns	ns	ns	<0.10	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns	**0.27**	**0.06**	**0.063**	**0.055**	ns	ns
Nitrate-Nitrogen (mg/L)	10	na	ns	<0.02	ns	<0.050	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns	**0.27**	**0.06**	**0.062**	**0.055**	ns	ns
Sulfate, as SO4 (mg/L)	500	na	ns	ns	ns	**9**	**9**	**9.0**	**13**	**11**	**11**	ns	ns	ns	**11**	**9**	**7.1**	**8.3**	**7.1**	**7.8**
Total Organic Carbon (mg/L)	na	na	ns	**3.9**	ns	**18**	**12**	**8.7**	**9.9**	**5.6**	**12**	ns	ns	ns	**1**	**1.8**	**1.3**	**3.2**	**1.5**	**1.6**
Carbon Dioxide (mg/L)	na	na	ns	ns	ns	**160**	ns	**160**	**160**	**140**	**170**	ns	ns	ns	**28**	ns	**30**	**43**	**32**	**36**
Volatile Fatty Acids																				
Acetic acid (mg/L)	na	na	ns	<1	ns	<1	ns	1.1	<1.0	ns	<1.0 UJ	ns	ns	ns	<1	ns	ns	<1.0	ns	<1.0 UJ
Butyric acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	<1.0 UJ	ns	ns	ns	<1	ns	ns	<1.0	ns	<1.0 UJ
Lactic acid and HIBA (mg/L)	na	na	ns	<25	ns	<25	ns	<25.0	<25.0	ns	<25.0 UJ	ns	ns	ns	<25	ns	ns	<25.0	ns	<25.0 UJ
Pentanoic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Propionic acid (mg/L)	na	na	ns	<1	ns	<1	ns	<1.0	<1.0	ns	<1.0 UJ	ns	ns	ns	<1	ns	ns	<1.0	ns	**0.5 J**
Pyruvic acid (mg/L)	na	na	ns	<10	ns	<10	ns	<10.0	<10.0	ns	<10.0 UJ	ns	ns	ns	<10	ns	ns	<10.0	ns	<10.0 UJ
MNA - Field Screening																				
pH	na	na	ns	**6.19**	ns	**6.2**	**7.15**	**5.73**	**6.0**	**6.1**	**6.3**	ns	ns	ns	**5.84**	**7.41**	**5.22**	**5.4**	**6.2**	**5.7**
ORP (mV)	na	na	ns	**250.4**	ns	**-2.6**	**11.3**	**25.2**	**22**	**-1**	**2**	ns	ns	ns	**180.1**	**160**	**345.7**	**235**	**71**	**117**
Specific Conductance (µS/cm)	na	na	ns	**243**	ns	**236**	**257**	**261**	**219**	**207**	**211**	ns	ns	ns	**32**	**33**	**32**	**38**	**36**	**37**
Dissolved Oxygen (mg/L)	na	na	ns	**0.8**	ns	**0.2**	**6.5**	**0.50**	**0.3**	**0.7**	**0.6**	ns	ns	ns	**10.0**	**3.0**	**12.71**	**6.9**	**6.8**	**4.8**
Turbidity (ntu)	na	na	ns	**0.8**	ns	**0.5**	**37.8**	**27.8**	**5.0**	**3.0**	<1	ns	ns	ns	**0.6**	**20.9**	**0.47**	**5.0**	**5.0**	**20**
Temperature (°C)	na	na	ns	ns	ns	ns	ns	ns	ns	**10**	**11**	ns	ns	ns	ns	ns	ns	ns	**8.0**	**10**
Ferrous Iron (mg/L)	na	na	ns	ns	ns	ns	ns	ns	**0.64**	**2.23**	**0.84**	ns	ns	ns	ns	ns	ns	**0.06**	**0.08**	**0.03**
Nitrate (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	**0.2**	**0.5 J***	ns	ns	ns	ns	ns	ns	ns	**0.2**	**0.4**

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Monitoring Well ID / Geological Unit of Well Screen / Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-702S Bedrock									TRY_MW-702D Bedrock										
			Aug-04	Oct-05	Jun-06	Dec-06	May-07	Jun-08	Dec-08	Jun-09	Oct-09	Aug-04	Oct-05	Jun-06	Dec-06	May-07	Jun-08	Dec-08	Jun-09	Oct-09, 25.9'	Oct-09, 35.9'	Oct-09, 44.4'
VOCs of Concern (µg/L)																						
Tetrachloroethene	5	5	ns	ns	ns	<0.4	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
Trichloroethene	5	5	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
cis-1,2-Dichloroethene	70	70	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
Vinyl Chloride	2	2	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
1,2,4-Trimethylbenzene	330	50	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
1,3,5-Trimethylbenzene	330	50	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
2-Butanone(MEK)	4,000	170	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Benzene	5	5	ns	ns	ns	<0.3	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
Naphthalene	20	20	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
n-Butylbenzene	260	50	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
n-Propylbenzene	260	50	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
p-Isopropyltoluene	260	50	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
Tetrahydrofuran(THF)	154	154	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Toluene	1,000	1,000	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
Additional VOCs (µg/L)																						
1,1,1-Trichloroethane	200	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
1,1-Dichloroethane	81	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
1,1-Dichloroethene	7	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
1,2,4-Trichlorobenzene	70	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
1,2-Dichloroethane	5	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<0.4	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
1,4-Dichlorobenzene	75	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
2-Chlorotoluene	100	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
4-Methyl-2-pentanone (MIBK)	2,000	na	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Acetone	6,000	na	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Ethylbenzene	700	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
Isopropylbenzene	800	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
Methylene Chloride	5	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
sec-Butylbenzene	260	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
t-Butanol (TBA)	40	na	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
t-Butylbenzene	260	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
Trichlorofluoromethane	2,000	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
m/p-Xylene	na	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
o-Xylene	na	na	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	ns	ns	ns	<2.0	ns	<2.0	ns	ns	<2.0	<2.0	<2.0
Total VOCs (µg/L)	na	na	ns	ns	ns	ND	ns	ND	ns	ns	ND	ns	ns	ns	ND	ns	ND	ns	ns	ND	ND	ND
1,4-Dioxane (µg/L)																						
1,4-Dioxane	3	3	ns	ns	ns	ns	ns	ns	ns	ns	<2.0	ns	ns	ns	ns	ns	ns	ns	ns	<2.0	<2.0	<2.0
SVOCs of Concern (µg/L)																						
Benzo(a)pyrene	0.20	0.20	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Benzo(b)fluoranthene	0.05	0.05	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Bis(2-ethylhexyl) phthalate	6	6	ns	ns	ns	<10	ns	<5.0	ns	ns	<5.0	ns	ns	ns	<10	ns	<5.0	ns	ns	**14 J***	<5.0	<5.0
Dibenzo(a,h)anthracene	0.01	0.01	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Naphthalene	20	20	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Pentachlorophenol	1	1	ns	ns	ns	<25	ns	<20	ns	ns	<20	ns	ns	ns	<25	ns	<20	ns	ns	<20	<20	<20
Additional SVOCs (µg/L)																						
3 & 4-Methylphenol	40	na	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Di-n-butylphthalate	na	na	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Di-n-octylphalate	na	na	ns	ns	ns	<10	ns	<10	ns	ns	<10	ns	ns	ns	<10	ns	<10	ns	ns	<10	<10	<10
Total SVOCs (µg/L)	na	na	ns	ns	ns	ND	ns	ND	ns	ns	ND	ns	ns	ns	ND	ns	ND	ns	ns	**14**	ND	ND
Metals of Concern (mg/L)																						
Arsenic	0.01	0.01	ns	ns	ns	**0.0010**	<0.0010	<0.0010	ns	ns	ns	ns	ns	ns	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	ns
Manganese	0.84	0.3	ns	ns	ns	**1.45**	**0.555**	**0.254**	ns	ns	**0.185**	ns	ns	ns	<0.010	<0.010	<0.010	ns	ns	**0.118**	**0.198**	**0.720**
Additional Metals (mg/L)																						
Barium	2	na	ns	ns	ns	**0.0227**	**0.0272**	**0.0423**	ns	ns	ns	ns	ns	ns	<0.0050	0.0050	<0.0050	ns	ns	ns	ns	ns
Cadmium	0.005	na	ns	ns	ns	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns	ns	ns	<0.0020	<0.0020	<0.0020	ns	ns	ns	ns	ns
Chromium	0.1	na	ns	ns	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns
Lead	0.015	na	ns	ns	ns	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	ns	ns	<0.0010	<0.0010	<0.0010	ns	ns	ns	ns	ns
Selenium	0.05	na	ns	ns	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns	ns	<0.0050	<0.0050	<0.0050	ns	ns	ns	ns	ns
Iron	na	na	ns	ns	ns	**3.06**	**2.220**	**0.281**	ns	ns	ns	ns	ns	ns	**0.066**	**0.067**	**0.077**	ns	ns	ns	ns	ns
MNA - Laboratory																						
Methane (µg/L)	na	na	ns	ns	ns	<10	<10	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	ns	ns	ns	ns	ns
Ethane (µg/L)	na	na	ns	ns	ns	<10	<10	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	ns	ns	ns	ns	ns
Ethene (µg/L)	na	na	ns	ns	ns	<10	<10	ns	ns	ns	ns	ns	ns	ns	<10	<10	ns	ns	ns	ns	ns	ns
Alkalinity (mg/L)	na	na	ns	ns	ns	**17.1**	ns	<1	ns	ns	ns	ns	ns	ns	**16.0**	ns	**18.6**	ns	ns	ns	ns	ns
Chloride (mg/L)	na	na	ns	ns	ns	<3.0	<3.0	<3.0	ns	ns	ns	ns	ns	ns	<3.0	<3.0	<3.0	ns	ns	ns	ns	ns
Nitrite-Nitrogen (mg/L)	1	na	ns	ns	ns	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns	ns	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns
Nitrate+Nitrite-Nitrogen (mg/L)	na	na	ns	ns	ns	<0.10	<0.050	<0.050	ns	ns	ns	ns	ns	ns	<0.10	**0.090**	**0.075**	ns	ns	ns	ns	ns
Nitrate-Nitrogen (mg/L)	10	na	ns	ns	ns	<0.050	<0.050	<0.050	ns	ns	ns	ns	ns	ns	<0.050	**0.090**	**0.073**	ns	ns	ns	ns	ns
Sulfate, as SO4 (mg/L)	500	na	ns	ns	ns	**10**	**14**	**8.9**	ns	ns	ns	ns	ns	ns	**7.0**	**6.0**	**5.8**	ns	ns	ns	ns	ns
Total Organic Carbon (mg/L)	na	na	ns	ns	ns	**2.9**	**21**	**2.4**	ns	ns	ns	ns	ns	ns	**0.81**	**1.7**	**0.87**	ns	ns	ns	ns	ns
Carbon Dioxide (mg/L)	na	na	ns	ns	ns	**23**	ns	ns	ns	ns	ns	ns	ns	ns	**6.2**	ns	ns	ns	ns	ns	ns	ns
Volatile Fatty Acids																						
Acetic acid (mg/L)	na	na	ns	ns	ns	<1	ns	ns	ns	ns	ns	ns	ns	ns	<1	ns	ns	ns	ns	ns	ns	ns
Butyric acid (mg/L)	na	na	ns	ns	ns	<1	ns	ns	ns	ns	ns	ns	ns	ns	<1	ns	ns	ns	ns	ns	ns	ns
Lactic acid and HIBA (mg/L)	na	na	ns	ns	ns	<25	ns	ns	ns	ns	ns	ns	ns	ns	<25	ns	ns	ns	ns	ns	ns	ns
Pentanoic acid (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Propionic acid (mg/L)	na	na	ns	ns	ns	<1	ns	ns	ns	ns	ns	ns	ns	ns	<1	ns	ns	ns	ns	ns	ns	ns
Pyruvic acid (mg/L)	na	na	ns	ns	ns	<10	ns	ns	ns	ns	ns	ns	ns	ns	<10	ns	ns	ns	ns	ns	ns	ns
MNA - Field Screening																						
pH	na	na	ns	ns	ns	**6.15**	**5.8**	**4.76**	ns	ns	ns	ns	ns	ns	**6.69**	**6.14**	**6.58**	ns	ns	ns	ns	ns
ORP (mV)	na	na	ns	ns	ns	**50.5**	**99.1**	**306**	ns	ns	ns	ns	ns	ns	**146**	**73**	**312**	ns	ns	ns	ns	ns
Specific Conductance (µS/cm)	na	na	ns	ns	ns	**47**	**48**	**28**	ns	ns	ns	ns	ns	ns	**38**	**54**	**43**	ns	ns	ns	ns	ns
Dissolved Oxygen (mg/L)	na	na	ns	ns	ns	**1.3**	**5.8**	**5.36**	ns	ns	ns	ns	ns	ns	**3.9**	**8.3**	**5.75**	ns	ns	ns	ns	ns
Turbidity (ntu)	na	na	ns	ns	ns	**2.3**	**532.0**	**8.6**	ns	ns	ns	ns	ns	ns	**2.6**	**990.0**	**7.3**	ns	ns	ns	ns	ns
Temperature (°C)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Ferrous Iron (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Nitrate (mg/L)	na	na	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

TABLE 7 - SUMMARY OF DETECTED COMPOUNDS IN GROUNDWATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

TABLE KEY:

Ambient Groundwater Quality Standards (AGQS) were obtained from the NHDES' Groundwater Quality Criteria (Env-Or 603).
Bolding indicates that the concentration was detected.
Shading indicates that the concentration exceeds the AGQS and/or the ROD ICL.

"na" indicates that no standard applies
"ns" stands for not sampled.
J and J* indicate that the associated numerical value is an estimated quantity. J is used for data qualified by the Environmental Data Services and J* is used for data qualified by GZA.
UJ indicates that the compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit. UJ is used for data qualified by Environmental Data Services.

NOTES:

1. The following abbreviations are used in this table: VOCs for Volatile Organic Compounds, SVOCs for Semi Volatile Organic Compounds, MNA for Monitored Natural Attenuation, ORP for Oxidation Reduction Potential, TOC for Total Organic Carbon, µg/L for micrograms per liter, and mg/L for milligrams per liter.
2. The analytical test methods for each compound as follows: VOCs by SW-846 8260B, SVOCs by Method SW-846 8270C, Metals by EPA 200.7, Alkalinity SM 2320B, Chloride by LACHAT 10-117-07-01-B, TOC by SM 5310B, and Sulfate by LACHAT 10-511-00-1-A.
3. The low-flow field parameter concentrations reported in this table represent the last round of data collected before sampling.
4. On June 9, 2009 the end-of-day calibration check for ORP was unsuccessful on one of the MP-20 units, so the ORP data collected at wells TRY_MW-2 and TRY_MW-7 must be considered estimated.
5. On June 10, 2009 the end-of-day check for ORP and pH was unsuccessful on one of the MP-20 units, so the pH and ORP data collected at wells TRY_MW-204, TRY_MW-301, and TRY_MW-602S must be considered estimated.
6. For the October 2009 sampling round, the nitrate data from the following wells, TRY_MW-601S, TRY_MW-301, TRY_MW-204, TRY_MW-201M, TRY_MW-602S, TRY_MW-602B, TRY_MW-101, TRY_MW-601D, and TRY_MW-205 are considered estimated because acceptance criteria were not met during the end-of-day calibration checks.
7. The iron and manganese data collected on June 8, 2009 must be considered estimated because the relative percent difference (RPD) between duplicate samples did not meet the acceptance criteria.
8. The ferrous iron data collected at TRY_MW-205 in June 2009, the ferrous iron and nitrate data collected at TRY_MW-501 in October 2009, and the nitrate data collected at TRY_MW-205 in October 2009 must be considered estimated because the RPD between duplicate samples did not meet acceptance criteria.
9. Naphthalene data collected on October 12, 2009 at wells TRY_MW-101, TRY_MW-201M, TRY_MW-601D, TRY_MW-602S, and TRY_MW-602B should be considered estimated since the trip blank associated with those wells returned hits of naphthalene which was determined to be a laboratory contaminant.
10. Bis 2-ethylhexyl phthalate data collected on October 14, 2009 at well TRY_MW-702D should be considered estimated since the equipment blank associated with the Kemmerer sampler with which TRY_MW-702D was sampled returned hits of Bis 2-ethylhexyl phthalate.
11. Groundwater samples collected between 2008 and 2010 on this table were collected using dedicated bladder pumps with the exception of wells MW-501, MW-508, and MW-202S which were sampled using a hand bailer; well MW 105D was sampled using a peristaltic pump, and MW-702D was sampled using a Kemmerer. In 2007 wells were sampled usign a Wattera inertia pump. Prior to 2007, a combination of Wattera, peristaltic pumps, and hand bailers were used to collect samples.

TABLE 8 - SUMMARY OF DETECTED COMPOUNDS IN SURFACE WATER SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Surface Water Sample Location ID	NH	TRY_SW-1								TRY_SW-3										TRY_SW-4			
Sampling Event Date	SWQC	Dec-06	May-07	Jun-08	Jun-08 DUP	Nov-08	Nov-08 DUP	Jun-09	Oct-09	Dec-06	Dec-06 DUP	May-07	May-07 DUP	Jun-08	Nov-08	Jun-09	Jun-09 DUP	Oct-09	Oct-09 DUP	Jun-08	Nov-08	Jun-09	Oct-09
VOCs (mg/L)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SVOCs (mg/L)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metals (mg/L)																							
Manganese	na	**0.019**	**0.030**	**0.023**	**0.023**	**0.036**	**0.036**	**0.027**	**0.231**	**0.065**	**0.064**	**0.046**	**0.047**	**0.062**	**0.231**	**0.061**	**0.060**	**0.232**	**0.232**	**0.034**	**0.026**	**0.028**	**0.020**
Hardness	na	**5.42**	**4.743**	**5.309**	**5.237**	**6.195**	**6.189**	**4.739**	**6.879**	<3	<3	<3	<3	**5.857**	**7.467**	**5.576**	**5.436**	**6.901**	**6.922**	**5.227**	**6.76**	**4.683**	**4.951**
MNA Parameters - Field																							
pH	na	*ns*	*ns*	*ns*	*ns*	**6.9**	*ns*	**6.0**	**6.8**	*ns*	*ns*	*ns*	*ns*	*ns*	**7.1**	**5.9**	*ns*	**8.2**	*ns*	*ns*	**7.0**	**6.1**	**6.9**
ORP (mV)	na	*ns*	*ns*	*ns*	*ns*	**112**	*ns*	**144**	**98**	*ns*	*ns*	*ns*	*ns*	*ns*	**112**	**93**	*ns*	**104**	*ns*	*ns*	**111**	**110**	**86**
Specific Conductance (µS/cm)	na	*ns*	*ns*	*ns*	*ns*	**34**	*ns*	**29**	**29**	*ns*	*ns*	*ns*	*ns*	*ns*	**30**	**28**	*ns*	**32**	*ns*	*ns*	**35**	**29**	**29**
Dissolved Oxygen (mg/L)	na	*ns*	*ns*	*ns*	*ns*	**14**	*ns*	**9.1**	**8.9**	*ns*	*ns*	*ns*	*ns*	*ns*	**13**	**8.8**	*ns*	**8**	*ns*	*ns*	**13**	**10.1**	**8.8**
Turbidity (ntu)	na	*ns*	*ns*	*ns*	*ns*	**0.7**	*ns*	<1	<1	*ns*	*ns*	*ns*	*ns*	*ns*	**0.8**	<1	*ns*	<1	*ns*	*ns*	**1.1**	<1	<1
Temperature (°C)	na	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**20**	**15**	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**17**	*ns*	**11**	*ns*	*ns*	*ns*	**20**	**13**

TABLE KEY:

Surface Water Quality Criteria (SWQC) were obtained from the NHDES' Surface Water Quality Regulations (Env-Wq 1700). The particular surface water criteria used in this table are Fresh Water Chronic Criteria.
Bolding indicates that the concentration was detected.
Shading indicates that the concentration exceeds the SWQC.
"na" indicates that no standard applies
"ns" stands for not sampled.

NOTES:

1. The following abbreviations are used in this table: VOCs for Volatile Organic Compounds, SVOCs for Semi Volatile Organic Compounds, MNA for Monitored Natural Attenuation, ORP for Oxidation Reduction Potential, µg/L for micrograms per liter, and mg/L for milligrams per liter.
2. The analytical test methods for each compound are as follows: VOCs by SW-846 8260B, SVOCs by Method SW-846 8270C, Metals by EPA 200.7.
3. There are no site Contaminants of Concern for Surface Water.

TABLE 9 - SUMMARY OF DETECTED COMPOUNDS IN SEDIMENT SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Sediment Sample Location ID / Sampling Event Date	SQuiRT TEC	TRY_SW-SEDSW-3							
		Dec-06	Dec 2006 DUP	Nov-07	Nov-07 DUP	Dec-08	Dec-08 DUP	Oct-09	Oct 2009 DUP
VOCs (mg/kg)		ND	ND	*ns*	*ns*	ND	ND	ND	ND
SVOCs (mg/kg)									
Bis(2-ethylhexyl) phthalate	na	**1,200**	**480**	<410	<440	<400	<400	<470	<620
Metals (mg/kg)									
Arsenic	9.79	**0.4004**	**0.3977**	**1.48**	**1.22**	**0.3189**	<0.2678	**0.7665**	**0.7889**
Barium	na	**28**	**25.4**	**39.1**	**28.3**	<28.7	<26.8	**27.6**	**24.3**
Cadmium	0.99	<0.015	<0.013	<1.35	<0.8145	<2.87	<2.68	<0.5554	<0.3511
Chromium	43.4	**5.11**	**4.97**	**7.96**	**6.84**	**2.81**	**2.53**	**5.34**	**4.80**
Iron	na	**5,042**	**4,959**	**11,370**	**8,369**	**5,046**	**4,303**	**6,701**	**6,157**
Lead	36	**3.94**	**3.98**	**16.6**	**10.4**	**1.90**	**1.45**	**6.83**	**6.84**
Mercury	0.180	*ns*	*ns*	*ns*	*ns*	*ns*	*ns*	**26.3**	**6.01**
Manganese	na	**45.1**	**45.4**	**345**	**254**	**151.0**	**77.1**	**111**	**123**
Potassium	na	*ns*	*ns*	**1,955**	**1,989**	*ns*	*ns*	*ns*	*ns*
MNA Parameters (µg/g)									
Total Organic Carbon	na	**15,000**	**9,100**	**9,900**	**23,000**	**1,000**	**890**	**30,000**	**26,000**

TABLE KEY:

The standards listed in the table are the NOAA Screening Quick Reference Tables (SQuiRT) from the NOAA OR&R Report 08-1.
Bolding indicates that the concentration was detected.
"na" indicates that no standard applies
"ns" stands for not sampled.

NOTES:

1. The following abbreviations are used in this table: VOCs for Volatile Organic Compounds, SVOCs for Semi Volatile Organic Compounds, MNA for Monitored Natural Attenuation, µg/g for micrograms per gram, and mg/kg for milligrams per kilogram.
2. The analytical test methods for each compound are as follows: VOCs by SW-846 8260B, SVOCs by Method SW-846 8270C, Metals by EPA 200.7/200.8, with the exception of Mercury by SW-846 7471A, and TOC by LLOYD KAHN.
3. There are no site Contaminants of Concern for Sediments.

TABLE 10 - SUMMARY OF DETECTED COMPOUNDS IN LEACHATE SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Leachate Sample Location ID	NH	ROD	TRY_SW-LEACHATE					
Sampling Event Date	SWQC	ICL	Dec-06	May-07	Jul-08	Nov-08	Jun-09	Oct-09
SVOCs of Concern (mg/L)								
Bis(2-ethylhexyl) phthalate	1.8	40	<10	<10	**16**	**5.2**	<5.0	<5.0
VOCs (mg/L)								
Ethylbenzene	3,100	na	**23.5**	**23**	**26**	**23**	**23**	**23**
n-Propylbenzene	na	na	**15.5**	**14.5**	**18**	**16**	**16**	**16**
n-Butylbenzene	na	na	**6.4**	**6.3**	**6.7**	**6.1**	**5.7**	**5.6**
m/p-Xylene	na	na	<2	<2	<2.0	<2.0	<2.0	**2.7**
sec-Butylbenzene	na	na	**8.5**	**8.1**	**10**	**9.1**	**8.4**	**8.5**
cis-1,2-Dichloroethene	na	na	**21**	**16**	**16**	**14**	**8.5**	**9.6**
Naphthalene	na	na	**12.5**	**11**	**10.3**	**12**	<2.0	**9.8**
1,2,4-Trimethylbenzene	na	na	**7.4**	**36**	**9.6**	**6.0**	**2.9**	<2.0
t-Butylbenzene	na	na	**2.3**	**2.2**	**2.9**	**2.5**	**2.1**	**2.4**
Isopropylbenzene	na	na	**10**	**12**	**13**	**11**	**11**	**12**
p-Isopropyltoluene	na	na	**7.4**	**8.6**	**7.3**	<2.0	**12**	**3.1**
Total VOCs (µg/L)			**114**	**138**	**119**	**99**	**88**	**93**
Metals (mg/L)								
Manganese	na	na	**7.92**	**7.22**	**7.60**	**7.75**	**6.12**	**6.4**
Hardness	na	na	*ns*	*ns*	*ns*	**112.6**	**104.8**	**102.8**

TABLE KEY:
Surface Water Quality Criteria (SWQC) were obtained from the NHDES' Surface Water Quality Regulations (Env-Wq 1700). The particular surface water criteria used in this table are Water & Fish Ingestion.
Bolding indicates that the concentration was detected.
Shading indicates that the concentration exceeds the SWQC and/or the ROD ICL.
"na" indicates that no standard applies
"ns" stands for not sampled.

NOTES:
1. The following abbreviations are used in this table: VOCs for Volatile Organic Compounds, SVOCs for Semi Volatile Organic Compounds, µg/L for micrograms per liter, and mg/L for milligrams per liter.
2. The analytical test methods for each compound are as follows: VOCs by SW-846 8260B, SVOCs by Method SW-846 8270C, and Metals by EPA 200.7.
3. The laboratory cannot achieve the action limit for the only Contaminant of Concern, Bis (2-ethylhexyl) phthalate. As the concentrations approach the action limits, an evaluation of the need for alternative test methods that could achieve the necessary RDLs will be conducted.

TABLE 11 - SUMMARY OF DETECTED COMPOUNDS IN WETLAND SOIL SAMPLES
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Surface Water Sample Location ID	NH Soil	TRY_WES-01			TRY_WES-02			TRY_WES-03					TRY_WES-04			
Sampling Event Date	Standard	Dec-06	Nov-08	Oct-09	Dec-06	Nov-08	Oct-09	Dec-06	Nov-08	Nov-08 DUP	Oct-09	Oct-09 DUP	Dec-06	Dec-09 DUP	Nov-08	Oct-09
SVOCs (mg/kg)																
Bis(2-ethylhexyl) phthalate	na	**53,000**	<530	**6,700**	**4,300**	**73,000**	**4,000**	**8,400**	**1,000**	**970**	**520**	**740**	**6,300**	**7,000**	**470**	**960**
Metals (mg/kg)																
Arsenic	11	**2.45**	**0.8242**	**0.9028**	**2.62**	**2.13**	**0.7698**	**0.6863**	**0.6328**	**0.6214**	**0.5299**	**0.3695**	**0.5448**	**0.8092**	**0.8115**	**0.4167**
Barium	1,000	**260**	<36.0	**375**	**198**	**173**	**233**	**25.6**	**90.3**	**41.3**	**56.3**	**41.1**	**27.6**	**27.8**	<31.5	**25.6**
Cadmium	33	<0.033	<3.62	**1.39**	<0.024	**7.66**	**1.20**	<0.015	<3.09	<3.66	**0.6212**	**0.3858**	<0.014	<0.014	<3.15	**0.4134**
Chromium VI	130	**14.5**	**6.49**	**9.91**	**18.2**	**16.6**	**14.5**	**4.23**	**7.35**	**7.24**	**6.49**	**4.44**	**5.82**	**5.92**	**4.73**	**5.30**
Iron	na	**141,665**	**7,435**	**211,623**	**94,346**	**129,516**	**160,652**	**17,398**	**23,026**	**16,207**	**15,694**	**28,952**	**10,425**	**10,516**	**16,974**	**12,487**
Lead	400	**15.1**	**6.81**	**8.54**	**14.5**	**16.7**	**8.68**	**2.38**	**3.44**	**3.50**	**3.65**	**3.27**	**2.87**	**2.95**	**2.83**	**2.52**
Manganese	5,200	**77,485**	**147**	**130,810**	**44,620**	**2,840**	**5,070**	**1,140**	**2,309**	**1,979**	**451**	**504**	**1,360**	**868**	**807**	**1,163**
Mercury	6	<0.1308	<0.1644	**1.34**	<0.095	<0.2904	**30.4**	<0.0619	<0.1377	<0.1486	<0.1716	**0.1694**	<0.0556	<0.0557	<0.1280	**1.25**
Selenium	180	<0.6132	<1.81	<2.33	**1.41**	<3.39	<2.04	<0.3612	<1.54	<1.83	<1.11	<0.6768	<0.287	<0.289	<1.57	**<1.65**
Silver	89	<0.033	<1.81	<2.33	<0.024	<3.39	<2.04	<0.015	<1.54	<1.83	<1.11	<0.6768	<0.014	<0.014	<1.57	<0.8268
MNA Parameters - Laboratory (mg/kg)																
Total Organic Carbon	na	**90,000**	**33,000**	**110,000**	**54,000**	**71,000**	**86,000**	**13,000**	**27,000**	**22,000**	**22,000**	**42,000**	**3,000**	**3,500**	**11,000**	**6,100**

TABLE KEY:

Soil Remediation Standards were obtained from NHDES' Soil Remediation Criteria (Env-Or 606.19).
Bolding indicates that the concentration was detected.
Shading indicates that the concentration exceeds the Soil Remediation Standard.
"na" indicates that no standard applies
"ns" stands for not sampled.

NOTES:

1. The following abbreviations are used in this table: SVOCs for Semi Volatile Organic Compounds, MNA for Monitored Natural Attenuation, and mg/kg for milligrams per kilogram.
2. The analytical test methods for each compound are as follows: SVOCs by Method SW-846 8270C, Metals by EPA 200.7/200.8, with the exception of Mercury by SW-846 7471A, and TOC by LLOYD KAHN.
3. There are no site Contaminants of Concern for Wetlands Soils.

APPENDIX A

PUBLIC NOTICE

Amount Due: $0.00

United States Environmental Protection Agency New England

EPA Starts Five-Year Review of Troy Mills Landfill Superfund Site

The U.S. Environmental Protection Agency (EPA) has begun its first Five-Year Review of the Troy Mills Landfill Superfund Site, in Troy, NH. Five-Year Reviews are required by law, and are conducted by EPA to determine if the cleanup performed at the site is protective of human health and the environment. This Five-Year Review will be completed by October 2010 and the results will be made publicly available.

During 2003-2005, EPA performed several removal actiions at the site. These removal actions included: the installation of three interceptor trenches to capture free product floating on the groundwater, and a drum removal action which involved the excavation and off-site disposal of 7,692 buried drums, 29,924 gallons of flammable liquid waste, 3,099 cubic yards of sludge, and 26,244 tons of contaminated soils. In September 2005, EPA selected a long-term cleanup remedy for the site which included monitored natural attenuation; continuing capture of free product from groundwater using the interceptor trenches, maintaining the permeable soil cap, and long-term monitoring of groundwater, surface water, sediment, leachate, and wetlands.

Contaminants at the site generally include metals, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs).

More information about the cleanup can be found online at www.epa.gov/ne/superfund/sites/troy or at the Gay Kimball Library, 10 South Main Street, Troy, NH 03465.

For more information, contact: Michael Jasinski Toll Free 1-888-372-7341, ext. 81352 jasinski.mike@epa.gov Kenneth Kettenring (NHDES) gov kenneth.kettenring@des.nh.gov

APPENDIX B

INTERVIEW DOCUMENTATION

Troy Mills 5-Year Review Interview Record

EPA ID No: NHD980520217

Date: August 11, 2010
Time: 9:00 am – 9:30 am
Type: Telephone Interview
Interviewer: Richard Hull, RPM, USEPA
Ken Kettenring, NHDES
Interviewee: Russell Butler, Chair, Troy Board of Selectmen
(603) 358-4231
Russell.Butler@Peerless-Ins.com

What is your overall impression of the project and Site over the last 5 years?

Mr. Butler initially thought we would be discussing the actual mill site in Troy. After clarifying that we were discussing the Superfund landfill site, Mr. Butler indicated that he understood that the landfill site is capped and grass is growing. Mr. Butler said the site looks "sharp". Mr. Butler is not aware of any issues with monitoring wells or contamination concerns. Ken informed him that groundwater contamination still exists and that monitoring wells are collecting samples for tracking the contamination. Mr. Butler was not aware of any current plans for development of site and indicated that it is currently used for recreational hiking and mountain biking. Vehicle use is not permitted.

What is your opinion of the remedy?

Ken informed Mr. Butler that the remedy included the drum removal effort and groundwater monitoring/natural attenuation. Ken indicated that the remedy is considered to be successfully on track as long as the groundwater contamination is not spreading and is attenuating. Mr. Butler said the site is secure and that he is not aware of any problems. Cleanup was "thorough", as for as he knows.

Do you have any concerns with the Site or Site remedy?

No concerns.

Was your previous impression different? Why is it different?

Impression has remained unchanged.

Are you aware of any issues the 5-year review should focus on?

None.

Who should we speak to in the community to solicit local input?

Mr. Butler indicated that the Conservation Commission may have some jurisdiction, but was not aware of any direct involvement at the site. Also suggested that the Troy Road Supervisor, Mr. Jim Dicey, has not had any issues with site.

Is the town actively involved with any Site activity or should it be?

Mr. Butler is under the impression that no further involvement is required and that monitoring is ongoing. The Town does not have any issues with further involvement. Local residents were concerned with maintaining hiking trails. Mr. Butler indicated that access to the site is limited for development.

Have there been any changes in the Site or surrounding area in the last five years?

Not aware of any. Police now monitor area with town owned ATV.

Are there any land-use or zoning changes at the Site or surrounding area? Are any changes planned in the surrounding area?

Mr. Butler indicated that there are no roads to the site existing from the Fitzwilliam site. Town zoning restrictions would limit any building at site. Ken indicated that the State maintains easements for groundwater management zone in area of landfill. Current ownership of the site is now with Troy Mills shareholders.

Have any developers shown interest in the Site?

Access is limited for development. Town has not heard of any interest from possible developers. Mr. Butler understands that any redevelopment would be limited due to EPA and state needing to recover expenses if parcel were to be taken by town and then sold or redeveloped.

What effects have site operations had on the surrounding community?

None.

Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

No concerns other than locals wanting to maintain access to recreational trails.

Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.

Not aware of any issues with vandalism or access at fenced area. Ken is aware of some vandalism at wells and ATV activity at landfill area. Mr. Butler is aware of some ATV activity on the trails in the vicinity of the landfill and the local police currently have an ATV for monitoring and enforcement.

Do you feel well informed about the site's activities and progress?

Mr. Butler is not aware of the Town receiving information regarding site progress, other than periodic monitoring reports, which he indicated that the town is receiving. Mr. Butler thought that there really was not much interest in site because there is not much activity. Town does receive periodic monitoring reports from EPA. No major issues or problems, so Town does not have any concerns or interest.

Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

No suggestions. Town would like something to happen with the actual mill site. Mr. Butler asked how long the groundwater would be contaminated. Ken indicated that it would be a number of years before the groundwater would meet state standards. Contamination is not spreading, but still exists at GW monitoring zone.

APPENDIX C

JUNE 2009 THROUGH JUNE 2010 SAMPLING DATA REPORT (GZA)

SDMS TARGET SHEET

US EPA New England
Superfund Document Management System
Image Target Sheet

SDMS Document ID #: _454663_____

Site Name: _Troy Mills Landfill_____

File Number: __8.3_____

Purpose of Target Sheet:

[ ] Oversized [ ] Color

[ ] Non-Paper Media [X] Other (Provide purpose below)

_____

Document Type this Target Sheet Replaces:

[ ] Map [ ] Photograph [ ] Graph/Chart

[ ] Video [ ] Compact Disc [X] Other (Specify below)

_____

Description or Comments:

_APPENDIX C: JUNE 2009 THROUGH JUNE 2010 SAMPLING DATA REPORT (GZA) is indexed separately as SDMS 482680_____

Retrieval:

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APPENDIX D

FOCUSED MNA EVALUATION (GZA)

GZA
GeoEnvironmental, Inc.

Engineers and Scientists

TECHNICAL MEMORANDUM

TO: Mike Asselin

FROM: Richard Schaffner

DATE: September 8, 2010

FILE NO.: 04.0024466.43

RE: Focused Monitored Natural Attenuation Evaluation
Troy Mills Landfill Superfund Site
Troy, New Hampshire

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TECHNICAL APPROACH

GZA GeoEnvironmental, Inc.'s (GZA's) Technical Approach for the Focused Monitored Natural Attenuation (MNA) Evaluation of the Site was to conservatively select surrogates for each group of detected Site contaminants of concern (COCs) to evaluate the efficacy of MNA for managing COC migration within the Site's Groundwater Management Zone (GMZ). The major groups of detected COCs include chlorinated volatile organic compounds (cVOCs), petroleum volatile organic compounds (pVOCs), phthalates (*i.e.,* bis(2-ethylhexyl) phthalate, DEHP), and metals (*i.e.,* manganese)[1]. Hence, GZA conservatively focused on evaluating surrogates for each COC group and the detection locations for the COCs detected at the greatest exceedances of their respective Ambient Groundwater Quality Standard (AGQS) per New Hampshire Code of Administrative Rules Env-Or 603.03 (Ambient Groundwater Quality Standards).[2] GZA's MNA evaluation follows a hierarchical lines-of-evidence approach consistent with EPA (1999[3]) to evaluate the strength of the MNA evidence, as follows:

- Primary Lines of Evidence – Direct evidence of natural attenuation on a temporal basis;
- Secondary Lines of Evidence – Biogeochemical data that indirectly support natural attenuation; and
- Tertiary Lines of Evidence – Field or laboratory-scale microcosm studies that directly support natural attenuation via a specific (typically biotic) pathway.

In general, evaluations of secondary lines of evidence are only necessary if there are insufficient primary lines of evidence to document natural attenuation of Site COCs. Consistent with this approach, evaluations of tertiary lines of evidence are only carried out if there are insufficient primary and secondary lines of evidence to document natural attenuation. It is our opinion that

[1] Please note that DEHP and manganese were respectively the only phthalate and metal detected above their respective AGQS during the October 2009 sampling round.

[2] GZA focused the evaluation on the COC of each group with the greatest exceedance of its respective AGQS to address worst-case conditions. Hence, if conditions suitable for MNA are present for the selected surrogate COC, it is likely they are also generally suitable for the remaining COCs of each group detected at lower concentrations.

[3] EPA's Office of Solid Waste and Emergency Response, 1999, Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites, Directive No 9200.4-17P, 32 p.

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GZA's Technical Approach of selecting surrogate COCs for the MNA evaluation provides a gross appraisal of the efficacy of MNA for managing COC migration at the Site at this point in the project lifecycle.

PURPOSE AND OBJECTIVES

The purpose of the Focused MNA Evaluation relative to the selected surrogate COCs and their respective detection locations was to assess whether the totality of natural attenuation processes[4] can reasonably be expected to manage COC migration within the Site GMZ. Specific objectives included the following to evaluate the lines of evidence of MNA performance:

- Selection of surrogates from COC groups (*i.e.,* pVOCs, cVOCs, phthalates, and metals) based on the highest exceedance of the detected COC relative to its respective AGQS;
- Developing temporal plots of surrogate COCs to establish primary lines of evidence; and
- Depending on the trends of the temporal plots for the surrogate COCs, evaluations of secondary lines of evidence of MNA performance.

METHODS

SURROGATE COC SELECTION

To conservatively select surrogates from each COC group and their respective detection locations for the focused MNA evaluation, GZA tabulated the groundwater quality data from the October 2009 sampling round relative to percent exceedance of respective AGQS (**Table 1 – Summary of Contaminants of Concern Exceedances of AGQS**). **Table 1** includes tabulated results for pVOCs, cVOCs, DEPH, and manganese, as follows:

- Table 1A – Summary of pVOC Percent Exceedances of AGQS;
- Table 1B – Summary of cVOC Percent Exceedances of AGQS;
- Table 1C – Summary of DEHP Percent Exceedances of AGQS; and
- Table 1D – Summary of Manganese Percent Exceedances of AGQS.

As shown on **Table 1A**, the percent exceedances for pVOCs ranged from 238% (well TRY_MW-101) to 854 % (well TRY_MW-205) for 1,2,4-trimethylbenzene (1,2,4-TMB), 74% (well TRY_MW-602S) to 208 % (well TRY_MW-205) for 1,3, 5-trimethylbenzene, and 25% (well TRY_MW-602S) to 100 % (well TRY_MW-205) for naphthalene. Based on these results, the selected COC surrogate for the pVOC group is 1,2,4-TMB at its detection location, well TRY_MW-205.

As shown on **Table 1B**, the percent exceedances for cVOCs was 639% (well TRY_MW-201M) for *cis*-1,2-Dichloroethene (*cis*-1,2-DCE) and ranged from 70% (well TRY_MW-501) to 90 % (well TRY_MW-104S) for vinyl chloride. Based on **Table 1B** results, the selected COC surrogate for the cVOC group is *cis*-1,2-DCE at well TRY_MW-201M.

[4] While natural attenuation mechanisms include both abiotic and biotic processes, GZA's evaluation focused on biotic mechanisms given they are destructive in nature and typically more robust than abiotic ones.

As shown on **Table 1C**, the percent exceedance for phthalates ranged from 133% (well TRY_MW-702D) to 517% (well TRY_MW-205) for DEHP. Based on Table 1C results, the selected COC surrogate for the phthalates group is DEHP at its detection location, well TRY_MW-205.

As shown on **Table 1D**, the percent exceedance for metals ranged from 71% (well TRY_MW-201M) to 11,367% (well TRY_MW-105S) for manganese. Based on Table **1D** results, the selected COC surrogate for the metals group is manganese at well TRY_MW-105S.

Therefore, based on **Table 1** (1A through 1D), GZA selected the following surrogate COCs and their respective detection locations for the MNA evaluation:

- pVOC group: 1,2,4-TMB, well TRY_MW-205;
- cVOC group: *cis*-1,2-DCE, well TRY_MW-201M;
- Phthalates group: DEHP, well TRY_MW-205; and
- Metals group: Manganese, well TRY_MW-105S.

PRIMARY LINES OF EVIDENCE – TEMPORAL CONCENTRATION PLOTS

GZA prepared the following temporal concentration plots for each of the four surrogate COCs at their respective detection locations to evaluate potential temporal trends associated with natural attenuation:

- **Figure 1 – 1,2,4-TMB Temporal Plot, TRY_MW-205**;
- **Figure 2 – *cis*-1,2-DCE Temporal Plot, TRY_MW-201M**;
- **Figure 3 – DEHP Temporal Plot, TRY_MW-205**; and
- **Figure 4 – Dissolved Manganese Temporal Plot, TRY_MW-105S**.

In addition to depicting the temporal concentration trend for each surrogate COC at its respective detection location, these figures depict the respective AGQS for each COC as well as the date when source control remedial actions were carried out at the Site, which puts these temporal trends into historical perspective.

SECONDARY LINES OF EVIDENCE

Estimates of Expressed Assimilative Capacity, pVOCs and Phthalates

GZA developed an Estimated Assimilative Capacity (EAC) for pVOCs (1,2,4-TMB as the surrogate COC) and phthalates (DEHP as the surrogate COC) at well TRY_MW-205 using the approach developed by Wiedemeier *et al.* (1997)[5] to evaluate the relationship between the natural EAC of the formation and the concentration of biodegradable[6] COCs (*i.e.,* pVOCs and

[5] Wiedemeier, T.H., Wilson, J.T., Kampbell, D.H., Miller, R.N., and Hansen, J.E., 1999, Technical Protocol For Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater, Air Force Center for Environmental Excellence, V. II, 183 p.

[6] For the purpose of this MNA evaluation, biodegradable COCs refers to those COCs that can generally be readily used as organic carbon and energy sources in the processes of aerobic mineralization, non-assimilatory nitrate reduction, manganogenic/ferrogenic reduction, non-assimilatory sulfate reduction, and/or methanogenesis.

DEHP).[7] GZA notes that while aerobic and anaerobic degradation pathways for the pVOCs and an aerobic degradation pathway for DEPH are generally well established, certain anaerobic pathways for phthalates (*e.g.,* nitrate reduction, manganogenic/ferrogenic reduction, sulfate reduction, and/or methanogenesis) were assumed for the purpose of calculating the EAC for DEHP, which would need to be verified by literature review, basic research, and/or microcosm testing to establish pathway potentials. Preliminarily, for example, GZA notes that Gejlsbjerg1 *et. al* (2004)[8] have demonstrated a nitrate reduction pathway for DEHP in sludge-soil mixtures under denitrifying conditions. Chang *et al.* (2005)[9] demonstrated that DEHP in sediment can undergo both methanogenesis and sulfate reduction.

Please refer to attached **Table 2** (**Summary of Assimilative Capacity (EAC) for Degrading the pVOC 1,2,4-TMB and the Phthalate DEHP, Try_MW-205**) for the tabulated results.

Scoring of cVOC Data

GZA scored the October 2009 cVOC and indicator parameter data for well TRY_MW-201M using the approach developed by EPA (1998[10]), which arbitrarily scores water quality data relative to the strength of the evidence (*i.e.,* higher scores characterized as stronger evidence, and lower scores characterized as weaker evidence). Please refer to attached **Table 3 – Scored MNA Results, Try_MW-201M** for the tabulated results.

TERTIARY LINES OF EVIDENCE

It is GZA's opinion that, for the purpose of supporting this five-year review, the primary and secondary lines of evidence support the utility of natural attenuation for managing COC migration within the Site GMZ. Therefore, GZA does not recommend laboratory/field-scale microcosm studies at the present time.

RESULTS AND DISCUSSION

pVOCs (1,2,4-TMB)

As shown on **Figure 1**, the baseline 1,2,4-TMB concentration at well TRY_MW-205 was nearly 500 micrograms per liter (µg/L) and there was a spiked increase to over 700 µg/L in about 2004, which may be attributed to construction activities associated with the drum removal program based on our experience at numerous sites undergoing remedial construction. Following the source control measures, there was a spiked decrease to less than 100 µg/L, below the respective AGQS, followed by an increasing temporal trend since about 2005. GZA notes that overall 1,2,4-TMB concentrations have decreased at well TRY_MW-205; however, the increasing temporal concentration trend since about 2005 is of concern, especially given the last two consecutive sampling rounds resulted in AGQS exceedances for that COC.

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[7] Assuming the following degradation pathways and parenthetically their respective terminal electron acceptor (TEA): mineralization (oxygen), nitrate reduction (nitrate), manganogenic/ferrogenic reduction (oxidized manganese and iron, respectively), sulfate reduction (sulfate), and/or methanogenesis (fermentative pathway).

[8] Gejlsbjerg1, B., Andersen, T.T., and Madsen, T., 2004, Mineralization of organic contaminants under aerobic and anaerobic conditions in sludge-soil mixtures, Journal of Soils and Sediments, V. 4, No. 1, p. 30-36.

[9] Chang, B.V., Liao, C.S., and Yuan, S.Y., 2005, Anaerobic degradation of diethyl phthalate, di-n-butyl phthalate, and di-(2-ethylhexyl) phthalate from river sediment in Taiwan, Chemosphere, v. 58, Issue, 11, p. 1601-1607.

[10] EPA, 1988, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, EPA/600/R-98/128, 78 p.

Given the increasing concentration trend since 2005 and the two AGQS exceedances, GZA calculated the EAC for 1,2,4-TMB at well TRY_MW-205 (**Table 2**) to evaluate secondary lines of evidence. As shown on Table 2, the calculated EAC for that well location is 11,466 µg/L whereas the total pVOC concentration was 1,297 µg/L. Therefore, the EAC is about an order of magnitude greater than the total pVOC concentration, which suggests that natural attenuation capacity exceeds pVOC loading by about a factor of ten. Therefore, despite the increasing temporal trend for 1,2,4-TMB since about 2005, the natural attenuation capacity of the groundwater system appears to exceed the current concentration of 1,2,4-TMB (and other biodegradable COCs) by about a factor of ten.

cVOCs (*cis*-1,2-DCE)

As shown on **Figure 2**, the baseline *cis*-1,2-DCE concentration at well TRY_MW-201M remained below 100 µg/L until about 2005, just after the drum removal program, and then exhibited a generally sustained spiked increase to nearly 700 µg/L through 2009. Assuming the source for the *cis*-1,2-DCE is the reductive dechlorination of trichloroethene (TCE), the spiked *cis*-1,2-DCE concentration increase starting in about 2005 is consistent with the dechlorination of TCE → *cis*-1,2-DCE. For example, GZA notes that relative to the monitoring well locations currently monitored semi-annually, well TRY_MW-201M is the only well at which TCE has been detected at concentrations exceeding its respective AGQS of 5 µg/L (*i.e.,* 7.9 µg/L, October 2005; and 6.2 µg/L, December 2006). GZA also notes there has only been one detect of TCE (*i.e.,* 3.8 µg/L, October 2009) and no exceedances since 2006. Therefore, the decreasing temporal trend for TCE and increasing temporal trend for *cis*-1,2-DCE at well TRY_MW-201M are consistent with a reductive dechlorination pathway of TCE to yield *cis*-1,2-DCE.

Given the increasing temporal trend for *cis*-1,2-DCE since 2005, resulting in exceedances of AGQS since that time, GZA scored the October 2009 MNA data for well TRY_MW-201M using the EPA (1998) approach (please refer to attached **Table 3**). As summarized in Table 3, the MNA data for that well scored a total of 19 points, which based on EPA's (1998) scoring system, indicates adequate evidence for anaerobic biodegradation of chlorinated organics via a reductive dechlorination pathway.

PHTHALATES (DEHP)

As depicted on **Figure 3**, DEHP was initially detected at well TRY_MW-205 in 2004 at about 30 µg/L and increased by over an order of magnitude to about 500 µg/L over about a year, possibly attributed to construction activities associated with the drum removal program initiated in 2004 as discussed previously. Following 2005, there has been an order of magnitude decrease in DEHP concentrations, with the October 2009 detection at about 40 µg/L and nearly all historical values exceeding its respective AGQS (6 µg/L) by about an order of magnitude. The fact there has been a decreasing temporal concentration trend for DEHP since 2005 is primary evidence for DEHP natural attenuation. GZA notes that the temporal decrease in DEHP concentration observed at well TRY_MW-205 since 2005 is generally consistent with the currently reported biodegradability of DEHP. For example, Health Canada (2010)[11] reports DEHP half lives of between about five days and one month, and the DEHP Information Center

[11] Health Canada, 2010, Bis(2-ethylhexyl) Phthalate - PLS1, Uniform Resource Locator: *http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl1-lsp1/bis_2_ethylhexyl/bis_2_ethylhexyl_2-eng.php*.

(2010)[12] reports DEHP to be "readily biodegradable." This characterization contrasts with earlier reporting of Pitter and Chudoba (1990)[13] that DEHP was "degraded most slowly and cannot be considered as readily biodegradable."

In addition to the primary evidence discussed above, GZA considered DEHP in calculating the EAC discussed above for 1,2,4-TMB at well TRY_MW-205, assuming that DEHP could potentially compete with pVOCs for available TEAs. As shown on **Table 2**, the calculated EAC for well TRY_MW-205 is 11,466 µg/L whereas the total pVOC, including DEPH, concentration was 1,297 µg/L. Therefore, the EAC is about an order of magnitude greater than the total pVOC/DEHP concentration, which suggests that natural attenuation capacity exceeds pVOC/DEHP loading by about a factor of ten.

METALS (MANGANESE)

As shown on **Figure 4**, the baseline dissolved manganese concentration at well TRY_MW-104S was in the range of about 8 to 10 milligrams per liter (mg/L) and there was a spiked increase to over 18 mg/L in about 2005, which may be attributed to construction activities associated with the drum removal program as discussed previously. Following the source control measures, there was a spiked decrease with resultant concentrations ranging between about 6 to 16 mg/L since 2005.

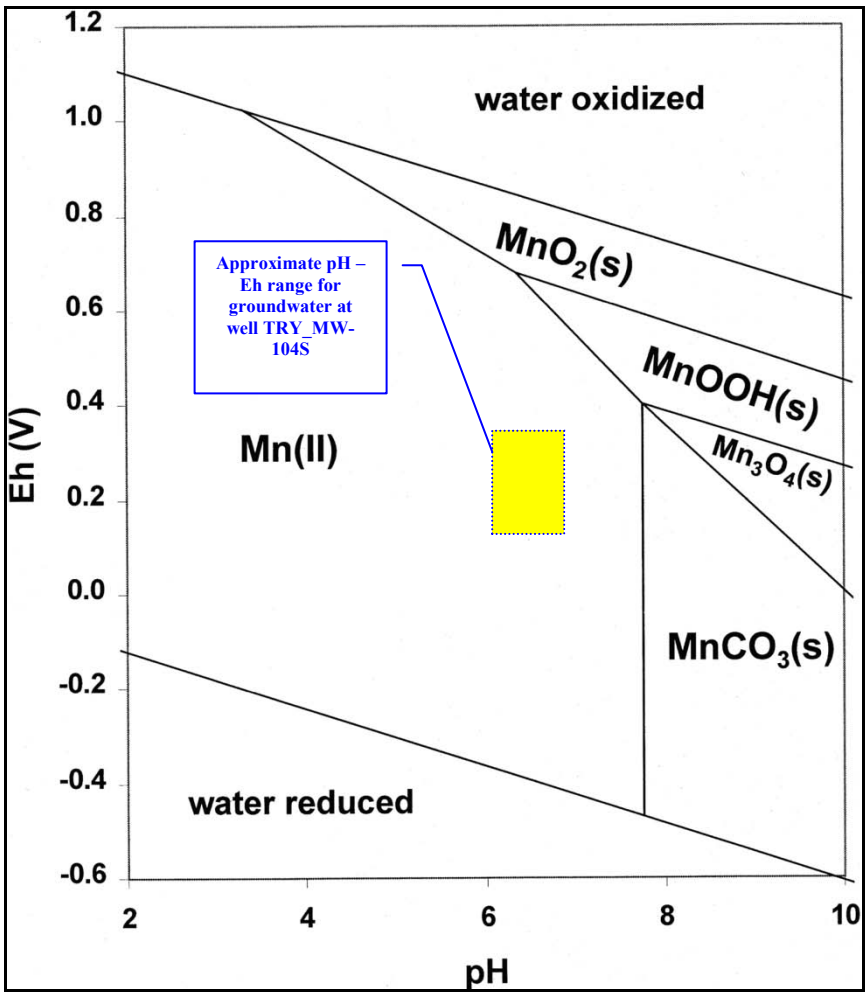
Manganese readily undergoes manganogenic reduction under anaerobic, chemically reducing conditions in the presence of organic carbon, which converts oxidized manganese (*e.g.,* solid mineral pyrolusite, with manganese in the +4 valence state) to chemically reduced manganese (*e.g.,* dissolved manganese in the +2 valence state). Under these conditions, the oxidized manganese in the formation is used by soil bacteria as a TEA to accept the electrons released during organic carbon metabolism. The following is a pH – Eh stability field diagram for manganese (Klinchuch and Delfino, 2000[14]), which was updated to depict the stability field for the range of pH – Eh[15] values from well TRY_MW-104S from 2005 to 2009 at the Site:

[12] DEHP Information Center, 2010, Health and Environment, Uniform Resource Locator: *http://www.dehp-facts.com/HE*.

[13] Pitter, P. and Chudoba, J., 1990, Biodegradability of Organic Substances in the Aquatic Environment, CRC Press, 306 p.

[14] Klinchuch, L.A. and Delfino, T.A., 2000, Reductive Dissolution and Precipitation of Manganese Associated with Biodegradation of Petroleum Hydrocarbons, Environmental Geosciences, v. 7; No. 2; p. 69-79.

[15] *i.e.,* given there have been at least eight sampling rounds of that well since 1996 using multiple Oxidation-Reduction Potential (ORP) meters and the ORP→Redox Potential (Eh) conversion factors for most meters consist of adding about 200 millivolts (mV) to the ORP value, GZA used that factor (adding 200 mV) to convert ORP to Eh.



As shown above, the stability field for the range of pH and Eh values collected from TRY_MW-104S from 2005 through 2009 is consistent with manganese stability in the +2 valence state (*i.e.,* dissolved manganese).

Based on the fact the preferred valence state for manganese in the groundwater system proximal well TRY_MW-104S is +2 (dissolved manganese), it is GZA's opinion that the elevated manganese is a function of site geochemistry as opposed to a release of COCs at the Site. It is likely that the source of organic carbon driving manganogenic reduction includes pVOCs/DEHP from the dissolved-phase plume as well as uncharacterized organic carbon from the upgradient landfill, and that dissolved manganese concentrations will remain elevated until such time as the total organic carbon concentration becomes depleted.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Based on the results of our Focused MNA Evaluation on selected surrogate COCs, it is GZA's opinion that there is primary and secondary evidence supporting MNA as a reasonable management of migration strategy at the Site. Though GZA's evaluation did not differentiate degradation pathways, the results support the overall efficacy of an MNA remedy for managing COC migration. Specific conclusions of our investigation are as follow:

- pVOCs (1,2,4-TMB):
  - There has been an overall decreasing temporal concentration trend for the surrogate COC (1,2,4-TMB) at well TRY_MW-205; however, there has been an increasing concentration trend since 2005, which is of concern given the last two consecutive sampling rounds resulted in AGQS exceedances for that COC.
  - The calculated EAC for 1,2,4-TMB at TRY_MW-205 (11,466 µg/L), which considered all detected pVOCs and DEHP, exceeded the current concentration of 1,2,4-TMB and other biodegradable COCs (1,297 µg/L) by about a factor of ten, suggesting the formation has sufficient EAC to manage pVOC migration.
- cVOCs (*cis*-1,2-DCE):
  - Following about five years of relatively stable cis-1,2-DCE concentrations below about 100 µg/L, there was a generally sustained spiked increase to nearly 700 µg/L through 2009. Assuming the source for the cis-1,2-DCE is the reductive dechlorination of TCE, the spiked cis-1,2-DCE concentration is consistent with the dechlorination of TCE → cis-1,2-DCE.
  - Given the increasing temporal trend for cis-1,2-DCE since 2005, resulting in exceedances of AGQS since that time, GZA scored the October 2009 MNA data for well TRY_MW-201M using the EPA (1998) approach, which indicated there is adequate evidence for anaerobic biodegradation of chlorinated organics via a reductive dechlorination pathway.
  - Based on GZA's review of Site water quality data, the electron donor source driving cVOC reductive dechlorination is likely both uncharacterized organic carbon likely from the upgradient landfill and the pVOCs/DEHP given the commingled pVOC/DEHP-cVOC plume.
- Phthalates (DEHP):
  - DEHP was initially detected at well TRY_MW-205 in 2004 at about 30 µg/L and increased by over an order of magnitude over the next two years. Following 2007, there has been over a two order of magnitude decrease in DEHP concentrations, with the October 2009 detection (40 µg/L) and nearly all historical values exceeding its respective AGQS (6 µg/L) by about an order of magnitude. The fact that there has been a gross decrease in DEHP concentrations since 2007 is primary evidence for DEHP natural attenuation, which is generally consistent with current characterizations that phthalate is "readily biodegradable."
  - The calculated EAC well TRY_MW-205 (11,466 µg/L), which considered all detected pVOCs and DEHP, exceeded the current concentration of DEHP and other biodegradable COCs (1,297 µg/L) by about a factor of ten, suggesting the formation has sufficient EAC to manage DEHP migration.
- Metals (Manganese):
  - The baseline dissolved manganese concentration at well TRY_MW-104S was below about 10 mg/L and there was a spiked increase to over 18 mg/L in about 2005. Following 2005, there was a spiked decrease with resultant concentrations ranging between about 6 to 16 mg/L since 2005. Aside from the spiked increase in about 2005, immediately following the drum removal program, manganese concentrations have generally ranged below 14 mg/L since about 1997.

- Manganese readily undergoes manganogenic reduction under anaerobic, chemically reducing conditions in the presence of organic carbon, which converts oxidized (solid phase) manganese to reduced (dissolved phase) manganese. Under these conditions, the oxidized manganese of the formation is used by soil bacteria as a TEA to accept the electrons released during organic carbon metabolism.
- As shown on a pH – Eh stability field diagram for manganese included herein, the stability field for the range of pH – Eh values from well TRY_MW-104S from 2005 to 2009 is consistent with manganese stability in the +2 valence state. Based on the fact the preferred valence state for manganese in the groundwater system proximal TRY_MW-104S is +2 (dissolved manganese), it is GZA's opinion that the elevated manganese is a function of site geochemistry as opposed to a release of COCs at the Site. It is likely that the source of organic carbon driving manganogenic reduction includes pVOCs/DEHP from the dissolved-phase plume as well as uncharacterized organic carbon from the upgradient landfill, and that dissolved manganese concentrations will remain elevated until such time as the organic carbon concentration becomes depleted, which will effectively shut down manganogenic reduction.

RECOMMENDATIONS

GZA recommends a robust MNA evaluation be carried out for all COCs during the next five-year review when more data are available, including an evaluation of degradation rates, to develop an estimate of time to closure assuming an MNA pathway for managing COC migration. This evaluation should also include a review of potential degradation pathways so that the fate of all detected COCs is clearly established. As part of that evaluation, GZA recommends a literature review on the known degradation pathways of DEHP to provide support for the EAC calculations included herein. If the results of that literature review are inconclusive or negative, then it may be prudent to carry out a microcosm study on potential DEHP degradation pathways to further evaluate biodegradability potential.

As previously stated, the calculated EACs included herein were limited to pVOCs and DEHP; however, GZA acknowledges that the calculated EAC values may potentially be biased by the effects of uncharacterized organic carbon from the upgradient, solid waste landfill. For example, the EAC calculations showed that over about 95% of the total EAC of the formation is attributed to methanogenesis of pVOCs and DEHP. If a significant amount of the electron donor is uncharacterized organic carbon from the upgradient, solid waste landfill instead of the pVOCs/DEHP, than the calculations included herein likely over exaggerate the EAC for that pathway. In addition, GZA notes that certain daughter VOCs such as *cis*-1,2-DCE and vinyl chloride can be destroyed by other biotic degradation pathways beside reductive dechlorination, and therefore their presence in the commingled plume can also bias the EAC calculations, though their effect is likely minimal given cVOC concentrations in the µg/L range. Therefore, GZA recommends that the next five-year review resolve these issues considering there will be five more years of data available at that time.

Attachments: Tables 1, 2 and 3
Figures 1, 2, 3, and 4

TABLE 1 - SUMMARY OF CONTAMINANTS OF CONCERN EXCEEDANCES OF N.H. AGQS

Troy Mills Landfill Superfund Site

Troy, New Hampshire

TABLE 1A - SUMMARY OF PETROLEUM VOC (pVOC) PERCENT EXCEEDANCES OF AGQS

Monitoring Well ID Geological Unit of Well Screen Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-101 Glacial Till / Bedrock Oct-09	% Exceedance of ICL	TRY_MW-205 Glacial Till Oct-09	% Exceedance of ICL	TRY_MW-602S Glacial Till Oct-09	% Exceedance of ICL
1,2,4-Trimethylbenzene	330	50	**169**	**238**	**477**	**854**	**297**	**494**
1,3,5-Trimethylbenzene	330	50	**42**	**-**	**154**	**208**	**87**	**74**
Naphthalene	20	20	**14**	**-**	**40**	**100**	**25**	**25**

Refer to Page 3 of 3 for notes.

TABLE 1B - SUMMARY OF CHLORINATED VOC (cVOC) PERCENT EXCEEDANCES OF AGQS

Monitoring Well ID Geological Unit of Well Screen Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-104S Overburden Oct-09	% Exceedance of ICL	TRY_MW-201M Glacial Till Oct-09	% Exceedance of ICL	TRY_MW-501 Glacial Till Oct-09	% Exceedance of ICL
cis-1,2-Dichloroethene	100	70	**4.2**	**-**	**639**	**813**	**5.2**	**-**
Vinyl Chloride	2	2	**3.8**	**90**	<2.0	**-**	**3.4**	**70**

Refer to Page 3 of 3 for notes.

TABLE 1C - SUMMARY OF BIS(2-ETHYLHEXYL) PHTHALATE (DEHP) PERCENT EXCEEDANCES OF AGQS

Monitoring Well ID Geological Unit of Well Screen Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-204 Glacial Till Oct-09	% Exceedance	TRY_MW-205 Glacial Till Oct-09	% Exceedance	TRY_MW-702D Bedrock Oct-09, 25.9'	% Exceedance
Bis(2-ethylhexyl) phthalate	6	6	**28**	**367**	**37**	**517**	**14**	**133**

Refer to Page 3 of 3 for notes.

TABLE 1 - SUMMARY OF CONTAMINANTS OF CONCERN EXCEEDANCES OF N.H. AGQS

Troy Mills Landfill Superfund Site

Troy, New Hampshire

TABLE 1D - SUMMARY OF MANGANESE PERCENT EXCEEDANCES OF AGQS

Monitoring Well ID Geological Unit of Well Screen Sampling Event Date	NH AGQS	ROD ICL	TRY_M-2 Overburden Oct-09	% Exceedance	TRY_M-7 Overburden Oct-09	% Exceedance	TRY_MW-101 Glacial Till / Bedrock Oct-09	% Exceedance
Manganese	0.84	0.3	**3.05**	**917**	**2.92**	**873**	**2.25**	**650**

Monitoring Well ID Geological Unit of Well Screen Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-104S Overburden Oct-09	% Exceedance	TRY_MW-105S Overburden Oct-09	% Exceedance	TRY_MW-105D Bedrock Oct-09	% Exceedance
Manganese	0.84	0.3	**14.9**	**4867**	**34.4**	**11367**	**2.39**	**697**

Monitoring Well ID Geological Unit of Well Screen Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-201M Glacial Till Oct-09	% Exceedance	TRY_MW-204 Glacial Till Oct-09	% Exceedance	TRY_MW-205 Overburden Oct-09	% Exceedance
Manganese	0.84	0.3	**0.512**	**71**	**10.3**	**3333**	**1.69**	**463**

Monitoring Well ID Geological Unit of Well Screen Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-301 Glacial Till Oct-09	% Exceedance	TRY_MW-501 Glacial Till Oct-09	% Exceedance	TRY_MW-601S Glacial Till Oct-09	% Exceedance
Manganese	0.84	0.3	**6.85**	**2183**	**9.78**	**3160**	**10.7**	**3467**

Monitoring Well ID Geological Unit of Well Screen Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-601D Glacial Till Oct-09	% Exceedance	TRY_MW-602S Glacial Till Oct-09	% Exceedance	TRY_MW-602B Bedrock Oct-09	% Exceedance
Manganese	0.84	0.3	**0.901**	**200**	**7.79**	**2497**	**6.6**	**2093**

Monitoring Well ID Geological Unit of Well Screen Sampling Event Date	NH AGQS	ROD ICL	TRY_MW-702D Glacial Till Oct-09, 44.4	% Exceedance
Manganese	0.84	0.3	**0.720**	**140**

Refer to Page 3 of 3 for notes.

TABLE 1 - SUMMARY OF CONTAMINANTS OF CONCERN EXCEEDANCES OF N.H. AGQS

Troy Mills Landfill Superfund Site

Troy, New Hampshire

Notes:

1) "AGQS" indicates Ambient Groundwater Quality Standards per N.H. Code of Administrative Rules Env-Or 603.03 - Ambient Groundwater Quality Standards.

2) "mg/L" indicates milligrams per liter; "µg/L" indicates micrograms per liter.

3) In Table 1A, the concentration of Naphthalene analyzed as a VOC as opposed to an SVOC is included in the table in order to be conservative, since the VOC concentrations are greater.

4) Bolding indicates that the concentration was detected above laboratory reporting detection limits. Shading indicates that the compound is in exceedance of its AGQS.

5) Although 14µg/L of bis(2-ethylhexyl) phthalate were detected in TRY_MW-702D at a depth of 25.9 feet, this concentration is considered suspect as bis(2-ethylhexyl) phthalate was also detected in the equipment blank for the Kemmerer sampler that was used at this location. This issue is discussed further in the "Spring and Fall 2009 Monitoring Data Report" dated March 2010.

TABLE 2 - SUMMARY OF EXPRESSED ASSIMILATIVE CAPACITY (EAC) FOR DEGRADING THE pVOC 1,2,4-TMB AND THE PHTHALATE (DEHP), WELL TRY_MW-205

Troy Mills Landfill Superfund Site

Troy, New Hampshire

TEA	MW	Concentration (mg/L)	Molar ratio (TEA/benzene)	Assimilative Capacity (µg/L)
O_2	32.00	0.3	7.50:1	97.6
NO_3	62.00	0.4	6.0:1	83.9
Fe_2O_3	159.69	1.11 (Fe2+)	30.0:1	18.1
MnO_2	86.94	1.69 (Mn2+)	15.0:1	101.2
SO_4	96.00	0	3.75:1	0.0
CH_4^*	16.03	8.6	3.75:1	11,164.9
			Assimilative capacity (µg/L)	**11,466**
			pVOC (µg/L)	**1,297**

Reactions
$C_6H_6+7.5O_2 \rightarrow 6CO_2+3H_2O$
$C_6H_6+6H^++6NO_3^- \rightarrow 6CO_{2(g)}+6H_2O+3N_{2(g)}$
$C_6H_6+30Fe(OH)_{3,a}+60H^+ \rightarrow 6CO_2+30Fe^{2+}+78H_2O$
$C_6H_6+15Mn^{4+}+12H_2O \rightarrow 6CO_2+30H^++15MN^{2+}$
$C_6H_6+7.5H^++3.75SO_4^{2-} \rightarrow 6CO_{2(g)}+3H_2O+3.75H_2S^0$
$C_6H_6+4.5H_2O \rightarrow 2.25CO_2+3.75CH_4$

Notes:

1. Stoichiometric molar ratios of terminal electron acceptor s (TEAs) to benzene were used to calculate EAC. In the absence of TEA concentration (*i.e.,* Fe_2O_3, MnO_2), reaction products (Fe^{2+} & Mn^{2+}) were used. This is a highly conservative estimate because Fe_2O_3 and MnO_2 are typically present in soil of New Hampshire. Actual EACs may be much higher. The same method was used to estimate benzene degradation by methanogenesis. (*i.e.,* CH_4 is not a TEA, but a reaction product).

2. pVOC refers to petroleum volatile organic compounds (VOCs). For the purposes of calculating EAC, considering that not just pVOCs exerts TEA demand, the pVOC value was calculated to include pVOCs, semi VOCs, and phthalates as these compounds can potentially exert TEA demand. The water quality data are from the October 2009 sampling round, and include all VOCs with the exception of chlorinated VOCs, which generally do not exert TEA demand.

3. It is assumed that the EAC of the groundwater system for benzene IS comparable to that of the other biodegradable VOCs that can ALSO serve as an organic carbon/energy source.

4. MW refers to molecular weight, mg/L refers to milligrams per liter, and µg/L refers to microgram per liter.

TABLE 3 - SCORED MNA RESULTS, TRY_MW-201M
Troy Mills Landfill Superfund Site
Troy, New Hampshire

Analysis	Concentration in Most Contaminated Zone	Value	Laboratory or Field Analysis Value (mg/L)	Score
DO	<0.5 mg/L	3	0.3	3
DO	>5 mg/l	-3		
Nitrate	<1 mg/L	2	2.3	
Iron II	>1 mg/l	2	0.44	
Sulfate	<20 mg/L	2	6.2	2
Sulfide	>1 mg/L	3		
Methane	<0.5 mg/L	0		
Methane	>0.5 mg/L	3	0.610	3
ORP	<50 mV	1	-81	1
ORP	<-100 mV	2		
pH	5< pH <9	0	7.0	
pH	5> pH >10	-2		
TOC	>20 mg/L	2	8.8	
Temp	> 20°C	1	10	
Carbon Dioxide	>2 times background	1	57	1
Alkalinity	>2 times background[1]	1	160	1
Chloride	>2 times background	2	<3.0	
Hydrogen	>1 nM	3		
Hydrogen	<1nM	0		
Volatile Fatty Acids	>0.1 mg/L	2	2.5	2
BTEX	>0.1 mg/L	2		
PCE		0		
TCE	If Daughter Product	2		
DCE	If Daughter Product	2	639	2
VC	If Daughter Product	2		
1,1,1-TCA		0		
DCA	If Daughter Product	2	8.5	2
Carbon Tetrachloride		0		
Chloroethane	If Daughter Product	2		
Ethene/Ethane	>0.01 mg/L or	2		
	>0.1 mg/L	3	0.17	3
Chloroform	If Daughter Product	2		
Dichloromethane	If Daughter Product	2		
			Total Score	20

Scoring Interpretation	
0 to 5	Inadequate evidence for anaerobic biodegradation* of chlorinated organics
6 to 14	Limited evidence for anaerobic biodegradation* of chlorinated organics
15 to 20	Adequate evidence for anaerobic biodegradation* of chlorinated organics
>20	Strong evidence for anaerobic biodegradation* of chlorinated organics
*reductive dechlorination	

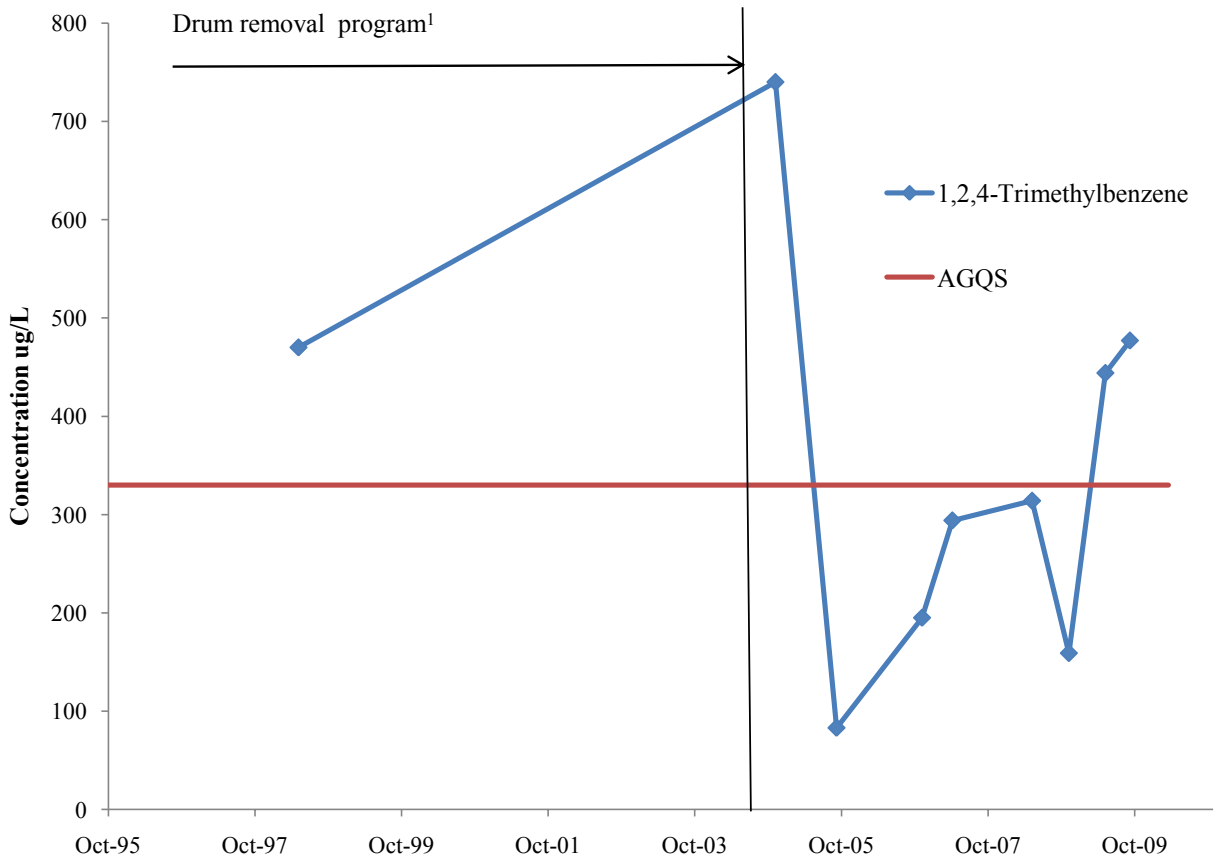
Values Taken from EPA Document **EPA/600/R-98/128,** *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water* , 1998, Table 2.3 and Table 2.4

Notes:
1. The most recent round of data (December 2008) from background well TRY_MW-507 was used for analysis.
2. Data are from the October 2009 sampling round.

FIGURE 1: 1,2,4-TRIMETHYLBENZENE TEMPORAL PLOT, TRY_MW-205

Troy Mills Landfill Superfund Site

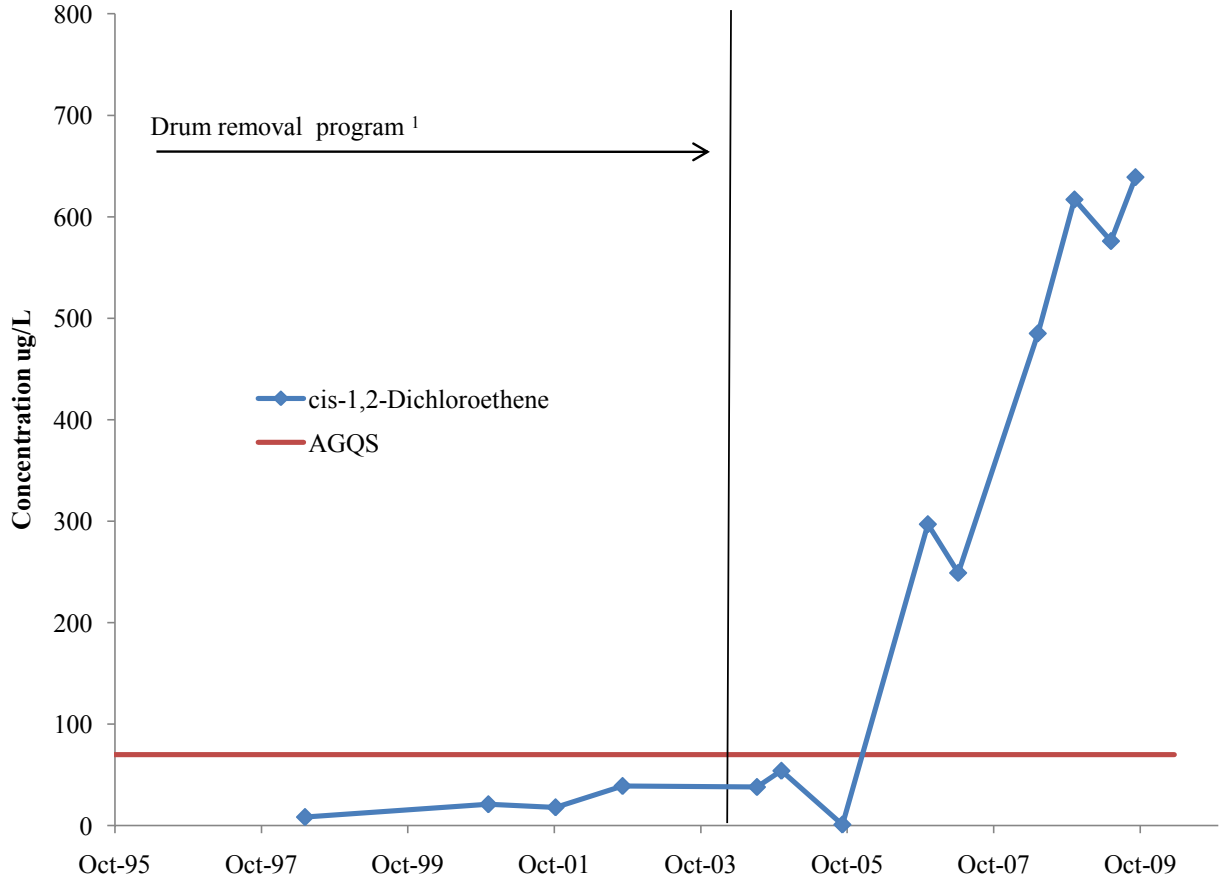
Troy, New Hampshire



Notes

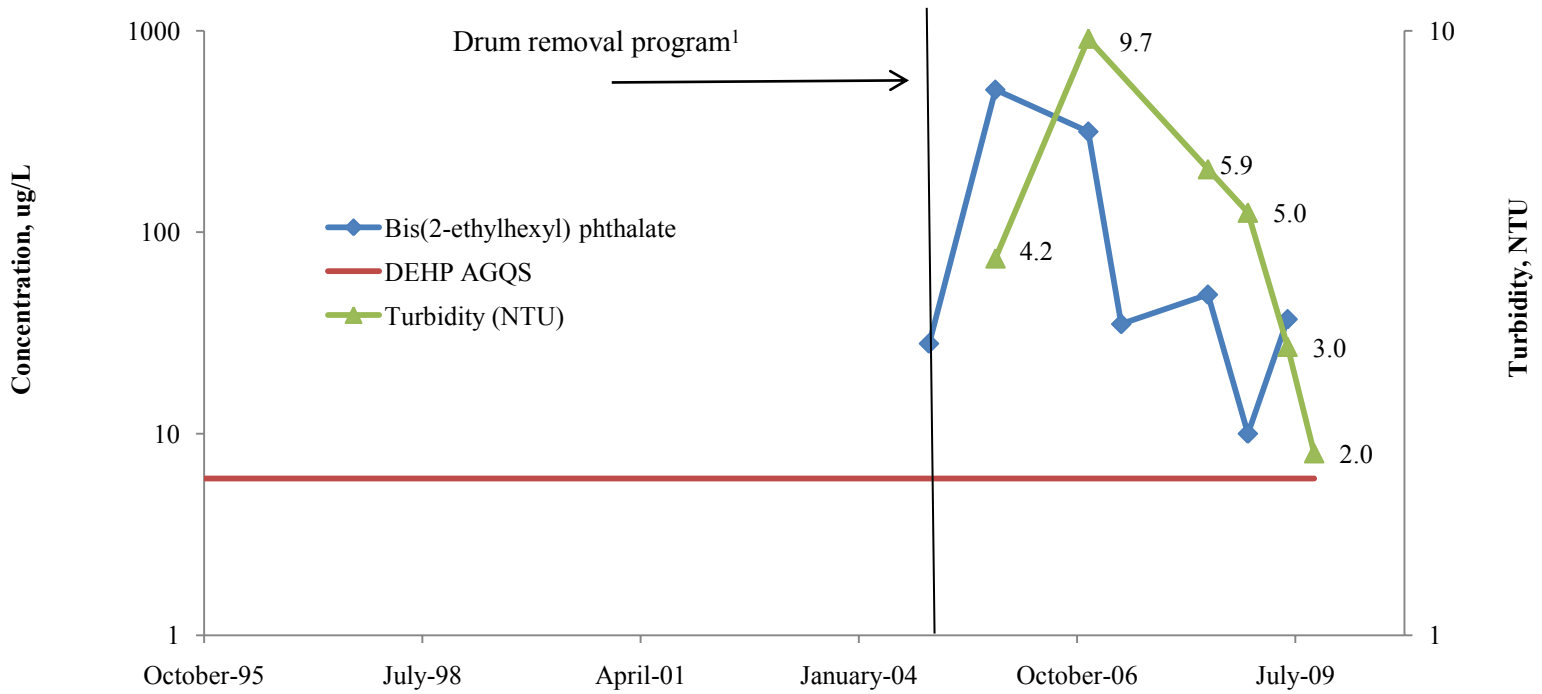
1. Between July and November, 2004 the U.S. EPA Superfund Technical Assessment and Response Team (START) Emergency and Rapid Response (ERRS) contractors excavated and disposed of approximately 7,692 55-gallon drums from the 2-acre drum disposal area. In addition, 29,924 gallons of flammable liquid waste, 26,244 tons of contaminated soil, and 3,099 cubic yards of waste sludge have been removed from the site (Metcalf & Eddy / AECOM, 2005, Final Remedial Investigation, Volume 1).
2. AGQS is New Hampshire Ambient Groundwater Quality Standard.
3. ug/L is microgram per liter.

FIGURE 2: *cis* -1,2-DICHLOROETHENE TEMPORAL PLOT, TRY_MW-201M
Troy Mills Landfill Superfund Site
Troy, New Hampshire



Notes
1. Between July and November, 2004 the U.S. EPA Superfund Technical Assessment and Response Team (START) Emergency and Rapid Response (ERRS) contractors excavated and disposed of approximately 7,692 55-gallon drums from the 2-acre drum disposal area. In addition, 29,924 gallons of flammable liquid waste, 26,244 tons of contaminated soil, and 3,099 cubic yards of waste sludge have been removed from the site (Metcalf & Eddy / AECOM, 2005, Final Remedial Investigation, Volume 1).
2. AGQS = New Hampshire Ambient Groundwater Quality Standard
3. ug/L is microgram per liter.

FIGURE 3: DEHP TEMPORAL PLOT, TRY_MW-205
Troy Mills Landfill Superfund Site
Troy, New Hampshire

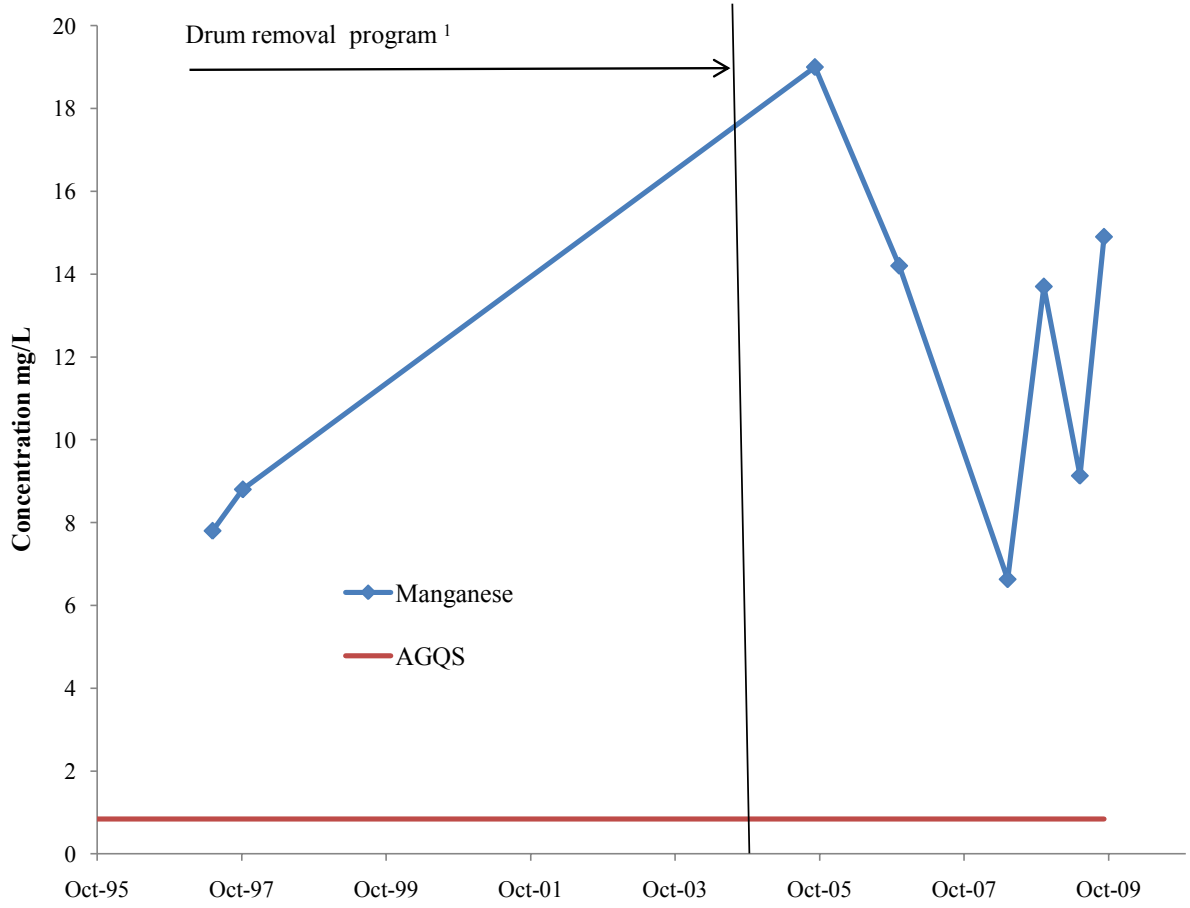


Notes
1.) Between July and November, 2004 the U.S. EPA START and ERRS contractors excavated and removed approximately 7,692 55-gallon drums from the 2-acre drum disposal area. In addition, 29,924 gallons of flammable liquid waste, 26,244 tons of contaminated soil, and 3,099 cubic yards of waste sludge have been removed from the site (U.S. EPA, 2004b as quoted by M&E, 2005, Final Remedial Investigation).
2.) AGQS = New Hampshire Ambient Groundwater Quality Standard.
3.) ug/L is microgram per liter. NTU is Nephelometric Turbidity Unit.
4.) GZA notes DEHP was detected in May 2007 at a concentration of 5,070 ug/L but was not included on this plot because turbidity was recorded at 501 NTUs for that round, which is two orders of magnitude higher than values recorded over this sampling period. Note that turbidity values above about 10 NTUs may indicate the strong potential that suspended solids with adsorbed semi-volatile compounds may impact analytical results, which would bias the water quality data.

FIGURE 4: DISSOLVED MANGANESE TEMPORAL PLOT, TRY_MW-104S

Troy Mills Landfill Superfund Site

Troy, New Hampshire



Notes

1. Between July and November, 2004 the U.S. EPA Superfund Technical Assessment and Response Team (START) and Emergency and Rapid Response (ERRS) contractors excavated and disposed of approximately 7,692 55-gallon drums from the 2-acre drum disposal area. In addition, 29,924 gallons of flammable liquid waste, 26,244 tons of contaminated soil, and 3,099 cubic yards of waste sludge have been removed from the site (Metcalf & Eddy / AECOM, 2005, Final Remedial Investigation, Volume 1).
2. AGQS is New Hampshire Ambient Groundwater Quality Standard.
3. ug/L is microgram per liter.
4. One well had a greater exceedance, MW-105S, Mn=34.4mg/L in October 2009, however this well was only sampled once. MW-104S was the well with the greatest exceedance and historical data.

APPENDIX E

SITE INSPECTION CHECKLIST

Site Inspection Checklist
Troy Mills Landfill Superfund Site
Troy, New Hampshire

I. SITE INFORMATION	
Site name: *Troy Mills Landfill Superfund Site*	**Date of inspection:** *4/15/10*
Location and Region: *Troy, NH / Region 1*	**EPA ID:** *NH0980520217*
Agency, office, or company leading the five-year review: *EPA*	**Weather/temperature:** *Sunny, breezy, mid 40s-50s*

Remedy Includes: (Check all that apply)

✓ Landfill cover/containment
✓ Access controls
✓ Institutional controls
_ Groundwater pump and treatment
_ Surface water collection and treatment
_ Other_____
_____

✓ Monitored natural attenuation
_ Groundwater containment
_ Vertical barrier walls

Attachments: ✓ Inspection team roster attached ✓ Site map attached

II. INTERVIEWS (Check all that apply) **

1. **O&M site manager** _____ _____ _____
Name Title Date
Interviewed _ at site _ at office _ by phone Phone no. _____
Problems, suggestions; _ Report attached _____
_____

2. **O&M staff** _____ _____ _____
Name Title Date
Interviewed _ at site _ at office _ by phone Phone no. _____
Problems, suggestions; G Report attached _____
_____

Site Inspection Checklist
Troy Mills Landfill Superfund Site
Troy, New Hampshire

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____Town of Troy, NH_____
Contact _Russell Butler, Chair, Troy Board of Selectmen _____
_____ _____ _____
Name Title Date Phone no.
Problems; suggestions;_✓_ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; _ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; _ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; _ Report attached _____
_____

4. **Other interviews** (optional) ✓ Report attached.

Site Inspection Checklist
Troy Mills Landfill Superfund Site
Troy, New Hampshire

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	_ O&M manual	_ Readily available	_Up to date	✓ N/A
	_ As-built drawings	_ Readily available	_Up to date	✓ N/A
	_ Maintenance logs	_ Readily available	_ Up to date	✓ N/A
	Remarks_____			
2.	**Site-Specific Health and Safety Plan**	✓ Readily available	✓ Up to date	_ N/A
	_ Contingency plan/emergency response plan	_ Readily available	_ Up to date	✓ N/A
	Remarks_____			
3.	**O&M and OSHA Training Records**	_ Readily available	_ Up to date	✓ N/A
	Remarks_____			
4.	**Permits and Service Agreements**			
	_ Air discharge permit	_ Readily available	_ Up to date	✓ N/A
	_ Effluent discharge	_ Readily available	_ Up to date	✓ N/A
	_ Waste disposal, POTW	_ Readily available	_ Up to date	✓ N/A
	✓ Other permits *NHDRED Trails permit*	✓ Readily available	✓ Up to date	_ N/A
	Remarks_____			
5.	**Gas Generation Records**	_ Readily available	_ Up to date	✓ N/A
	Remarks_____			
6.	**Settlement Monument Records**	_ Readily available	_ Up to date	✓ N/A
	Remarks_____			
7.	**Groundwater Monitoring Records**	✓ Readily available	✓ Up to date	_ N/A
	Remarks_____			
8.	**Leachate Extraction Records**	_ Readily available	_ Up to date	✓ N/A
	Remarks_____			
9.	**Discharge Compliance Records**			
	_ Air	_ Readily available	_ Up to date	✓ N/A
	_ Water (effluent)	_ Readily available	_ Up to date	✓ N/A
	Remarks_____			
10.	**Daily Access/Security Logs**	_ Readily available	_ Up to date	✓ N/A
	Remarks_____			

Site Inspection Checklist
Troy Mills Landfill Superfund Site
Troy, New Hampshire

IV. O&M COSTS

1. **O&M Organization**
_ State in-house ✓ Contractor for State
_ PRP in-house _ Contractor for PRP
_ Federal Facility in-house _ Contractor for Federal Facility
_ Other_____
_____

2. **O&M Cost Records**
_ Readily available ✓ Up to date *See Section 4.3 of text*
_ Funding mechanism/agreement in place
Original O&M cost estimate_____ _ Breakdown attached

Total annual cost by year for review period if available

From_____ To_____ _____ _ Breakdown attached
Date Date Total cost
From_____ To_____ _____ _ Breakdown attached
Date Date Total cost
From_____ To_____ _____ _ Breakdown attached
Date Date Total cost
From_____ To_____ _____ _ Breakdown attached
Date Date Total cost
From_____ To_____ _____ _ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**
Describe costs and reasons: *See Section 4.3 of text*
_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS ✓ Applicable _ N/A

A. Fencing

1. **Fencing damaged** _ Location shown on site map ✓ Gates secured _ N/A
Remarks_____
_____

B. Other Access Restrictions

1. **Signs and other security measures** _Location shown on site map ✓ N/A
Remarks_____
_____

Site Inspection Checklist
Troy Mills Landfill Superfund Site
Troy, New Hampshire

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented _ Yes ✓ No _ N/A
Site conditions imply ICs not being fully enforced ✓ Yes _ No _ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date _ Yes _ No ✓ N/A
Reports are verified by the lead agency _ Yes _ No ✓ N/A

Specific requirements in deed or decision documents have been met ✓ Yes _ No _ N/A
Violations have been reported ✓ Yes _ No _ N/A
Other problems or suggestions: _ Report attached
ATV/snow mobile access

2. **Adequacy** ✓ ICs are adequate _ ICs are inadequate _ N/A
Remarks_____

D. General

1. **Vandalism/trespassing** ✓ Location shown on site map _ No vandalism evident
Remarks *See Section 4.5 of text*

2. **Land use changes on site** ✓ N/A
Remarks _____

3. **Land use changes off site** ✓ N/A
Remarks_____

VI. GENERAL SITE CONDITIONS

A. Roads ✓ Applicable _ N/A

1. **Roads damaged** _ Location shown on site map ✓ Roads adequate _ N/A
Remarks_____

B. Other Site Conditions

Remarks *no problems identified*

VII. LANDFILL COVERS ✓ Applicable _ N/A

A. Landfill Surface

1. **Settlement** (Low spots) _ Location shown on site map ✓ Settlement not evident
Areal extent_____ Depth_____
Remarks_____

2. **Cracks** _ Location shown on site map ✓ Cracking not evident
Lengths_____ Widths_____ Depths_____
Remarks_____

3. **Erosion** _ Location shown on site map ✓ Erosion not evident
Areal extent_____ Depth_____
Remarks_____

4. **Holes** _Location shown on site map ✓ Holes not evident
Areal extent_____ Depth_____
Remarks_____

5. **Vegetative Cover** _ Grass ✓ Cover properly established _ No signs of stress
G Trees/Shrubs (indicate size and locations on a diagram)
Remarks_____

6. **Alternative Cover (armored rock, concrete, etc.)** ✓ N/A
Remarks_____

7. **Bulges** _ Location shown on site map ✓ Bulges not evident
Areal extent_____ Height_____
Remarks_____

8. **Wet Areas/Water Damage** ✓ Wet areas/water damage not evident
_ Wet areas _ Location shown on site map Areal extent_____
_ Ponding _ Location shown on site map Areal extent_____
_ Seeps _ Location shown on site map Areal extent_____
_ Soft subgrade _ Location shown on site map Areal extent_____
Remarks_____
_____

9. **Slope Instability** _ Slides _ Location shown on site map ✓ No evidence of slope instability
Areal extent_____
Remarks_____
_____

B. Benches _ Applicable ✓ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** _ Location shown on site map _ N/A or okay
Remarks_____
_____

2. **Bench Breached** _ Location shown on site map _N/A or okay
Remarks_____
_____

3. **Bench Overtopped** _ Location shown on site map _ N/A or okay
Remarks_____
_____

C. Letdown Channels _ Applicable ✓ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** _ Location shown on site map _ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____
_____

2. **Material Degradation** _Location shown on site map _ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____
_____

3. **Erosion** _ Location shown on site map _ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____
_____

4.	**Undercutting** _ Location shown on site map _ No evidence of undercutting Areal extent_____ Depth_____ Remarks_____
5.	**Obstructions** Type_____ _No obstructions _Location shown on site map Areal extent_____ Size_____ Remarks_____
6.	**Excessive Vegetative Growth** Type_____ _ No evidence of excessive growth _ Vegetation in channels does not obstruct flow _Location shown on site map Areal extent_____ Remarks_____
D. Cover Penetrations	✓ Applicable _ N/A
1.	**Gas Vents** _ Active _ Passive _ Properly secured/locked G Functioning _ Routinely sampled _ Good condition _ Evidence of leakage at penetration _ Needs Maintenance ✓ N/A Remarks_____
2.	**Gas Monitoring Probes** _Properly secured/locked G Functioning _ Routinely sampled _ Good condition _ Evidence of leakage at penetration _ Needs Maintenance ✓ N/A Remarks_____
3.	**Monitoring Wells** (within surface area of landfill) _ Properly secured/locked _ Functioning ✓ Routinely sampled _ Good condition _Evidence of leakage at penetration ✓ Needs Maintenance _ N/A Remarks *See Section 4.5 of text*
4.	**Leachate Extraction Wells** _ Properly secured/locked G Functioning _ Routinely sampled _Good condition _ Evidence of leakage at penetration _ Needs Maintenance ✓ N/A Remarks_____
5.	**Settlement Monuments** _ Located _ Routinely surveyed ✓ N/A Remarks_____

Site Inspection Checklist
Troy Mills Landfill Superfund Site
Troy, New Hampshire

E. Gas Collection and Treatment	_ Applicable ✓ N/A
1.	**Gas Treatment Facilities** _ Flaring _ Thermal destruction _ Collection for reuse _ Good condition _ Needs Maintenance Remarks_____
2.	**Gas Collection Wells, Manifolds and Piping** _Good condition _ Needs Maintenance Remarks_____
3.	**Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings) _Good condition G Needs Maintenance _ N/A Remarks_____
F. Cover Drainage Layer	_ Applicable ✓ N/A
1.	**Outlet Pipes Inspected** _ Functioning _ N/A Remarks_____
2.	**Outlet Rock Inspected** _ Functioning _ N/A Remarks_____
G. Detention/Sedimentation Ponds	_ Applicable ✓ N/A
1.	**Siltation** Areal extent_____ Depth_____ _ N/A _ Siltation not evident Remarks_____
2.	**Erosion** Areal extent_____ Depth_____ _ Erosion not evident Remarks_____
3.	**Outlet Works** _ Functioning _ N/A Remarks_____
4.	**Dam** _ Functioning _ N/A Remarks_____

H. Retaining Walls	_Applicable ✓ N/A
1.	**Deformations** _ Location shown on site map _ Deformation not evident Horizontal displacement_____ Vertical displacement_____ Rotational displacement_____ Remarks_____
2.	**Degradation** _ Location shown on site map _ Degradation not evident Remarks_____
I. Perimeter Ditches/Off-Site Discharge	_ Applicable ✓ N/A
1.	**Siltation** _ Location shown on site map _ Siltation not evident Areal extent_____ Depth_____ Remarks_____
2.	**Vegetative Growth** _Location shown on site map _ N/A _ Vegetation does not impede flow Areal extent_____ Type_____ Remarks_____
3.	**Erosion** _ Location shown on site map _Erosion not evident Areal extent_____ Depth_____ Remarks_____
4.	**Discharge Structure** _ Functioning _ N/A Remarks_____
VIII. VERTICAL BARRIER WALLS	_ Applicable ✓ N/A
1.	**Settlement** _ Location shown on site map _ Settlement not evident Areal extent_____ Depth_____ Remarks_____
2.	**Performance Monitoring** Type of monitoring_____ _ Performance not monitored Frequency_____ _ Evidence of breaching Head differential_____ Remarks_____

Site Inspection Checklist
Troy Mills Landfill Superfund Site
Troy, New Hampshire

C. Treatment System _ Applicable ✓ N/A	
1.	**Treatment Train** (Check components that apply) _ Metals removal _ Oil/water separation _ Bioremediation _ Air stripping _ Carbon adsorbers _Filters_____ _ Additive (*e.g.*, chelation agent, flocculent)_____ _ Others_____ _ Good condition G Needs Maintenance _ Sampling ports properly marked and functional _ Sampling/maintenance log displayed and up to date _ Equipment properly identified _ Quantity of groundwater treated annually_____ _ Quantity of surface water treated annually_____ Remarks_____
2.	**Electrical Enclosures and Panels** (properly rated and functional) _ N/A _ Good condition _ Needs Maintenance Remarks_____
3.	**Tanks, Vaults, Storage Vessels** _ N/A _Good condition G Proper secondary containment _ Needs Maintenance Remarks_____
4.	**Discharge Structure and Appurtenances** _ N/A _ Good condition G Needs Maintenance Remarks_____
5.	**Treatment Building(s)** _ N/A _ Good condition (esp. roof and doorways) _ Needs repair _Chemicals and equipment properly stored Remarks_____
6.	**Monitoring Wells** (pump and treatment remedy) _ Properly secured/locked _ Functioning _ Routinely sampled _ Good condition _ All required wells located _ Needs Maintenance _ N/A Remarks_____
D. Monitoring Data	
1.	Monitoring Data ✓ Is routinely submitted on time ✓ Is of acceptable quality
2.	Monitoring data suggests: ✓ Groundwater plume is effectively contained ✓ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
_ Properly secured/locked ✓ Functioning ✓ Routinely sampled _ Good condition
✓ All required wells located ✓ Needs Maintenance _ N/A
Remarks *see above*

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

T*renches – no measurable LNAPL has collected in the trenches since late fall 2005. See section 7.1.1.1 of the text for additional details.*

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

See section 7.1 of the text for additional details.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

See sections 7 and 8 of the text for additional details.

C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. *None*
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. *No opportunity for optimization of monitoring tasks observed during the site visit*

FIVE-YEAR REVIEW SITE INSPECTION TEAM ROSTER
Troy Mills Landfill Superfund Site
Troy, New Hampshire
NHD980520217

Site Inspection Date: April 15, 2010

Purpose: Conduct site inspection as required by the five-year review. Complete "Site Inspection Checklist"

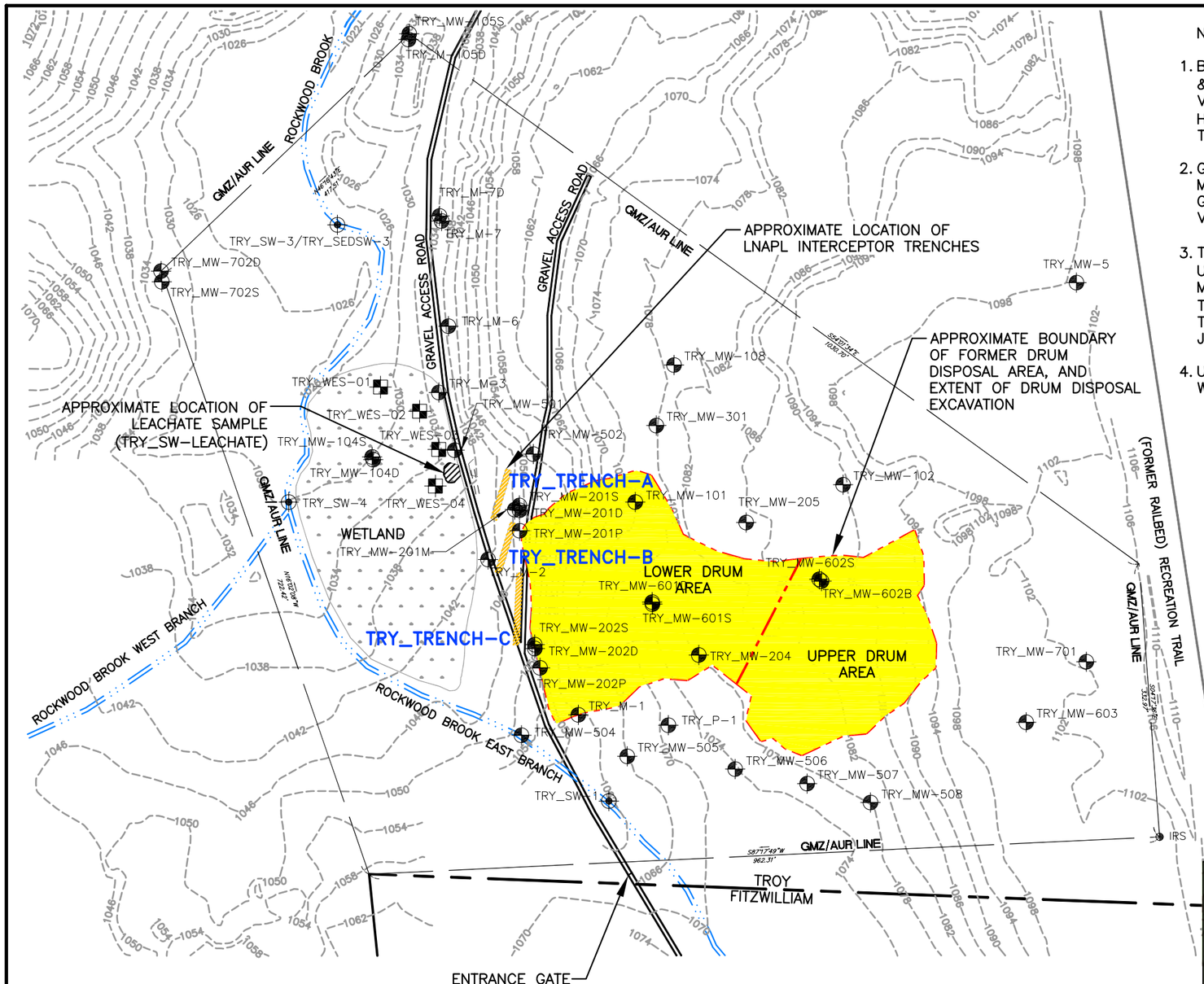
Weather: Sunny, breezy, mid 40s to mid 50s

Site Inspection Attendees:

US EPA, Region 1
Michael Jasinski
Jean Choi
Margaret McDonough
Cornell Rosiu

New Hampshire Department of Environmental Services
Kenneth Kettenring
Sharon Perkins

GZA GeoEnvironmental, Inc
Steven Lamb
Michael Asselin
Amy Doherty

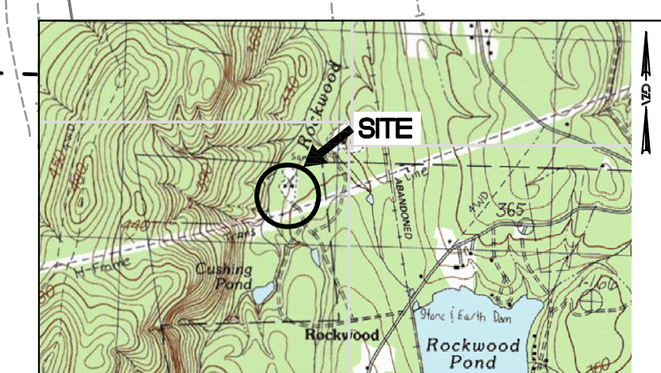


NOTES:

1. BASE PLAN IS FROM FIGURE 2.2 OF THE REPORT BY METCALF & EDDY, INC. ENTITLED "FINAL REMEDIAL INVESTIGATION, VOLUME I, TROY MILLS LANDFILL SUPERFUND SITE, TROY, NEW HAMPSHIRE", DATED SEPTEMBER 2005, AND PREPARED FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
2. GROUND SURFACE CONTOURS ARE FROM THE BASE PLAN. THE METHOD OF PREPARATION BY OTHERS IS UNKNOWN. EPA GRADING CHANGED GROUND SURFACE CONTOURS SHOWN IN VICINITY OF LOWER AND UPPER DRUM AREA.
3. THE GROUNDWATER MANAGEMENT ZONE (GMZ)/ACTIVITY AND USE RESTRICTION (AUR) LINE IS FROM "GROUNDWATER MANAGEMENT ZONE & ACTIVITY AND USE RESTRICTION PLAN, TROY MILLS LANDFILL, TROY, NEW HAMPSHIRE", PREPARED BY TF MORAN, INC., DATED DECEMBER 18, 2006, REVISED JANUARY 17, 2007 AND MARCH 19, 2007.
4. UPPER AND LOWER DRUM AREAS, AND SURROUNDING AREAS WERE COVERED BY CLEAN FILL AND GRADED BY EPA.

LEGEND

- GMZ/AUR BOUNDARY
- 1100 GROUND SURFACE CONTOUR
- FORMER RAILBED
- SURFACE WATER
- TRY_MW-102 MONITORING WELL
- TRY_WES-01 WETLAND SOIL SAMPLE LOCATION
- TRY_SW-1 SURFACE WATER AND/OR SEDIMENT SAMPLE LOCATION
- LEACHATE SAMPLE LOCATION
- IRS IRON ROD SET



LOCUS PLAN
SCALE: 1" = 2,000'

REV. NO.	DESCRIPTION	BY	DATE

PROJ MGR: MBA
DESIGNED BY: ATD
REVIEWED BY: SRL

OPERATOR: BJC
CHECKER: NJN
DATE: JUNE 2008

GZA GeoEnvironmental, Inc.
Engineers and Scientists
380 HARVEY ROAD
MANCHESTER, NEW HAMPSHIRE 03103
(603) 623-3600
(603) 624-9463

GRAPHIC SCALE: 1" = 150'
0 75' 150' 300'

TROY MILLS LANDFILL SUPERFUND SITE
TROY, NEW HAMPSHIRE

SITE PLAN AND EXPLORATION LOCATION PLAN

PROJECT NO.
04.0024466.11

FIGURE NO.
1

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FILE: P:\04Jobs\04.0024466.00\04.0024466.16 – Troy SAP\SAP\CAD\MAY 2008\Site Plan-rev.dwg BY: brian.cooper DATE: 09 Jun 2008 – 1:59pm