

## DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Final: May 16, 2001

### RCRA Corrective Action Environmental Indicator (EI) RCRIS Code (CA725)

#### Current Human Exposures Under Control

**Facility Name:** NRG Fossil Fuel Plant – Montville  
**Facility Address:** 74 Lathrop Road  
**Facility EPA ID #:** CTD 049181654

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

If data are not available skip to #6 and enter "IN" (more information needed) status code.

#### **BACKGROUND**

##### **Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

##### **Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

##### **Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives, which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The

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RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "contaminated"<sup>1</sup> above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

"Contaminated" Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			See notes to 725-2.
Air (indoors)		X		See notes to 725-2.
Soil (surface, e.g., <2 ft)	X			See notes to 725-2.
Surface Water		X		See notes to 725-2.
Sediment		X		See notes to 725-2.
Soil (subsurface e.g., >2 ft)	X			See notes to 725-2.
Air (outdoors)		X		See notes to 725-2.

\_\_\_\_\_ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

  X   If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

\_\_\_\_\_ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s): See notes to 725-2.

Footnotes:

<sup>1</sup> "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of

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appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there complete pathways between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential Human Receptors (Under Current Conditions)

<b>“Contaminated” Media</b>	<b>Residents</b>	<b>Workers</b>	<b>Day-Care</b>	<b>Construction</b>	<b>Trespassers</b>	<b>Recreation</b>	<b>Food</b>
Groundwater	No	No	No	No	No	No	No
Air (indoors)	-	-	-	-	-	-	-
Soil (surface, e.g., <2 ft)	No	Yes	No	Yes	Yes	No	No
Surface Water	-	-	-	-	-	-	-
Sediment	-	-	-	-	-	-	-
Soil (subsurface e.g., >2 ft)	No	No	No	Yes	No	No	No
Air (outdoors)	-	-	-	-	-	-	-

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated”) as identified in #2 above.
2. Enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“\_\_\_”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

\_\_\_\_ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

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If yes (pathways are complete for any “Contaminated” Media - Human Receptor (combination) - continue after providing supporting explanation.

If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code.

Rationale and Reference(s): See notes to 725-3 .

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.).

4. Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be “significant”<sup>4</sup> (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s): See notes to 725-4 .

<sup>4</sup> If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

5. Can the “significant” exposures (identified in #4) be shown to be within acceptable limits?

If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

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\_\_\_\_\_ If no (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

\_\_\_\_\_ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

Rationale and Reference(s): Per the Instructions to 725-4, this section is not applicable.

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

  X   YE - Yes, “Current Human Exposures Under Control” has been verified. Based on a review of the information contained in this EI Determination, “Current Human Exposures” are expected to be “Under Control” at the NRG Fossil Fuel – Montville Station facility, EPA ID # CTD049181654, located at Montville Connecticut under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

\_\_\_\_\_ NO - “Current Human Exposures” are NOT “Under Control.”

\_\_\_\_\_ IN - More information is needed to make a determination.

Completed by (signature)  Date 3/5/02

(print) Juan A. Perez

(title) Environmental Scientist

Supervisor (signature)  Date 3/21/02

(print) Matthew R. Hoagland

(title) Section Chief

(EPA Region or State) Reg. I.

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Locations where References may be found:

RCRA Groundwater Monitoring Program 1997 Annual Report (CL&P)  
Human Health Risk Assessment, May, 2001 (Metcalf & Eddy, Inc.)  
Groundwater Reclassification Application, December 2000 (Metcalf & Eddy, Inc.)  
March, 1999 Phase I Environmental Site Assessment (Metcalf & Eddy, Inc.)  
April, 1999 Phase II Environmental Field Investigation Report (Metcalf & Eddy, Inc.)  
November, 1999 Supplemental Site Investigation Report (Metcalf & Eddy, Inc.)

Contact telephone and e-mail numbers

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(e-mail) john-cardoni@aqualliance.com

**FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**

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**Rationale and References  
For  
Documentation of Environmental Indicator Determination  
RCRA Corrective Action Environmental Indicator Code CA 725**

**Background**

Sampling activities at the Montville Station ("the Site") began in November, 1988, in order to determine the impact of a single-membrane-lined surface impoundment (EB-2), operated as part of its permitted wastewater treatment system. The unit was designed to receive boiler chemical cleaning solvents, demineralizer regeneration wastewaters, and other maintenance washwater, prior to its eventual discharge to the Thames River. These wastewaters were determined to be RCRA hazardous due to corrosivity, as well as the occasional presence of chromium and/or lead.

*This should be NPDES - Clarified via telephone call on 2/22/02*

EB-2 was constructed in 1978, in an area formerly used for coal ash storage. As required by federal regulations, all discharges of hazardous waste to the EB-2 basin. In November of 1988, CL&P notified the USEPA that it intended to close EB-2. After the removal of the sludge and liner, soil samples from the 18-inches immediately below the liner were collected from two (2) depths at seven locations. Samples were analyzed for Closure Performance Standard Parameters (CPSP). The results of the analyses indicate that none of the CPSP concentrations in the subliner soil exceeded the CPSP standards for clean closure. However, three (3) volatile compounds (PCE, TCE and toluene), not part of the CPSPs, were detected in the subsurface soils. The detection of these compounds has been attributed to the historic use of the site and the nature of the site subsurface materials. However, at the request of the EPA, these compounds were added to the groundwater monitoring program. The RCRA groundwater detection monitoring program was initiated on a quarterly basis, and is continued at present on a semi-annual basis. Certification of closure documentation was submitted to U.S.EPA, and to the CTDEP on January 30, 1991. To date, neither the U.S.EPA nor the CTDEP have approved the closure documentation.

*Sentence not complete - will be result by contact. Agreed on over the telephone. 2/22/02*

An network of twelve (12) groundwater monitoring wells was installed in 1985. Eleven of the wells (MW-1S, MW-2 through MW-11) were advanced to shallow groundwater between the depths of 10' to 40', and were screened within the upper 10-feet of the overburden aquifer. One (1) well (MW-1D) was installed into shallow bedrock (approximately 40 feet below ground surface). The majority of the monitoring wells are located surrounding the former equalization basin, with two of the wells (MW-1S and MW-1D) located in the southwest corner of the site.

In April of 1999, a Phase I Environmental Site Assessment ("ESA"), was completed to identify potential areas of environmental concern ("AOCs") at the Montville facility, and to review prior environmental

Received and  
Reviewed on  
2/26/02 and 2/27/02  
JAP

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For  
Documentation of Environmental Indicator Determination  
RCRA Corrective Action Environmental Indicator Code CA 725**

**Background**

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An network of twelve (12) groundwater monitoring wells was installed in 1985. Eleven of the wells (MW-1S, MW-2 through MW-11) were advanced to shallow groundwater between the depths of 10' to 40', and were screened within the upper 10-feet of the overburden aquifer. One (1) well (MW-1D) was installed into shallow bedrock (approximately 40 feet below ground surface). The majority of the monitoring wells are located surrounding the former equalization basin, with two of the wells (MW-1S and MW-1D) located in the southwest corner of the site.

In April of 1999, a Phase I Environmental Site Assessment ("ESA"), was completed to identify potential areas of environmental concern ("AOCs") at the Montville facility, and to review prior environmental

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investigations. Subsequently, a limited Phase II ESA was completed in April, 1999, in order to investigate potential contamination at the AOCs identified during the Phase I ESA. A direct push Geoprobe® unit was used to collect soil and groundwater samples from various locations throughout the facility.

In addition to obtaining information regarding the former equalization basin (EB-2) as previously discussed, the Phase I and Phase II Environmental Site Assessments indicates the following significant areas of concern:

- Coal ash and cinders were placed along the southern portion of the NRG property in the area of the facility's former septic leachfield. The size of the area is approximately three (3) acres. The area is now vegetated.. Additional coal and cinders were placed in the area if the former wastewater equalization basin (EB-2). As previously discussed, the basin was closed in 1991 and the area around the basin has been paved, which minimize the possibility of direct contact with surface/subsurface soil, as well as wind entrainment of contaminated soil.
- All coal storage took place on the northeastern portion of the property, in the present location of the Petroleum Bulk Storage area,. The majority of this portion of the site is covered with roadways/parking lots, trap rock and permanent structures, which minimize the possibility of direct contact with surface/subsurface soil, as well as wind entrainment of contaminated soil.
- Aerial photographs taken in 1980 and in 1990 show a construction pit with some areas of filling. A pit was constructed between 1975 and 1980 in north of the upper switchyard. The west half of the pit appears to have been filled in by 1980, with evidence of vehicle traffic from the switchyard. Additional filling in the area is evident between 1985 and 1991. Based upon discussions with site representatives, the area was initially used to dispose dredge spoils removed from the barge dock along the Thames River. Facility representatives indicate that this material was subsequently re-excavated and removed from the site. Borings advanced in the area indicate the presence of fill material including coal ash.

Areas of concern (AOC) investigated as part of the Phase II investigation activities were as follows:

- Oil-Filled Electrical Equipment - three soil samples.
- Former gasoline UST - one soil sample.
- Petroleum Bulk Storage Tanks - ten soil samples.
- Diesel Internal Combustion Units - five soil samples.
- Former Ash Settling Ponds / Disposal Lagoon - six soil samples.

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- Former Coal Storage Area - three soil samples.
- Former Dredge Soils Location (previously identified as the Former Hilltop Disposal Area) - four soil samples.
- Hazardous Materials Storage Areas - eight soil samples.
- Abutters of Concern - two soil samples.
- Soil Piles and Road Debris - three groundwater samples.

A supplemental soils investigation was conducted in the Former Ash Setting Ponds and the Former Ash Disposal Lagoon (former EB-2 area) in the fall of 1999 on behalf of NRG. The investigation was performed to evaluate potential soil contamination in these areas and to develop a risk assessment for these areas based upon the levels of contaminants detected from 0 to 4 feet below ground surface. The results of the samples collected during this investigation indicated that arsenic was marginally above the I/C DEC in 15 of 64 samples collected in these areas. The attached risk assessment discusses the potential health impacts to on-site employees and trespassers.

As part of the on-going investigation activities per the Connecticut Transfer Act, surficial and limited subsurface soil samples were collected from the north and western portion of the site in October, 2000 to evaluate the former dredge material location. The sampling activities consisted of dividing the area into 100 foot grids and that approximately 30 borings were advanced in the area. Twenty five (25) of the borings were advanced to a depth of four feet below ground surface using a truck mounted drill rig utilizing split spoon samplers or hand augers. Samples were collected from 0 to 2 feet and 2 to 4 feet below ground surface from each boring and from 0 to 0.5 feet from selected borings located along the northern property boundary. The remaining five (5) borings were advanced to the top of groundwater in proximity of the former dredged material locations utilizing a truck mount drill rig. All soil samples collected from 0 to 0.5 feet and from 0 to 2 feet were analyzed for total and SPLP metals. Samples collected at a depth of 2 to 4 feet below ground surface were also analyzed for total and SPLP metals if the 0 to 2 foot sample contained contaminants above the applicable CTRSR criteria or if ash and cinders were observed in the sample. Samples collected from the five (5) deep soil borings at 2 to 4 feet below ground surface and at greater depths were analyzed for VO compounds, SVO compounds, total and SPLP metals.

The results of the samples did not detect any VO compounds, or SVO compounds above the applicable CT RSR criteria. The results of PPM analysis revealed that 29 samples out of 58 samples contained levels of arsenic above the I/C DEC criteria of 10 parts per million (ppm) at concentrations ranging from 12.3 ppm to 176 ppm. In addition, one (1) sample contained nickel at a concentration of 7,750 ppm, which is just above the I/C DEC criteria of 7,500 parts per million. With the exception of samples collected from three (3) of the 30 borings, metals analyzed using the SPLP methodology were not detected above the GA pollutant mobility criteria (PMC). The results of the soil samples are presently

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being evaluated as part of the Connecticut Transfer Act requirements as to its potential health risk, if any, to workers at the site and potential trespassers onto the site.

**Discussion**

The following notes and associated attachments expand on the conclusions reached in each step of the Environmental Indicator Determination for RCRIS Code CA 725. Headings used for these notes correspond to the item numbers in the determination work sheet.

**General**

- In this evaluation, the Connecticut DEP's Industrial/Commercial Direct Exposure criteria were used to evaluate the risk (if any) that these soils pose to human receptors, through direct contact;
- According to the CTDEP's Water Quality Classification for the Thames River Basin, groundwater in the aquifer beneath the section of Montville and Waterford where the facility is located is classified as GA/GAA and GB,. The dividing line between the two classification areas is located along the New England Central Railroad right-of-way. The site is also bordered to the east by the Thames River. Consequently, the CTDEP's GA/GAA GPC and the SWPC are of primary importance when evaluating groundwater contamination west of the railroad right-of-way while SWPC is of primary importance when evaluating groundwater contamination east of the railroad right-of-way. Therefore, groundwater quality data obtained from wells located west of the railroad right-of-way was compared to the GA/GAA GPC and SWPC, while groundwater data obtained from wells located east of the railroad was compared to the SWPC. As a result of the site being located in two (2) groundwater classification areas, NRG Energy prepared and submitted a reclassification application to the CTDEP requesting that the portion of the site presently as classified as GA/GAA be reclassified to GB. However, the reclassification application was withdrawn based upon the CTDEP's opinion that the groundwater analytical results did not find any demonstrated groundwater contamination on that portion of the site.

Because this classification indicates that groundwater west of the railroad right-of-way is suitable for drinking without treatment, and because the subject facility and surrounding community are serviced with both private wells and public water, ingestion of contaminated groundwater is a viable route of exposure. Consequently, the USEPA's Maximum Contaminant levels (MCLs) for drinking water is considered valid regulatory standards for the purpose of this discussion.

**752.2 - Media Contamination Determination**

- **Groundwater** - As previously stated, groundwater in the portion of the site classified as GA/GAA contains limited inorganic compounds above the GA/GAA criteria. The facility conducted groundwater investigation activities as part of an application submitted to the CTDEP to reclassify the

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area west of the railroad right-of-way as GB. However, the reclassification application was withdrawn based upon the CTDEP's opinion that the groundwater analytical results did not find any demonstrated groundwater contamination on that portion of the site. However, based upon the results of numerous of groundwater elevation measurements obtained from the wells, the flow of groundwater is from west to east towards the Thames River. Therefore use of site groundwater for drinking water is not reasonable under current or future land use scenarios. Because there is no reasonable pathway between on-site constituents in groundwater and potential on-site human receptors under current or future land use, comparison of contaminant concentrations to the MCLs is not warranted.

For a detailed discussion of potential groundwater impacts, please refer to the accompanying "Documentation of Environmental Indicator Determination - Migration of Contaminated Groundwater Under Control" document.

- **Air (Indoors)** – Groundwater contamination detected from eleven (11) monitoring wells at the site detected metals and PCBs in one water sample. The CTDEP has not promulgated volatilization criteria for these contaminants. There is, therefore, no valid regulatory criterion for evaluating the potential impact of soil and/or groundwater contaminants upon indoor air quality.
- **Surface Soil** – Limited surface soil contamination was encountered at the subject site. The majority of surface soils analyzed were from the Former Ash Setting Ponds / Former Ash Disposal Lagoon (former EB-2 area) and the Former Dredge Spoils Location. The contamination that was detected above I/C DEC in the areas of the Former Ash Setting Ponds / Former Ash Disposal Lagoon was arsenic at concentrations between 10.9 and 79.7 ppm. Other areas where surface soils were found to contain contaminants above either the I/C DEC, GA pollution mobility criteria (PMC), or the GB PMC were the Diesel ICUs (SVOCs), Former Dredge Spoils Location (TCE, Benzo(a)anthracene, RCRA Metals), and the Soil Piles and Road Debris Area (methylene chloride, TCE, arsenic, lead).

The results of the additional samples collected in the Former Dredge Spoils Disposal Location revealed 29 samples out of 58 samples contained levels of arsenic above the I/C DEC criteria of 10 parts per million (ppm) at concentrations ranging 12.3 ppm to 176 ppm. In addition, one (1) sample contained nickel at a concentration of 7,750 ppm, which is marginally above the above the I/C DEC criteria of 7,500 parts per million. With the exception of samples collected from three (3) of the 30 borings, metals analyzed using the SPLP methodology were not detected above the GA pollutant mobility criteria (PMC).

- **Surface Water** – While there are no surface water bodies on the premises of the Montville facility, the entire eastern portion of the facility is bordered by the Thames River, a few miles upstream from its discharge into the Long Island Sound. It has been determined that groundwater from the site discharges to the Thames River, under tidal influence.

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While contaminants have been detected in groundwater in excess of SWPC, it is not known whether contaminants have actually discharged to the Thames River at or above those concentrations. Based upon four rounds of groundwater monitoring results, and the large volume of water flowing in the Thames River, it is highly unlikely that groundwater contaminated in excess of SWPC would adversely impact the Thames River.

For a detailed discussion of potential impacts to surface water, please refer to the accompanying For a detailed discussion of potential groundwater impacts, please refer to the accompanying "Documentation of Environmental Indicator Determination - Migration of Contaminated Groundwater Under Control" document..

*Typos  
env  
JAP  
3/1/02*

- **Sediment** – M&E collected a number of sediment samples from the Thames River, adjacent to the Montville facility. No applicable human health standards for sediments were found to exist during the course of this evaluation. In lieu of a more appropriate criterion, the contaminant concentrations were compared to the I/C DEC for soil.

While measurable concentrations of various contaminants were encountered in many of the samples, two (2) samples exhibited concentrations of several SVOCs were detected above the I/C DEC and three (3) samples exhibited concentrations of arsenic above the I/C DEC.

- **Subsurface Soil** – Limited surface soil contamination was encountered at the subject site; mainly in the areas of the Bulk Petroleum Storage Tanks, the Former Ash Setting Ponds /Ash Disposal Lagoon (former EB-2 area), Former Dredge Spoils Location, and the Former Coal Storage Area.
- **Air (Outdoors)** - Groundwater contamination detected from eleven (11) monitoring wells at the site detected metals and PCBs in one water sample. The CTDEP has not promulgated volatilization criteria for these contaminants. There is, therefore, no valid regulatory criterion for evaluating the potential impact of soil and/or groundwater contaminants upon outdoor air quality.

**752.3 - Exposure Pathway Determination**

Given the contaminant concentrations and locations, along with current site use and site development, viable pathways do not appear to exist for human exposure to contaminants detected in various media on-site . The rationale for this determination is presented below, for each environmental media.

- **Groundwater** – According to the CTDEP’s Water Quality Classification for the Thames River Basin, groundwater in the section of the aquifer located adjacent to the Thames River beneath the section of Montville in which the facility is located is classified as GB. The area of the site classified as GA/GAA is not an active operations area other than it is where the upper switchyard is located. Five (5) previous rounds of groundwater elevation measurements indicates that the flow direction is from west to east and does not appear to be flowing towards nearby residential potable wells. In addition, three previous rounds of groundwater samples and analysis of selected residential wells

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indicate that the residential wells are not being impacted by the Montville facility. Ingestion of contaminated groundwater is not a viable route of exposure, nor will it be in the future, under foreseeable scenarios due to the following:

- The homes adjacent to the site that have private wells are not being impacted by the subject site;
- The GB classification of groundwater along the Thames River indicates that groundwater in this area is unsuitable for drinking without treatment; and
- The subject site and the majority of the surrounding homes in the community are serviced with public water.

*Inquired about on 3/1/02*  
*— Homes upgradient have wells on the GA portion; maybe 1 home is sidegradient.*

Furthermore, there is no viable indirect route of exposure of facility employees or construction workers to contaminated groundwater.

- **Air (Indoors)** – Groundwater contamination from RCRA units is limited to RCRA metals and PCBs. No volatilization of these materials would be expected, under normal conditions. Consequently, no viable exposure pathway exists.
- **Surface Soil** –
  - **Former Ash Settling Pond / Former Ash Disposal Lagoon (former EB-2 area)** - While site workers, construction workers and trespassers may be exposed to contaminated surface soils in this area, any exposure would be minimal and short-lived. However, further risk evaluation would be required to verify a determination of “no significant exposure”. The attached risk assessment document describes the potential risk of exposure to site workers and trespassers.
  - **Diesel ICUs**- Soil in this area is covered by approximately 6” to 1’ of gravel and asphalt. The likelihood of site workers, construction workers and trespassers coming into contact with contaminated surface soils in this area is small, under current site conditions. Any event would be minimal and short-lived. Furthermore, no indirect exposure pathways to these surface soils, such as inhalation of air-entrained surface soil contaminants and/or and ingestion of contaminated food crops, are reasonable for human receptors, under current land use conditions.
  - **Former Dredge Spoils Location** - While site workers, construction workers and trespassers may be exposed to contaminated surface soils in this area, any exposure would be minimal and short-lived. As part of the Connecticut Transfer Act and the groundwater reclassification application, additional surface and subsurface were collected from this area to determine if potential soil contamination in this area exceeds the appropriate Connecticut Remediation Standard Regulations (CTRSRs). A further risk evaluation would be required to verify a determination of “no significant exposure” should elevated levels of contaminants be

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encountered. The attached risk assessment document describes the potential risk of exposure to site workers and trespassers.

- **Soil Piles and Road Debris Area** - The debris and soil piles have been removed from the site. Therefore there is no exposure pathway from this area.
- **Surface Water** – Surface water samples were not collected from the Thames River, in the vicinity of the Plant, as part of this exercise. The portion of the River in the immediate vicinity of the plant is not, however, used for recreation or any other purposes which would lead to prolonged direct contact with contaminants (if present) originating from the plant.

Furthermore, there are no commercial shellfish beds or finfish harvesting areas in the vicinity of the plant. Finally, because of the large volume of water flowing in the river and the tidal nature of the river in the vicinity of the plant, any surface water contamination resulting from Plant operations (if present) would be quickly dissipated prior to contact with any receptors. *Typographic error*

For a detailed discussion of potential impacts to surface water, please refer to the accompanying *JAP 3/1/02* For a detailed discussion of potential groundwater impacts, please refer to the accompanying “Documentation of Environmental Indicator Determination - Migration of Contaminated Groundwater Under Control” document..

- **Sediment** – Five (5) sediment sample exhibited contamination (for SVOCs and arsenic) above the I/C DEC for soil. There is no reasonable potential for direct exposure of human receptors to this contamination, as these sediments are below 6-8 feet of turbulent water, in an area not used for recreation.
- **Subsurface Soil** – As stated, limited subsurface soil contamination was encountered at the subject site; mainly in vicinity of the Bulk Fuel Oil Storage Tanks, the Former Ash Settling Ponds / Disposal Lagoon, Former Hilltop Disposal Area, and the Former Coal Storage Area.
  - **Former Ash Settling Pond / Former Ash Disposal Lagoon (former EB-2 area)** - Facility personnel and trespassers will not come into contact with subsurface soil in this area during normal work assignments. While construction workers may be exposed to contaminated surface soils during excavation, any such exposure would be minimal and short-lived. Furthermore, because the site is not used for growing food crops, indirect exposure, via ingestion of contaminated food is not a viable pathway.
  - **Bulk Tank Storage Area** - Facility personnel will not come into contact with subsurface soil in this area during normal work assignments. Construction workers may come into contact with subsurface soils in excess of I/C DEC levels as a result of soil excavation for facility construction or renovation. The likelihood of significant excavation in this area, with its ASTs

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and network of aboveground pipes, is, however, extremely unlikely. Any excavation that might occur would be minimal and short-lived.

Furthermore, no indirect exposure pathways to subsurface soils, such as inhalation of air-entrained surface soil contaminants and/or and ingestion of contaminated food crops, are reasonable for human receptors, under current land use conditions.

- **Former Dredge Spoils Location** - Facility personnel and trespassers will not come into contact with subsurface soil in this area during normal work assignments. While construction workers may be exposed to contaminated surface soils during excavation, any such exposure would be minimal and short-lived. Furthermore, because the site is not used for growing food crops, indirect exposure, via ingestion of contaminated food is not a viable pathway. As part of the Connecticut Transfer Act and the groundwater reclassification application, additional surface and subsurface soil samples will be collected from this area to determine if potential soil contamination in this area exceeds the appropriate Connecticut Remediation Standard Regulations (CTRSRs). A further risk evaluation would be required to verify a determination of “no significant exposure” should elevated levels of contaminants be encountered. The attached risk assessment document describes the potential risk of exposure to site workers and trespassers.
  
- **Former Coal Storage Area** - This area is located north of the facility's wastewater treatment plant and extends into what is now the bulk petroleum storage area. Facility personnel will not come into contact with subsurface soil in this area during normal work assignments. Construction workers may come into contact with subsurface soils in excess of I/C DEC levels as a result of soil excavation for facility construction or renovation. The likelihood of significant excavation in this area, with its ASTs and network of aboveground pipes, is, however, extremely unlikely. Any excavation that might occur would be minimal and short-lived.
  
- **Air (Outdoors)** - Groundwater contamination from RCRA units is limited to RCRA metals and phenanthrene. No volatilization of these materials would be expected under normal conditions. Furthermore, because the majority of the soil surfaces are covered with gravel, roadways, or permanent structures, the potential for wind entrainment of contaminants present in surface soils is negligible.

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**752.4 – Exposures can not be reasonably expected to be significant**

The only identified areas with a complete exposure pathway with the potential to pose an unacceptable risk to human health are the Former Ash Disposal Lagoon (area of the former EB-2 basin), the Former Ash Settling Ponds, and the Former Dredge Spoils Location. As detailed in the attached “Human Health Risk Assessment”, the residual surface soil contamination identified in these areas would not reasonably be expected to pose a current or future significant risk to human health, in the absence of remedial action.