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 – Norwalk Harbor**
Facility Address: **Manresa Island Ave, South Norwalk, CT**
Facility EPA ID #: **CTD 000845214**

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?

   __X__ 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 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"[1] 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:

[1] "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

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

[2] 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)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food
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).

_X_ 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 .

[3] 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"[4] (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)?

_X_ 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.

[4] 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).

_____ 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 – Norwalk Harbor facility**, EPA ID # **CTD000845214**, located at **Norwalk 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 2/22/02

(print) Juan A. Perez

(title) Environmental Scientist

Supervisor (signature) _____ Date 3/18/02

(print) Matthew R. Hoagland

(title) Section Chief

(EPA Region or State) Reg. I.

Locations where References may be found:

RCRA Groundwater Monitoring Program 1997 Annual Report (CL&P)

Human Health Risk Assessment, May, 2001 (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

(name)_____

(phone #)_____

(e-mail)_____

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.

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

Background

A Phase I and Phase II Environmental Site Assessment conducted in 1998 & 1999, respectively, by CL&P & NRG indicates the following:

Site History

The facility is located on a peninsula jutting into Long Island Sound. It is bordered by Norwalk Harbor to the east, Long Island Sound to the south, and Sheffield Island Harbor to the west. It remained an undeveloped wetlands until 1859, when it was used as a private summer residence. It was purchased in 1898 by the Manresa Institute, and used as a retreat for Jesuit Clergy until its purchase by CL&P in 1958

Construction of a coal-fired facility was begun in 1958. A second generating unit was added in 1963. Those units were converted to burn #6 fuel oil in 1971 and 1972. The former coal storage area now contains three (3) #6 fuel oil ASTs with a capacity of 500,000 barrels (21,000 gallons). The two primary generating units have a net capability of 338,000 kilowatts. A 15-megawatt gas turbine was installed in 1996, to ensure load demand during restoration work at the Millstone Station.

Areas of Environmental Concern

- **Former Ash Disposal Area** - Historically, coal ash slurry from the facility, containing bottom ash, and possibly fly ash, was disposed of in the northeastern portion of the facility. This disposal resulted in ash deposits on that portion of the property. Historical aerial photographs and topographic maps show that this area was formerly a wetlands, and possibly totally underwater from 1932 to 1951, after which fill operations apparently commenced.

  As part of a limited Phase II investigation, conducted in 1999, soil and groundwater were sampled at the former ash disposal area. Total arsenic was detected above the Industrial/Commercial (I/C) Direct Exposure Criteria in the majority of soil samples from this area, while beryllium was detected in a smaller number of samples. Thallium was detected in two (2) samples, and nickel in one (1). Other metals were detected at concentrations below applicable Connecticut Remediation Standards Regulations (CTRSR) criteria. Many of these metals are often associated with ash fill. Some metals were detected in groundwater samples from this area at concentrations above the Surface Water Protection Criteria, and both the Acute and Chronic Aquatic Life Criteria.

- **Abandoned Gasoline UST** - The facility formerly used a 1,000-gallon gasoline UST in the area of the Screen House. According to a closure report submitted to the CTDEP on September 6, 1989, the UST passed a tightness test on September 30, 1988. Due to limited need for gasoline, the UST was taken out of service on October 31, 1988, and abandoned-in-place by being filled with concrete.

  Four (4) soil borings were advanced around the UST. Samples from the borings were taken at the 3-foot and 12-foot depths and analyzed for BTEX and TPH. The BTEX analysis did not indicate high levels of typical gasoline compounds (BTEX < 50 ppb). TPH was, however, encountered at a

maximum value of 1,245 ppm at a depth of 12 feet. NUSCO reported that the groundwater table near this UST was approximately 12 feet below ground surface at the time the samples were collected.

In a September 6, 1989 letter to CTDEP, NUSCO concluded that the TPH was from historic non-gasoline spill(s), and not from a release from the UST. Therefore, NUSCO did not perform any further investigation or remediation.

As part of a limited Phase II investigation, conducted in 1999, a single Geoprobe® boring was advanced in the area of the former UST. One (1) soil sample was collected. No analytes were found above applicable CTRSR criteria in this sample. A groundwater sample was also collected from the Geoprobe® boring in this area. No analytes were detected above the applicable CTRSR criteria in that sample.

- **Abandoned-In-Place Fuel Oil USTs** - The facility formerly used two (2) 25,000-gallon USTs to store the #2 fuel oil. According to a January 24, 1990 letter to the CTDEP, these USTs were removed from service on July 31, 1989, and abandoned-in-place by being filled with concrete in September 1990.

  NUSCO investigated the area, and encountered soil contaminated with #2 fuel oil. A written report was submitted to CTDEP on January 24, 1990. Results of five (5) soil borings advanced on August 14, 1989 identified contamination at a depth of six feet below grade in four of the borings, with a maximum TPH concentration of 13,462 ppm. This release was reported verbally to the CTDEP on August 14, 1989. Because the USTs passed a tightness test on October 6, 1988, NUSCO concluded that the contamination was due to overfilling, rather than a discharge from the UST.

  Four (4) groundwater monitoring wells were subsequently installed in the UST area in 1990. Soil samples were collected during monitoring well installation. Analysis showed 4,842 ppm TPH at the MW-4 location and 11,700 ppm TPH at the MW-3 location. While there was generally little evidence of groundwater contamination, elevated TPH readings were encountered in MW-3, with a maximum concentration of 45 ppm TPH. In order to address this contamination, a small amount of contaminated soil was removed from the vicinity of MW-3. According to available information, the amount of soil was limited due to nearby structures and utility lines. Groundwater monitoring was discontinued in December of 1990, with a TPH level of 15.8 mg/l in MW-3, and readings of 1 mg/l or less in the remaining three wells. A final report of the above activities was submitted to the CTDEP in January 29, 1991.

  Three (3) Geoprobe® borings were advanced in this area as part of the limited Phase II investigation. A soil sample was collected from each. No analytes were found above applicable regulatory criteria in any soil samples collected from this area..

  A groundwater sample was collected from boring ME-NRK-21. Phenanthrene was detected above the Surface Water Protection Criteria in that sample.

- **Oil-Filled Equipment** - Numerous oil-filled transformers and other electrical equipment exist on-site. These include two step-up transformers for the main generating plant, and various transformers and other electrical equipment in the T&D switchyard. The facility currently has one (1) transformer, which, according to its label, contains PCBs in a concentration greater than or equal to 50 ppm. This transformer is located in the center of the switchyard. In addition, the historic use of PCBs in the remaining present and/or former transformers at this facility could not be ruled out during the site audit or during follow-up file reviews. Due to the age of the facility and discussions with CL&P personnel, it is possible that at least some of the transformers and/or other electrical control equipment contained PCB dielectric fluids at one time.

As part of the limited Phase II Investigation, a total of eight (8) Geoprobe® borings were advanced within and around the perimeter of the T&D switchyard, as well as in the vicinity of two transformers adjacent to the power plant building. No analytes were found above applicable CTRSR criteria in any soil samples collected from those borings.

Groundwater samples were collected from six (6) of those borings. No analytes were found above the applicable CTRSR criteria in any of those samples.

- **Former Surface Impoundment (EB-2)** - The facility formerly operated a surface impoundment (EB-2), as part of its wastewater treatment facility. The impoundment was located approximately 300 feet northwest of the cooling water intake (screen) building. Its capacity was 2,600,000 gallons, and it measured approximately 205 x 325 feet. It was constructed by excavating into fly ash, which had been previously deposited in that area. It was constructed in 1978 to treat all wastewater from the treatment plant, prior its NPDES permitted discharge. It was classified as a RCRA solid waste management unit, due to the corrosive and EP Toxic nature of certain washwaters, and operated under RCRA interim status until 1989, when all discharges of hazardous waste to the unit were halted. RCRA closure was initiated in 1989, and completed in 1991. It was closed in place, under RCRA.

  A groundwater detection monitoring program was initiated in 1985 to assess the impact of the plant's surface impoundment on the quality of groundwater in the uppermost aquifer underlying the site. The program was established to satisfy RCRA interim permitting status requirements. The monitoring program initially consisted of eight (8) monitoring wells. 22 additional shallow and deep wells were added in February, 1989, as part of the closure requirements for the EB-2 unit, for a total of 30 wells. Sampling of four (4) deep wells was discontinued in 1994, with EPA's approval. Sampling of the remaining wells for selected inorganic and organic constituents was incorporated as part of the routine quarterly monitoring program, beginning with the June 1989 sampling round. Collection and analysis of samples from these wells has continued through the present, as part of the Post Closure approval for the EB-2 unit.

  According to the 1997 Annual Report, elevated concentrations of several groundwater constituents were found in various wells in the study area. Seven (7) constituents exceeded the Federal and/or Connecticut DOHS standards. Out of the 6 shallow wells, one exceeded antimony, 3 exceeded arsenic, 2 exceeded beryllium, 3 exceeded cadmium, 3 exceeded chloride, 1 exceeded lead, and 5 exceeded nickel at least one period during 1997. The report concluded that these elements, with the exception of chloride, are commonly associated with coal combustion wastes. The presence of chloride likely reflects the impact of the former practice of saltwater sluicing of coal ash across this area of the property.

- **Fuel Oil Tank Farm** - The Norwalk Harbor facility currently uses three (3) 7,560,000 gallon #6 fuel oil ASTs. The tanks are grouped together within a common earthen containment area. The southern portion of this containment area overlaps the former coal storage area. The floor within the tank area consists of gravel fill. All ASTs are equipped with drains designed to allow removal of water from the tank interior. Small amounts of surficial staining were typically encountered on the gravel adjacent to the outlets for these drains during the Phase I ESA.

  As part of a limited Phase II investigation, conducted in 1999, a total of nine (9) soil samples were collected from this area. All but one were collected from a depth of 1-2 feet using a hand auger.

  Total arsenic was detected above the I/C Direct Exposure Criteria in all soil samples. Other metals were detected at concentrations below applicable remediation criteria. As with contaminants from

the former ash disposal area, these contaminants are often found in ash fill. The physical characteristics of soil collected in this area confirm that it is composed of fill material. No VOC or SVOC levels were detected above applicable criteria.

A groundwater sample was collected from a Geoprobe® boring advanced in this area. Dissolved zinc, which exceeded both the Acute and Chronic Aquatic Life Criteria was the only analyte detected above the applicable CTRSR criteria in that sample.

- **Former Coal Storage Area** - According to historical information, the southern portion of the facility was used for storage of coal prior to the facility's conversion to fuel oil. While the bulk petroleum storage tank farm has been constructed in the northern portion of this area, the majority of the former coal storage area has been left open and planted with grass.

  As part of a limited Phase II investigation, conducted in 1999, three (3) soil samples were collected from this area; two (2) with a hand auger and one (1) with a Geoprobe®. Total arsenic was detected above the I/C DEC in samples ME-DEV-18 & 19. Other metals were detected at concentrations below applicable remediation criteria.

  Refusal was encountered before groundwater in the Geoprobe® boring for this area, and no groundwater samples were collected.

- **ICU UST** - A plastic drum, approximately 55 gallons in size, located adjacent to the facility's "cold" start ICU, is used as a receptacle for condenser blowdown. This drum is approximately three quarters buried. At the time of M&E's Phase I and Phase II ESAs, it was full to overflowing with an oily water emulsion.

  As part of the limited Phase II investigation, two (2) samples were collected from a single hand auger boring advanced in this area. The samples displayed physical evidence (appearance and odor) often associated with petroleum contamination. No analytes were, however, found above applicable CTRSR criteria in either sample. A variety of VOCs and SVOCs for which there are no CTRSR criteria were found in these samples.

- **Existing Septic Leach Field** - Sanitary wastewater from the facility is discharged to an on-site septic tank, which drains to a leach field located in the south-*west* portion of the facility. The current leach field was constructed to replace a former leach field approximately 10 years ago. The existing leach field is located south of the plant. No evidence of misuse of the septic system was found during the Phase I ESA, but a thorough assessment of past waste disposal practices to the septic systems was not conducted.

  As part of the limited Phase II investigation, a single soil sample was collected from this area by hand augering. No analytes were found above applicable regulatory criteria in any soil samples collected from this area. Various metals were, however, found in concentrations below applicable remediation criteria.

- **Former Septic Leach Field** - See the above description of the existing septic leach field. The former leach field is located west of the facility.

  Two (2) Geoprobe® borings were advanced in this area, and a soil sample was collected from each. No analytes were found above applicable CTRSR criteria in the soil samples collected from this area.

  A groundwater sample was collected from one boring (ME-NRK-26). Zinc was detected above both the Acute and Chronic Aquatic Life Criteria in that sample.

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;

- Groundwater in the aquifer beneath the section of Norwalk in which the facility is located is classified as GB, according to the CTDEP's Water Quality Classification. Because this classification indicates that groundwater in this area is unsuitable for drinking without treatment, and because the subject facility and surrounding community are serviced with public water, ingestion of contaminated groundwater is not a viable route of exposure. Consequently, the USEPA's Maximum Contaminant levels (MCLs) for drinking water are not considered valid regulatory standards for the purpose of this discussion, and groundwater contaminant concentration concentrations were not compared to them, as part of this exercise.

752.2 – Media Contamination Determination

- **Groundwater** – As stated, groundwater in the vicinity of the facility is classified as GB. 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 is limited to RCRA metals and phenanthrene. 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; mainly in the vicinity of the Bulk Fuel Oil Storage Tanks, and the former ash disposal area. That contamination was limited to RCRA metals. The primary contaminant of concern is arsenic, detected from 140 to 8.4 ppm. in the Bulk Fuel Oil Storage Area, and from 381 to 10.3 ppm in the former ash pond area

  As indicated, contaminated surface soils in the former EB-2 unit were removed as part of RCRA closure of that area.

- **Surface Water** – A small tidal marsh is located in the center of the facility. This area is hydraulically connected to the Long Island Sound and its tributaries, which border the facility to the north, south and east. It has been determined that groundwater from the site discharges to the Long Island Sound, under tidal influence.

While contaminants have been detected in groundwater in excess of SWPC, it is not known whether contaminants have actually discharged to the Long Island Sound at or above those concentrations. Based upon RCRA groundwater monitoring results, it appears that contaminant concentrations have decreased during the course of that monitoring, and will continue to decrease with further monitoring. In addition, flow calculations indicate that, due to the high base flow in the Norwalk River, which discharges in to the Long Island Sound, adjacent to the facility's eastern boundary, it is highly unlikely that groundwater contaminated in excess of SWPC would adversely impact the Long Island Sound.

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** – M&E collected a number of sediment samples adjacent to the perimeter of the Norwalk Harbor 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, no samples exhibited a contaminant concentration in excess of this criterion.

- **Subsurface Soil** – As can be seen from the tables in the Phase II Environmental Field Investigation Report, and the Supplemental Site Investigation Report, limited surface soil contamination was encountered at the subject site; mainly in vicinity of the Bulk Fuel Oil Storage Tanks, and the former coal ash disposal area.

- **Air (Outdoors)** - Groundwater contamination is limited to RCRA metals and phenanthrene. 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.

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 mapping, groundwater in the aquifer beneath the section of Norwalk Harbor in which the facility is located is classified as GB. Because this classification indicates that groundwater in this area is unsuitable for drinking without treatment, and because the subject facility and surrounding community are serviced with public water, ingestion of contaminated groundwater is not a viable route of exposure, nor will it be in the future, under foreseeable scenarios.

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

- **Air (Indoors)** – Groundwater contamination is limited to RCRA metals and Phenanthrene. No volatilization of these materials would be expected, under normal conditions. Consequently, no viable exposure pathway exists.

- **Surface Soil –**

  - **Bulk Tank Storage Area** - Soil in this area is covered by approximately 6" to 1' of gravel. Access is extremely limited by the surrounding berm, along with above ground piping traversing the surface of this area.

    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 Ash Disposal 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.

- **Surface Water** – Surface water samples were not collected from the Long Island Sound, Sheffield Island Harbor or Norwalk Harbor, in the vicinity of the Plant, as part of this exercise. The portions of the Harbor and Sound in the immediate vicinity of the plant are not, however, used for recreation or any other purposes which would lead to prolonged direct contact with contaminants (if present) originating from the plant.

  Finally, because of the tidal nature of the Long Island Sound, any surface water contamination resulting from Plant operations (if present) would be quickly dissipated prior to contact with any receptors.

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

- **Sediment** – No sediment samples exhibited contamination above the I/C DEC for soil.

- **Subsurface Soil** – As stated, limited subsurface soil contamination was encountered at the subject site; mainly in vicinity of the Bulk Fuel Oil Storage Tanks, and the former ash disposal area. They are discussed as follows:

  - **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 and network of aboveground pipes, is, however, extremely unlikely. Any excavation which 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 ingestion of contaminated food crops, are reasonable for human receptors, under current land use conditions.

  - **Former Ash Disposal Area** - Facility personnel 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 of the high water table. and the nature of the fill in this area, it would not appear to be amenable to construction projects. Because the site is not used for growing food crops, indirect exposure, via ingestion of contaminated food is not a viable pathway. and trespassers. Finally, because access to this area is severely restricted the likelihood of significant exposure to trespassers is highly unlikely.

- **Air (Outdoors) -** Groundwater contamination 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.

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 area, the Tank Farm area, and the Coal Storage area. 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.