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ENVIRITE CORPORATION THOMASTON, CONNECTICUT

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FIRST INTERIM DELIVERABLE OF THE PUBLIC HEALTH AND ENVIRONMENTAL RISK EVALUATION (PHERE)

Prepared for

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March 16, 1995

I. INTRODUCTION

ENVIRON International Corporation (a division of APBI Environmental Sciences Group, Inc.) (ENVIRON) was retained by Envirite Corporation (Envirite) to prepare the First Interim Deliverable of the Public Health and Environmental Risk Evaluation (PHERE) of Envirite's Thomaston, Connecticut site. The requirements for this deliverable were presented in Attachment C of a September 30, 1993 letter from the United States Environmental Protection Agency (USEPA) to Envirite, which approved the RCRA Facility Investigation (RFI) Proposal for the site. In accordance with these USEPA requirements, Chapter II of this report presents two components of the Human Health Risk Assessment (Hazard Identification and Exposure Assessment) and Chapter III of this report presents one component of the Ecological Risk Assessment (Hazard Identification).

II. HUMAN HEALTH RISK ASSESSMENT

A. Introduction

In accordance with USEPA requirements, this chapter presents two components of the Human Health Risk Assessment. The two objectives of the first component, Hazard Identification, are to: 1) present an orderly compilation of the available sampling data on the hazardous substances present at the site; and 2) identify chemicals of concern upon which the quantitative assessment of risk will be based. The objective of the second component, Exposure Assessment, is to identify all plausible present and potential future exposure pathways and exposure parameters.

B. Hazard Identification

1. Sampling Data and Data Validation

GZA GeoEnvironmental, Inc. (GZA) conducted the primary site characterization work as part of the RFI, the design and implementation of which has been approved by USEPA Region I (GZA 1995). This work forms the basis for evaluating potential exposures to chemicals detected at the site.[1]

2. Summary Statistics

One hundred and twenty-eight (128) chemicals were detected at least once in the various sampled media.[2] Table 1 identifies these chemicals and presents their frequency of detection in each medium. Summary statistics (including frequency of detection, minimum and maximum detected levels, mean concentration[3], and the range of reported quantitation limits for each detected chemical in various media) are presented in Tables 2 through 21. Tables 2 through 5 present statistics for ground water data, Tables 6 through

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[1] Refer to Appendix F for the Quality Assurance / Quality Control Program and Appendix I for Data Validation procedures.

[2] The compounds decachlorobiphenyl and tetrachloro-m-xylene are included in the data compilation; however, these two compounds were not present in any samples taken as part of the site characterization work, but were laboratory surrogates used for quality control purposes.

[3] The mean concentration was calculated using one-half the quantitation limit for non-detects.

9 for sediment data, Tables 10 through 12 for soil data, Tables 13 through 16 for surface water data, Table 17 for leachate data, and Tables 18 through 21 for piezometer data.

3. Reduction in the Number of Chemicals to Be Quantitatively Considered in the Human Health Risk Assessment

Many of the 128 chemicals detected in the various media are unlikely to contribute significantly to overall public health risk because of low frequency of detection, low detected concentrations, or comparatively low intrinsic toxicities compared with other chemicals detected at the site. In addition, a number of the detected chemicals may be background constituents, and therefore, risks posed by these chemicals need not be included in the site-related risk. Consequently, the USEPA (1989a) permits a quantitative risk assessment to be based upon a subset of all detected substances that is developed by considering four criteria: 1) the frequency of detection; 2) essential nutrient information; 3) background concentrations; and 4) a concentration-toxicity screen. The chemicals eliminated from further evaluation in the quantitative risk assessment based on these criteria are discussed below and summarized in Table 22.

a. Frequency of Detection

Based on USEPA risk assessment guidance (USEPA 1989a; RAGS, p. 5-22), any chemical detected in less than five percent of the samples may be eliminated from further consideration in the risk assessment. As shown in Table 22, a total of 23 chemicals were eliminated from further consideration in the risk assessment based on this criterion, leaving a total of 105 chemicals for further consideration.

b. Essential Nutrients

A number of trace elements that are present naturally in the environment are essential nutrients. A deficiency in these elements can result in impairment of biological functioning. In recognition of this, USEPA risk assessment guidance (USEPA 1989a; RAGS p. 5-23) states that essential nutrients need not be considered in the quantitative public health risk assessment. Consistent with this guidance, the following six essential nutrients are not considered further in the public health risk assessment for the site: 1) calcium; 2) iron; 3) magnesium; 4) manganese; and 5) potassium; and 6) sodium. After eliminating six essential nutrients, 99 chemicals remain for further consideration.

c. Probable Background Constituents

According to USEPA risk assessment guidance (USEPA 1989a; RAGS p. 5-18), a comparison of on-site sample concentrations with background concentrations can be useful in identifying non-site related chemicals that are found on or near the site. Tables 23 through 30 present a comparison between each chemical's maximum detected on-site concentration and its maximum detected background concentration. If the maximum background concentration is greater than one-half of the maximum on-site concentration, the chemical is considered a probable background constituent. Tables 25, 26, 29, and 30 show that the majority of chemicals detected in sediment and surface water samples are probable background constituents. Chemicals considered probable background constituents are not eliminated from the risk assessment at this stage. A more complete statistical analysis will be performed before these chemicals are removed from further consideration.

d. Concentration and Toxicity Screen

As stated in USEPA risk assessment guidance (USEPA 1989a; RAGS p. 5-23), the objective of the concentration and toxicity "screening procedure is to identify chemicals in a particular medium that - based on concentration and toxicity - are most likely to contribute significantly to risks calculated for exposure scenarios involving that medium, so that the risk assessment is focused on the 'most significant' chemicals."

In this screening procedure, each chemical in a medium is scored according to its concentration and toxicity to obtain a risk factor as follows:

$$R_{ij} = (C_{ij})\ (T_{ij})$$

where

R_{ij} = risk factor for chemical i in medium j;

C_{ij} = maximum concentration of chemical i in medium j; and

T_{ij} = toxicity value for chemical i in medium j (either the cancer slope factor or the reciprocal of the reference dose, 1/RfD)

Slope factors and RfDs for the chemicals evaluated in the concentration and toxicity screen are presented in Table 31, and are obtained from USEPA sources (viz., Integrated Risk Information System [IRIS] (USEPA 1995); and Health Effects Assessment Summary Tables [HEAST] (USEPA 1994a)).

Total chemical scores are calculated for each medium by summing all chemical-specific risk factors as follows:

$$R_j = R_{1j} + R_{2j} + R_{3j} + \ldots + R_{ij}$$

where

R_j = total risk factor for medium j; and

$R_{1j} + \ldots + R_{ij}$ = risk factors for chemicals 1 through i in medium j.

A separate R_j is calculated for carcinogenic and noncarcinogenic effects for each medium. As stated by USEPA (USEPA 1989a; RAGS p. 5-24), "the ratio of the risk factor for each chemical to the total risk factor (i.e., R_{ij}/R_j) approximates the relative risk for each chemical in medium j." Therefore, chemicals whose R_{ij}/R_j ratios are very low compared with the ratios of other chemicals are eliminated from the risk assessment. As recommended by USEPA (USEPA 1989a; RAGS p. 5-24), a ratio of 0.01 was used to eliminate chemicals from further consideration in the risk assessment (i.e., all chemicals in a medium whose R_{ij}/R_j ratios were less than 0.01 were eliminated from the risk assessment for that medium).

The calculations conducted for the concentration and toxicity screen are summarized in tables 32 through 38. Of the 99 remaining chemicals, a total of 16 chemicals could not be scored using the concentration and toxicity screen because no toxicity values are available from USEPA sources. These chemicals are eliminated from the quantitative risk assessment, but will be discussed qualitatively in a subsequent submission of the risk assessment. Thus, 83 chemicals are scored using the concentration and toxicity screen.

Of these 83 chemicals, a total of 56 are eliminated from further consideration as a result of the screen. Therefore, 27 chemicals are retained for consideration in the risk assessment. These chemicals are listed below.

e. Summary

In summary, 27 chemicals are retained for consideration in the quantitative risk assessment. These are:

Volatile Compounds

Acetone
Cis-1,2-Dichloroethene
Ethylbenzene
Methylene chloride
Tetrachloroethene
Trichloroethene
Toluene
Vinyl chloride

Semivolatile Compounds

2,4-Dichlorophenol
Bis(2-ethylhexyl)phthalate
N-Nitrosodimethylamine

PCBs/Pesticides

Aldrin
Aroclor 1254
Dieldrin
Gamma-BHC (Lindane)

Inorganics

Arsenic
Barium
Cadmium
Chromium
Copper
Cyanide
Mercury
Nickel
Silver

Thallium
Vanadium
Zinc

As discussed above, some of these chemicals are probable background constituents that may be eliminated from the quantitative risk assessment in a subsequent stage following a more complete statistical analysis of the data.

C. Exposure Assessment

1. Characterization of Potentially Exposed Populations

Populations potentially exposed to chemicals released from the site can be broadly identified as residents, workers, recreational visitors, and trespassers. Under the current land use of the site and the surrounding area, potential exposure to the following populations are characterized:

- Workers. A worker population is assumed to be at current on-site and off-site locations.

- Residents. A residential population, including adults and children, is assumed to be at current off-site locations.

- Trespassers. Although access to the site is restricted as a result of fencing, the residential population is assumed to trespass on-site.

- Recreational visitors. Recreational visitors, including adults and children, are assumed to engage in activities in and around Branch Brook, the Naugatuck River, and the state forest.

Future land use of the site and surrounding area is assumed to be the same as the current land use. Future residential use of the site is unreasonable given the physical characteristics of the site, and its location in an area with a low population density and a low projected growth rate. This non-residential scenario for potential future use of the site will be supported at a later date by the submission of the following information requested by USEPA: 1) local zoning laws and zoning maps showing current zoning

(which permits only "light manufacturing" uses); 2) identification of the location of the facility within the non-residential setting; 3) relevant development plans; 4) population growth projections; 5) valid deed restrictions which restrict the use of the land to non-residential use; and 6) characteristics of neighboring properties. In addition, Envirite will seek to obtain concurrence from the town of Thomaston and public input regarding the proposed non-residential use scenario. Based on the above, the potentially exposed populations will be the same for both current and future conditions at the site.

2. Identification of Exposure Pathways

Exposure pathways are those situations by which a population or an individual could be exposed to chemicals originating from a site. Potential exposure pathways that will be quantitatively considered in the risk assessment are discussed below and summarized in Tables 39 and 40.

Soil Exposure Pathways. Exposure to chemicals in the soil may occur through direct contact and subsequent incidental ingestion and dermal absorption. The on-site worker and trespasser are assumed to be exposed to chemicals through ingestion and dermal absorption. If off-site soils are determined to contain chemicals originating from the site, then the off-site residents, workers, and recreational visitors may also be exposed through direct contact of the soil and subsequent ingestion and dermal absorption.

Air Exposure Pathways. Some chemicals present in the soil may be released to the air via volatilization. In addition, fugitive dust may be generated at the site by wind erosion and vehicular traffic. These airborne releases, which will be modeled using USEPA-approved fate and transport models, could result in inhalation exposure for on-site workers and trespassers, and off-site residents, workers, and recreational visitors downwind of the site.

Ground Water Pathways. The ground water beneath the site and the surrounding areas is designated class GB, indicating that the water is not a potential drinking water supply but could be used for industrial process water and cooling water.[4] Because ground water could be used as industrial process water and cooling water, off-site workers could be

[4] There is no known current use of ground water as a drinking water source downgradient of the site.

potentially exposed to chemicals present in the ground water through dermal absorption and inhalation (from chemicals volatilizing from the water).

Surface Water and Sediment Pathways. Chemicals originating from the site could enter surface waters near the site (i.e., Branch Brook and the Naugatuck River) through ground water discharge and overland runoff. These waters do not currently serve as human drinking water sources, and are unlikely to serve as a drinking water source in the future because the area is served by a municipal water supply. Potential human exposure to chemicals present in surface waters could occur, however, as a result of direct contact during recreational activities (e.g., wading, swimming, fishing) and subsequent incidental ingestion and dermal absorption. Potential human exposure to chemicals present in sediment could also occur during these recreational activities as a result of direct contact and subsequent incidental ingestion and dermal absorption.

3. Identification of Exposure Parameters

It is not possible to estimate accurately the exposures for potentially exposed populations due to uncertainties in both the current and future behavior patterns of these populations and limitations in knowledge of other exposure variable values. In light of these uncertainties, USEPA (1989a) recommends that intake values reflect an estimate of the reasonable maximum exposure (RME), defined as the highest exposure that is reasonably expected to occur. USEPA's intent with the RME "is to estimate a conservative exposure case (i.e., well above the average case) that is still within the range of possible exposures" (USEPA 1989a, p. 6-5). As discussed in the *Exposure Factors Handbook* (USEPA 1990a), USEPA recommends that all values not be at their individual maximums in calculating the RME; professional judgment can be used to combine values to arrive at a set of variables that adequately estimates the RME.

More recent USEPA guidance, however, presents standard default values that typically lead to the RME risk estimates being at the very high end of the risk distribution (USEPA 1990a). In at least two guidance documents (USEPA 1992a, 1992b), USEPA has recognized that the RME approach is incomplete because it presents a point estimate of risk with no understanding of its relationship to the overall risk distribution. In its guidance, USEPA (1992a, 1992b) suggests that a quantitative uncertainty analysis be conducted to develop a distribution of risk. One method for accomplishing this type of analysis is a probabilistic numerical method, such as Monte Carlo simulation. Although the remainder of this section presents exposure parameters that are based primarily on

assumptions consistent with USEPA guidance (USEPA 1989a, 1990a, 1991a), Envirite reserves the right in the future to refine the risk assessment and the uncertainty about point estimates of risk through the use of quantitative uncertainty analysis.

Tables 41 through 50 present RME exposure assumptions for the various pathways and receptors discussed above.

III. PRELIMINARY ECOLOGICAL HAZARD IDENTIFICATION

In this chapter, chemicals of potential ecological concern are identified for ecologically-relevant media (surface water, sediments, and surface soil) through a preliminary screening process. Preliminary ecological endpoints and potential indicator species are also identified. The data used in this preliminary assessment were provided by GZA (1995).

A. Identification of Chemicals of Potential Ecological Concern

Chemicals of Potential Ecological Concern (CPECs) were selected using a screening process in order to focus the assessment on the chemicals most likely to pose ecological risk at the site. The CPECs were selected based on: 1) the observed magnitude and distribution of the chemical concentrations at the site; 2) the frequency of detection; 3) comparison to background concentrations; 4) potential toxicity to ecological receptors; 5) potential for bioaccumulation; and 6) persistence. CPECs were selected for surface water, sediment, and surface soil.

As discussed in chapter II, a comparison of on-site sample concentrations with background concentrations can be useful in identifying non-site related chemicals that are found on or near the site. Based on a comparison between each chemical's maximum detected on-site concentration and its maximum detected background concentration, chemicals considered probable background constituents are identified. These chemicals are not, however, eliminated from the risk assessment at this stage. A more complete statistical analysis will be performed before these chemicals are removed from further consideration.

Detection limits for some analytes exceeded applicable benchmark toxicity values in some of these media, particularly for pesticides/PCBs and for some semivolatile organics and metals. Tables 51 through 55 show the range of detection limits for each medium evaluated. In all cases, the detection limits employed in analyzing these chemicals were consistent with, or below, the practicable quantitation limits (PQLs) recognized by USEPA in the RCRA program.

Ground water and subsurface soils (soils at depths greater than 12 inches) were not considered since ecological receptors typically have limited direct contact with these media. Indirect exposure to ground water (e.g., when ground water discharges to surface water bodies, is exposed at the surface as leachate seeps, or seeps into sediment pore water) will be addressed through the evaluation of surface water and sediment (no leachate seeps were

observed by GZA). Since the majority of plants on the landfill are expected to be shallow-rooted herbaceous species, plant exposure to ground water in the root zone is not expected to be significant.

1. Surface Water

A total of 54 surface water samples were collected from water bodies (Branch Brook and the Naugatuck River) adjacent to the site during June and September-October 1994. This includes 30 samples from Branch Brook, 9 upgradient of the site (3 locations) and 21 adjacent to or downgradient of the site (7 locations), and 24 samples from the Naugatuck River, 9 upgradient of the site (3 locations) and 15 adjacent to or downgradient of the site (5 locations). The upstream samples were used to characterize "background" conditions. All surface water samples were unfiltered.

To evaluate potential ecological risks associated with measured concentrations of chemicals in surface water, USEPA Ambient Water Quality Criteria (AWQC) for the Protection of Aquatic Life (USEPA 1986; 1991b), Connecticut Water Quality Standards (CTDEP 1992), and other available criteria or standards were used as screening benchmarks. In general, chemical-specific AWQC are established based on toxicity testing and other appropriate data (as opposed to AWQC for the Protection of Human Health, which are risk-based), and are normally established to protect all, or the vast majority, of aquatic species. For chemicals which are known to bioaccumulate in aquatic food chains (e.g., mercury), AWQC are often based on Final Residue Values (FVR) which are designed to protect against possible adverse effects of bioaccumulation at higher trophic levels. As such, AWQC provide a suitable gauge of chemical levels at which sensitive aquatic species, and their predators, may be adversely affected.

If a chemical had no established AWQC, a conservative (the lowest reported value for appropriate freshwater species) toxicity threshold value for acute and chronic effects was derived from the literature. AWQC for several of the metals require adjustment based on water hardness (in mg/L as $CaCO_3$). A hardness value of 50 mg/L was assumed (per CTDEP [1992]); this value was similar to calculated hardness values based on measured levels of calcium and magnesium in on-site samples.

a. Branch Brook

Ten inorganic and two organic chemicals were detected in downgradient Branch Brook surface water samples (Table 56). Maximum measured downstream concentrations for copper, mercury, zinc, methylene chloride, and di-n-

butylphthalate were consistent with maximum detected upstream concentrations, suggesting that these chemicals are not site-related. Zinc, methylene chloride, and di-n-butylphthalate did not exceed chronic screening benchmarks and were screened out of the assessment. Since mercury and copper exceeded acute and chronic benchmarks, these chemicals were retained for further background evaluation. Maximum measured values for six (calcium, iron, magnesium, manganese, potassium, and sodium) of the remaining seven chemicals did not exceed chronic screening benchmarks. Cyanide, which was detected in only one of 14 samples, exceeded both acute and chronic screening benchmark levels. However, the criterion for cyanide is based on free (not total) cyanide. Analyzing samples for free (rather than total) cyanide is likely to substantially decrease the measured chemical concentrations, likely to levels below criteria. Based on the above, no chemicals were considered CPECs for Branch Brook surface water. The status of mercury and copper as probable background constituents will be re-evaluated in the next phase of the assessment.

b. Naugatuck River

Seven inorganic and six organic chemicals were detected in downgradient Naugatuck River surface water samples (Table 57), although it should be noted that detection limits were higher than screening benchmarks for several chemicals in at least some samples. Maximum measured downstream concentrations for iron, zinc, and trichloroethene were consistent with maximum detected upstream concentrations, suggesting that these chemicals are not site-related. Iron and trichloroethene did not exceed chronic screening benchmarks and were screened out of the assessment. Zinc exceeded chronic screening benchmarks and was retained for further background evaluation.

None of the other detected chemicals exceeded acute or chronic benchmark values. Based on the above, no chemicals were considered CPECs for Naugatuck River surface water. The status of zinc as a probable background constituent will be re-evaluated in the next phase of the assessment.

2. Sediment

A total of 32 sediment samples were collected from water bodies (Branch Brook and the Naugatuck River) adjacent to the site during June and October 1994. This includes 16 samples from Branch Brook, 4 upgradient of the site (2 locations) and 12 adjacent to

or downgradient of the site (6 locations), and 16 samples from the Naugatuck River, 8 upgradient of the site (4 locations) and 8 adjacent to or downgradient of the site (4 locations). The upstream samples were used to characterize "background" conditions. For sampling locations where more than one depth was sampled during a sampling event, only the data from the top-most stratum (0 to 0.5 feet for these samples) was used in this assessment.

Screening-level sediment guidelines developed by the Ontario Ministry of the Environment (MOE 1993), the New York State Department of Environmental Conservation (NYSDEC 1989), National Oceanic and Atmosphere Administration (NOAA) (Long and Morgan 1990), and USEPA (1988, as updated for individual chemicals) were used to assess potential adverse impacts to ecological receptors from chemicals present in the sediments of Branch Brook and the Naugatuck River. For the MOE (1993) sediment guidelines, the Lowest Effect Level (LEL) value was used; the LEL represents the concentration at which no adverse effect on the majority of freshwater benthic species is likely. Effects Range-Low (ER-L) values from Long and Morgan (1990) were also used, which are similar to LEL values. Since the majority of data used to determine the ER-L values were from marine or estuarine habitats, ER-L values were not used if a LEL or other freshwater-based value was available. LEL, ER-L, and NYSDEC metal guideline values (and LEL and ER-L organic guideline values) are generally considered conservative screening benchmarks since they do not account for chemical bioavailability (i.e., they assume that the chemical is 100 percent bioavailable to benthic organisms).

NYSDEC and USEPA sediment guideline values for organic chemicals are based on equilibrium partitioning. These guideline values control for bioavailability by normalizing based on the total organic carbon (TOC) content of the sediment. A TOC value of one percent was used in this assessment, which is generally consistent with measured sediment TOC levels in Branch Brook and the Naugatuck River. If a sediment guideline value was not available for an organic chemical from the sources cited above, a value was calculated using data inputs from the literature and the equilibrium partitioning approach (USEPA 1988).

a. Branch Brook

Seven inorganic chemicals were detected in downgradient Branch Brook sediment samples (Table 58). Maximum measured downstream concentrations for barium, chromium, lead, and zinc were consistent with maximum detected upstream

concentrations, suggesting that these chemicals are not site-related. Chromium, lead, and zinc did not exceed screening benchmarks and barium in sediments is likely to be in insoluble, non-toxic forms (carbonates and sulfates) and thus unavailable to ecological receptors (USEPA 1986). Therefore, these chemicals were screened out of the assessment.

Maximum measured values for cobalt and nickel did not exceed conservative screening benchmarks. Maximum copper concentrations marginally exceeded the most conservative available benchmark (the MOE benchmark; hazard quotient of 1.06) but did not exceed NYSDEC (19 mg/kg) or NOAA (70 mg/kg) sediment guideline values. Based on the above, no inorganic chemicals are considered CPECs for Branch Brook sediments.

Twenty-one organic chemicals were detected in downgradient Branch Brook sediment samples (Table 58). Maximum measured values for 13 of these organic chemicals did not exceed conservative screening benchmarks and were immediately screened out. For seven of the remaining eight chemicals (aldrin, benzo[a]pyrene, benzo[k]fluoranthene, 4,4'-DDT, dieldrin, fluoranthene, and pyrene), exceedences were based on conservative screening benchmarks (all were based on MOE guideline values) which do not account for the bioavailability of the chemical to benthic organisms. Re-evaluating these seven chemicals using the equilibrium partitioning approach (which accounts for chemical bioavailability) and a total organic carbon level of one percent, none of these chemicals exceed partitioning-based benchmarks.

Screening criteria for the remaining organic chemical (diethylphthalate) was already based on the equilibrium partitioning approach. The hazard quotient at the maximum detected concentration was less than three, but was less than one based on mean measured concentrations. Since this chemical exceeded screening benchmarks in only one of 12 total samples, and mean concentrations were well below the benchmark value, this chemical is unlikely to result in significant, widespread effects to ecological receptors. Based on the above, no organic chemicals are considered CPECs in Branch Brook sediments.

b. Naugatuck River

Twelve inorganic chemicals were detected in downgradient Naugatuck River sediment samples (Table 59). Maximum measured downstream concentrations for barium, cadmium, copper, lead, and zinc were consistent with maximum detected

upstream concentrations, suggesting that these chemicals are not site-related. Since lead did not exceed screening benchmarks, it was screened out of the assessment. Barium in sediments is likely to be in insoluble, non-toxic forms (carbonates and sulfates) and thus unavailable to ecological receptors (USEPA 1986), and was also screened out. Since cadmium, copper, and zinc exceeded screening benchmarks, these chemicals were retained for further background evaluation.

Maximum measured values for arsenic and cobalt did not exceed conservative screening benchmarks and were screened out. Maximum nickel concentrations marginally exceeded the most conservative available criterion (hazard quotient of 1.4) but did not exceed NYSDEC (22 mg/kg) or NOAA (30 mg/kg) sediment criteria.

No screening benchmarks were available for potassium or vanadium. Potassium, an essential nutrient, is unlikely to adversely effect aquatic receptors. Vanadium was detected in only a single sample at relatively low concentrations.

Chromium and silver were detected in downstream samples at levels exceeding concentrations in upstream samples. The maximum chromium concentration was adjacent to Envirite's southern property line, while the maximum silver concentration was below the Thomaston POTW's outfall. Since these two chemicals were at, or exceeded, screening benchmarks based on both the maximum concentration (hazard quotients of 3.0 and 2.2, respectively) and the mean concentration (hazard quotients of 1.2 and 1.0, respectively), they were retained as CPECs. The status of cadmium, copper and zinc as probable background constituents will be re-evaluated in the next phase of the assessment.

Twenty-two organic chemicals were detected in downgradient Naugatuck River sediment samples (Table 59). Maximum measured downstream concentrations for acetone, anthracene, 2-butanone, dibenzofuran, di-n-butylphthalate, fluoranthene, fluorene, phenanthrene, and pyrene were less than maximum detected upstream concentrations, suggesting that these chemicals are not site-related. Although fluoranthene and phenanthrene exceeded conservative screening benchmarks (the other 7 chemicals did not exceed benchmarks), these two chemicals did not exceed benchmarks based on equilibrium partitioning at a TOC level of one percent. Thus, these 9 chemicals were screened out of the assessment.

Maximum measured values for acenaphthene, benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate, bromodichloromethane, chloroform, methylene chloride, naphthalene, and tetrachloroethene did not exceed conservative screening

benchmarks and were screened out of the assessment. For four (benzo[a]pyrene, benzo[k]fluoranthene, dieldrin, and heptachlor) of the remaining five chemicals, exceedences were based on conservative screening benchmarks which do not account for the bioavailability of the chemical to benthic organisms. Re-evaluating these four chemicals using the equilibrium partitioning approach (which accounts for chemical bioavailability) and a TOC level of one percent, none of these chemicals exceed partitioning-based benchmarks.

Screening criteria for the remaining organic chemical (methoxychlor) was already based on the equilibrium partitioning approach. The hazard quotient, based on the maximum detected concentration, was only 1.1, and this chemical was detected in only one sample. Based on the above, no organic chemicals are considered CPECs in Naugatuck River sediments.

3. Surface Soil

Surface soil data are available from soil borings of the zero to one foot strata at 24 on-site locations; these data were collected in November-December 1994. Eight surface soil samples were collected at locations to characterize background conditions (GZA 1995).

Promulgated criteria for assessing the toxicity of surface soil contaminants to terrestrial ecological receptors are unavailable. As part of this assessment, soil benchmarks were developed based on the toxicity of chemicals in soil to plants and earthworms as determined from the literature. These benchmarks were used to screen the chemicals detected in surface soils.

Seventeen inorganics were detected in on-site surface soils (Table 60). Maximum measured concentrations for barium and lead were consistent with maximum background concentrations. Barium did not exceed screening benchmarks and was screened out of the assessment. Lead exceeded screening benchmarks in only a single sample (out of 22), and was also screened out. Eight additional inorganics (arsenic, beryllium, cobalt, mercury, selenium, thallium, tin, and vanadium) did not exceed soil benchmarks and were screened out of the assessment. Antimony was very infrequently detected (1 of 22 samples), although the single detect exceeded a conservative screening benchmark.

Chromium exceeded soil benchmarks frequently (13 exceedences), as did copper (14), nickel (12), cadmium (5), silver (4), and zinc (17). For each of these chemicals. except cadmium and silver, both maximum and mean concentrations exceeded benchmarks. Thus, these six metals were retained as CPECs even though the maximum

background concentration exceeded the mean on-site concentration (as well as the screening benchmarks) for each of these chemicals.

Thirty-eight organic chemicals (including two PCB Aroclors) were detected in on-site surface soils (Table 61). Nine of these chemicals were detected in two or fewer samples (out of 24 total samples or 8 percent) and were screened out based on frequency of detection (Table 61). Eight organic chemicals (acetone, bis[2-ethylhexyl]phthalate, 2-butanone, chloroform, di-n-butylphthalate, diethylphthalate, 4-methyl-2-pentanone, and methylene chloride) were consistently detected in sample blanks and were screened out on this basis. Of the remaining 21 organic chemicals, 15 did not exceed screening benchmarks (Table 61) and were screened out.

Five of the six remaining organic chemicals were PAHs. Benzo(a)pyrene was the only one for which a screening benchmark was available; this benchmark was exceeded only one time, by a relatively small margin (hazard quotient of 1.5). The remaining four PAHs were detected at maximum concentrations comparable to, or below, that of benzo(a)pyrene. Thus, these five PAHs are not likely to present a significant risk to ecological receptors at the site and were screened out.

Di-n-octylphthalate was detected relatively frequently (17 of 24 samples). Its maximum detected soil concentration was 0.19 mg/kg and its mean soil concentration was 0.08 mg/kg (Table 61). Since no screening benchmark was available for this chemical, it was retained as a CPEC to allow further evaluation in subsequent phases of the assessment.

4. Summary of CPECs

In summary, no CPECs were selected for Branch Brook surface water or sediments. In the Naugatuck River, no chemicals were selected as CPECs in surface water, although chromium and silver were selected as CPECs in sediments. In surface soils, chromium, copper, nickel, cadmium, silver, zinc, and di-n-octylphthalate were retained as CPECs. The status of mercury and copper in Branch Brook surface water; zinc in Naugatuck River surface water; and cadmium, copper, and zinc in Naugatuck River sediments as probable background constituents will be re-evaluated in the next phase of the assessment.

B. Potential Indicator Species

Because of the complexity of natural systems, it is rarely, if ever, possible to assess potential impacts to all ecological receptors present within an area. Therefore, indicator

species or species groups are frequently used as surrogates to evaluate potential risks to the entire ecological community. Selection criteria for choosing indicator species may include: 1) known or likely occurrence within the vicinity of the site; 2) representative of a specific taxonomic group, life history trait, and/or trophic level in the habitats present; 3) representative of exposed populations at the site because of toxicological sensitivity or the magnitude of potential exposure; and 4) sufficient toxicological information is available for the species on which to base an evaluation. This section discusses potential indicator species for use in subsequent phases of the assessment.

Since limited field work has been done in terrestrial habitats at the site and, because inquiries (agency consultation) as to the potential occurrence of rare and endangered species at the site have not yet been made, the selection of potential indicator species groups should be considered preliminary. In later phases of the assessment, a reconnaissance-level field survey of the site will be conducted by qualified biologists. A literature review and agency consultation will be conducted to supplement field observations regarding species potentially present at the site and to determine the potential presence of rare and endangered species. Once these activities are completed, the list of indicator species can be finalized.

For aquatic habitats (Branch Brook and the Naugatuck River), the following indicator species or species groups are proposed:

- **Benthic Invertebrates** - Benthic invertebrates living in or on sediments are potentially exposed to chemicals present in sediment pore water and/or surface water. For species which ingest bulk sediments, additional exposures can occur during feeding activities. In addition, these organisms serve as food for many other organisms (such as fish) and are therefore important in aquatic food chains.

- **Fish** - Fish may be exposed to chemicals present in surface water and sediments through direct contact or via the food chain. In addition, these organisms often serve as food for wildlife and are therefore important in aquatic and terrestrial food chains.

As part of the Consent Order, Rapid Bioassessment Protocol benthic invertebrate and fish studies were conducted at several locations within Branch Brook and the Naugatuck River. Thus, site-specific data are available to directly evaluate potential adverse effects to these groups due to site-related chemicals.

The following indicator species or species groups are proposed for terrestrial habitats:

- **Terrestrial Plants** - Plants are exposed to chemicals present in the surface soils though root uptake. As such, they are representative of direct effects to primary producers, and indirect effects (habitat alteration and food chain transfer of chemicals) to various animal groups.

- **Soil Invertebrates** - Earthworms are the "standard" surrogate; it is the species group for which the most toxicological information is available. These organisms are maximally exposed to chemicals present in soils, both by direct contact and by ingestion, and thus serve as good indicators of potential effects to detritivores present in terrestrial systems. In addition, these organisms serve as food for many other organisms and are therefore important in terrestrial food chains.

Additional, upper trophic level species can be selected for terrestrial habitats following completion of the reconnaissance-level field survey, literature review, and agency consultation. Wildlife species will be selected that forage in the terrestrial habitat types present on-site, as well as species which may also utilize adjacent aquatic areas to obtain food. Because of the amount of information potentially available on toxic effects, bird and mammal species will be emphasized during the selection process.

C. Potential Ecological Endpoints

There are two types of ecological endpoints, assessment endpoints and measurement endpoints. An assessment endpoint is an explicit expression of the environmental value that is to be protected, while a measurement endpoint is a measurable ecological characteristic that is related to the valued characteristic chosen as the assessment endpoint (USEPA 1992c). The general considerations for selecting assessment and measurement endpoints are summarized in USEPA (1992c) and discussed in detail in Suter (1989; 1993).

Assessment and measurement endpoints may involve individual organisms, populations, communities, or the ecosystem itself (USEPA 1992c). Effects to individual organisms are important for some receptors, such as rare and endangered species, although community- and population-level effects are typically more relevant to ecosystems. However, community- and population-level effects are frequently difficult to directly evaluate without long-term and extensive study. Measurement endpoints at the individual organism level (e.g., mortality or reproductive success) can often, however, be used to evaluate an assessment endpoint at the population level (USEPA 1992c). In addition, use of criteria or benchmark values designed to protect sensitive components of the community (e.g., Ambient Water Quality Criteria for the

Protection of Aquatic Life) can be useful in evaluating potential community- and/or population-level effects.

The following assessment endpoints for terrestrial habitats are proposed for this screening-level ecological risk assessment:

- No ecologically significant adverse effects (growth and reproduction) to selected plant and lower trophic level animal indicator species or species groups

- No ecologically significant adverse effects (reproduction) to selected upper trophic level animal indicator species

These assessment endpoints will be evaluated using toxicological threshold values from the literature (which are based on laboratory and field data) and/or criteria/guideline values as measurement endpoints. As part of the risk characterization, a semi-quantitative evaluation of these assessment endpoints will be conducted by comparing projected exposures of selected indicator species with toxicological threshold values (the measurement endpoints) for each appropriate medium using the quotient method (Suter 1993).

For aquatic areas, the following assessment endpoints are proposed:

- No significant difference in benthic invertebrate abundance, diversity, or the presence of pollution-sensitive benthic invertebrate taxa between upstream and downstream locations in Branch Brook which are attributable to site-related chemicals

- No significant difference in fish abundance or diversity between upstream and downstream locations in Branch Brook which are attributable to site-related chemicals

- No significant difference in benthic invertebrate abundance, diversity, or the presence of pollution-sensitive benthic invertebrate taxa between upstream and downstream locations in the Naugatuck River which are attributable to site-related chemicals

- No significant difference in fish abundance or diversity between upstream and downstream locations in the Naugatuck River which are attributable to site-related chemicals

For the above aquatic habitat assessment endpoints, measurement endpoints will consist of various community metrics (e.g., species richness, diversity) calculated for upstream and downstream locations within each water body for benthic invertebrates and fish.

IV. SUMMARY AND CONCLUSIONS

This report presents the First Interim Deliverable of the PHERE of Envirite's Thomaston, Connecticut site. In accordance with USEPA requirements, two components of the Human Health Risk Assessment (Hazard Identification and Exposure Assessment) and one component of the Ecological Risk Assessment (Hazard Identification) are presented herein. Other than a reconnaissance-level field survey of the site to be conducted by a qualified biologist and some limited literature review and agency consultation, ENVIRON does not believe that additional data collection activities are necessary to complete the PHERE.

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TABLES

Table 1
Chemicals Detected in at Least One of the Sampled Media

Chemical	Ground Water		Sediment		Soil		Surface Water		Leachate		Piezometer		Totals	
	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples
Volatile Compounds														
1,1,1-Trichloroethane	19	91			8	28			1	9			28	128
1,1,2-Trichloroethane	3	91											3	91
1,1-Dichloroethane	4	91											4	91
1,1-Dichloroethene	12	91			2	23							14	114
1,2-Dichloroethane	25	91							3	30			28	121
1,2-Dichloropropane	2	90							1	9			3	99
2-Butanone	2	79	7	28	33	101			6	23			48	231
2-Hexanone	1	79			2	14							3	93
4-Methyl-2-pentanone	4	79			54	120			1	9			59	208
Acetone	15	79	20	32	117	130	9	22	10	10			171	273
Acrylonitrile					1	3							1	3
Benzene	16	91			9	40			3	30			28	161
Bromodichloromethane	3	91	1	8	1	8							5	107
Carbon disulfide					19	74			4	9			23	83
Carbon tetrachloride					2	34							2	34
Chlorobenzene					2	23							2	23
Chloroform	30	91	21	32	96	128			6	31			153	282
Cis-1,2-Dichloroethene	51	79	1	12	15	73							67	164
Ethylbenzene	3	91			61	122			1	1			65	214
Methylene chloride	21	93	32	32	87	125	10	36	9	9			159	295
Styrene					10	59			3	10			13	69
Tetrachloroethene	58	91	2	20	86	128	3	10	18	33			167	282
Toluene	3	91			89	130			2	9			94	230
Trans-1,2-Dichloroethene	11	91			9	23							20	114
Trichloroethene	59	91	1	12	55	127	15	16	14	32	1	3	145	281
Vinyl acetate	4	78											4	78
Vinyl chloride	24	91											24	91
Xylenes (total)	14	79			94	130			3	9			111	218

Table 1
Chemicals Detected in at Least One of the Sampled Media

Chemical	Ground Water		Sediment		Soil		Surface Water		Leachate		Piezometer		Totals	
	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples
Semivolatile Compounds														
1,2,4-Trichlorobenzene					1	14			1	5			2	19
1,2-Dichlorobenzene	3	91											3	91
2,4,5-Trichlorophenol	12	45	1	7									13	52
2,4,6-Trichlorophenol	8	80							1	5			9	85
2,4-Dichlorophenol	17	80							1	5			18	85
2,4-Dimethylphenol	2	80			2	19							4	99
2,6-Dichlorophenol	5	44											5	44
2-Chloronaphthalene	1	36											1	36
2-Chlorophenol	3	80											3	80
2-Methylnaphthalene					20	88							20	88
2-Methylphenol					3	18			3	35			6	53
3,3'-Dichlorobenzidine											1	7	1	7
3,3'-Dimethylbenzidine	2	6											2	6
4-Chloro-3-methylphenol	2	76											2	76
4-Methylphenol					2	18			3	34			5	52
4-Nitrophenol	1	76											1	76
Acenaphthene	1	79	3	19	7	61							11	159
Acenaphthylene	1	80			4	34							5	114
Anthracene			11	31	47	117							58	148
Benzo(a)anthracene	1	80			6	34							7	114
Benzo(a)pyrene	1	80	21	31	61	111							83	222
Benzo(b)fluoranthene	1	80	23	31	63	113							87	224
Benzo(g,h,i)perylene					2	20							2	20
Benzo(k)fluoranthene	1	80	23	31	62	99							86	210
Benzoic acid					1	1							1	1
Benzylbutylphthalate	18	82											18	82
Bis(2-chloroisopropyl)ether	1	75											1	75
Bis(2-ethylhexyl)phthalate	53	81	9	31	114	119	1	10	6	12			183	253
Butylbenzylphthalate			2	11	11	46							13	57

Table 1
Chemicals Detected in at Least One of the Sampled Media

Chemical	Ground Water		Sediment		Soil		Surface Water		Leachate		Piezometer		Totals	
	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples
Chrysene	3	82			6	34							9	116
Di-n-butylphthalate	49	82	29	31	104	119	5	30	3	3			190	265
Di-n-octylphthalate	2	80			64	107							66	187
Dibenzo(a,h)anthracene					1	20							1	20
Dibenzofuran			3	19	9	84							12	103
Diethyl phthalate					4	14							4	14
Diethylphthalate	5	82	13	23	25	99							43	204
Dimethylphthalate	1	79											1	79
Fluoranthene	4	82	26	31	78	119							108	232
Fluorene			12	19	15	109							27	128
Hexachlorobutadiene	1	80											1	80
Indeno(1,2,3-cd)pyrene					2	20							2	20
Isophorone					4	22							4	22
Methoxychlor	3	45	2	10	3	34							8	89
N-Nitrosodimethylamine	17	77											17	77
N-Nitrosodiphenylamine	2	80			1	20							3	100
Naphthalene	9	80	1	8	27	103			3	5			40	196
Pentachlorophenol	1	80											1	80
Phenacetin					1	2							1	2
Phenanthrene	4	82	22	31	78	119							104	232
Phenol	1	79			4	31							5	110
Pyrene	3	78	25	31	82	119							110	228
Pyridine									1	3			1	3
PCBs/Pesticides														
4,4'-DDD					1	16							1	16
4,4'-DDE	1	80			21	73							22	153
4,4-DDT	1	80	1	6	52	99							54	185
Aldrin	3	80	4	8									7	88
Alpha-BHC	1	42			1	16							2	58
Aroclor 1016					1	2							1	2

Table 1
Chemicals Detected in at Least One of the Sampled Media

Chemical	Ground Water		Sediment		Soil		Surface Water		Leachate		Piezometer		Totals	
	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples
Aroclor 1221					1	2							1	2
Aroclor 1232	2	42			1	2							3	44
Aroclor 1242					1	2							1	2
Aroclor 1248					3	18							3	18
Aroclor 1254	1	80			59	101							60	181
Aroclor 1260					23	91							23	91
Beta-BHC	4	80											4	80
Carbazole					2	17							2	17
Decachlorobiphenyl	46	46	16	16			18	18	2	2	8	8	90	90
Delta-BHC	2	80			7	48					1	3	10	131
Dieldrin	7	80	2	10	4	38					2	4	15	132
Endosulfan I	1	80											1	80
Endosulfan II	3	82											3	82
Endosulfan sulfate	2	42											2	42
Endrin aldehyde	1	80			6	18							7	98
Gamma Chlordane					1	15							1	15
Gamma-BHC (Lindane)	1	80			22	110	1	3					24	193
Heptachlor	9	80	2	8					1	34			12	122
Heptachlor epoxide	1	42			1	16							2	58
Tetrachloro-m-xylene	46	46	16	16			18	18	2	2	8	8	90	90
Inorganic Compounds														
Antimony	1	79	1	2	3	27							5	108
Arsenic	42	122	1	5	111	117			5	29			159	273
Barium	17	134	17	17	117	117			34	46			185	314
Beryllium	2	79			60	102							62	181
Cadmium	21	132	5	9	84	117			21	56			131	314
Calcium	122	123					35	35			20	20	177	178
Chromium	33	134	17	17	117	117			45	95			212	363
Cobalt	14	81	17	17	102	102			4	29			137	229
Copper	94	135	17	17	117	117	2	19	34	46	10	12	274	346

Table 1
Chemicals Detected in at Least One of the Sampled Media

Chemical	Ground Water		Sediment		Soil		Surface Water		Leachate		Piezometer		Totals	
	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples	Detects	Samples
Cyanide							1	12					1	12
Iron	114	135					35	35			18	20	167	190
Lead	14	122	16	17	110	117			15	38			155	294
Magnesium	123	123					35	35			20	20	178	178
Manganese	121	135					23	35			11	20	155	190
Mercury	1	41			33	89	8	19	1	18			43	167
Nickel	89	135	16	17	117	117			29	42			251	311
Potassium	123	123	1	1			35	35			20	20	179	179
Selenium					21	81							21	81
Silver	4	79	3	5	70	117			1	2			78	203
Sodium	135	135					35	35			20	20	190	190
Thallium					33	91							33	91
Tin					11	64							11	64
Vanadium			1	5	85	100							86	105
Zinc	134	135	17	17	117	117	28	35	45	46	20	20	361	370

Table 2
Summary Statistics For Chemicals Detected in Groundwater Samples
(Total)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
3,3'-Dimethylbenzidine	2	6	1.00E-02	1.00E-02	1.30E-03	1.30E-03	3.77E-03
2-Chloronaphthalene	1	36	1.00E-02	1.00E-02	1.00E-02	1.00E-02	5.14E-03
N-Nitrosodimethylamine	17	77	1.00E-02	1.00E-02	4.00E-04	0.03	5.72E-03
Phenol	1	79	1.00E-02	1.00E-02	0.03	0.03	5.25E-03
2-Chlorophenol	3	80	1.00E-02	1.00E-02	3.00E-04	1.20E-03	4.84E-03
1,2-Dichlorobenzene	3	91	1.00E-02	1.00E-02	1.00E-04	2.40E-03	4.87E-03
Bis(2-chloroisopropyl)ether	1	75	1.00E-02	1.00E-02	6.10E-03	6.10E-03	5.01E-03
2,4-Dimethylphenol	2	80	1.00E-02	1.00E-02	0.06	0.07	6.44E-03
2,4-Dichlorophenol	17	80	1.00E-02	1.00E-02	1.20E-03	1.40	0.05
Naphthalene	9	80	1.00E-02	1.00E-02	1.00E-04	0.04	5.58E-03
2,6-Dichlorophenol	5	44	1.00E-02	1.00E-02	1.90E-03	0.04	6.11E-03
Hexachlorobutadiene	1	80	1.00E-02	1.00E-02	1.00E-02	1.00E-02	5.06E-03
4-Chloro-3-methylphenol	2	76	1.00E-02	0.02	4.00E-03	4.30E-03	9.78E-03
2,4,6-Trichlorophenol	8	80	1.00E-02	1.00E-02	6.00E-04	0.18	6.98E-03
2,4,5-Trichlorophenol	12	45	1.00E-02	1.00E-02	5.00E-03	0.17	0.02
Dimethylphthalate	1	79	1.00E-02	1.00E-02	5.90E-03	5.90E-03	5.01E-03
Acenaphthylene	1	80	1.00E-02	1.00E-02	2.00E-04	2.00E-04	4.94E-03
Acenaphthene	1	79	1.00E-02	1.00E-02	0.18	0.18	7.22E-03
4-Nitrophenol	1	76	0.03	0.05	8.00E-04	8.00E-04	0.02
Diethylphthalate	4	80	1.00E-02	1.00E-02	1.30E-03	1.00E-02	4.96E-03
N-Nitrosodiphenylamine	2	80	1.00E-02	1.00E-02	6.00E-04	1.00E-02	5.01E-03
Pentachlorophenol	1	80	0.03	0.05	1.00E-03	1.00E-03	0.02
Phenanthrene	3	80	1.00E-02	1.00E-02	2.00E-04	9.00E-04	4.83E-03
Di-n-butylphthalate	48	80	1.00E-02	1.00E-02	4.00E-04	0.03	3.38E-03
Fluoranthene	3	80	1.00E-02	1.00E-02	5.00E-04	1.60E-03	4.85E-03
Pyrene	3	78	1.00E-02	1.00E-02	3.00E-04	1.10E-03	4.83E-03
Benzylbutylphthalate	17	80	1.00E-02	1.00E-02	5.00E-04	0.02	4.76E-03
Benzo(a)anthracene	1	80	1.00E-02	1.00E-02	5.00E-04	5.00E-04	4.94E-03

Table 2
Summary Statistics For Chemicals Detected in Groundwater Samples
(Total)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Bis(2-ethylhexyl)phthalate	51	79	7.40E-03	1.00E-02	3.00E-04	0.23	0.02
Di-n-octylphthalate	2	80	1.00E-02	1.00E-02	9.00E-04	1.90E-03	4.91E-03
Chrysene	2	80	1.00E-02	0.02	4.00E-04	7.00E-04	4.95E-03
Benzo(b)fluoranthene	1	80	1.00E-02	1.00E-02	6.00E-04	6.00E-04	4.94E-03
Benzo(k)fluoranthene	1	80	1.00E-02	1.00E-02	6.00E-04	6.00E-04	4.94E-03
Benzo(a)pyrene	1	80	1.00E-02	1.00E-02	6.00E-04	6.00E-04	4.94E-03
Arsenic	15	41	5.00E-03	0.05	1.70E-03	0.05	9.41E-03
Barium	8	41	0.50	0.50	0.07	1.70	0.39
Cadmium	7	41	1.00E-02	1.00E-02	6.10E-03	0.09	8.76E-03
Calcium	41	41			1.00	480	128
Chromium	13	41	1.00E-02	0.04	0.04	0.53	0.08
Copper	35	41	0.02	0.11	0.02	6.70	0.34
Iron	40	41	44	44	0.03	400	47
Lead	6	41	2.00E-03	0.06	0.07	0.17	0.04
Magnesium	41	41			0.05	690	100
Manganese	41	41			0.02	20	3.41
Mercury	1	41	2.00E-04	0.05	1.40E-03	1.40E-03	1.35E-03
Nickel	32	41	0.03	0.03	0.03	2 10	0.24
Potassium	41	41			0.10	64	17
Sodium	41	41			0.10	780	172
Zinc	41	41			1.00E-02	5.90	0.68
Cobalt	9	38	1.00E-02	0.10	0.10	0.24	0.08
Tetrachloro-m-xylene	45	45			5.30E-05	3.30E-04	2.03E-04
Decachlorobiphenyl	45	45			1.20E-05	2.60E-04	1.11E-04
Alpha-BHC	1	42	5.00E-05	1.00E-02	1.30E-05	1.30E-05	4.41E-03
Beta-BHC	4	80	1.70E-05	1.00E-02	2.00E-05	4.30E-04	2.21E-03
Delta-BHC	2	80	5.50E-06	1.00E-02	1.20E-05	5.00E-05	2.20E-03
Gamma-BHC□(Lindane)	1	80	4.00E-06	1.00E-02	5.50E-05	5.50E-05	2.20E-03

Table 2
Summary Statistics For Chemicals Detected in Groundwater Samples
(Total)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Heptaclor	9	80	3.50E-06	1.00E-02	7.50E-06	2.00E-04	2.22E-03
Aldrin	3	80	6.00E-06	1.00E-02	5.50E-06	1.70E-05	2.23E-03
Heptaclor epoxide	1	42	1.40E-05	1.00E-02	2.00E-05	2.00E-05	4.41E-03
Endosulfan I	1	80	8.00E-06	1.00E-02	2.10E-05	2.10E-05	2.20E-03
Dieldrin	7	80	7.00E-06	1.00E-02	1.10E-05	1.30E-03	2.23E-03
4,4'-DDE	1	80	1.70E-05	1.00E-02	8.50E-06	8.50E-06	2.21E-03
Endosulfan II	2	80	1.60E-05	1.00E-02	1.00E-04	1.60E-04	2.22E-03
Endosulfan sulfate	2	42	1.00E-04	1.00E-02	7.90E-06	7.30E-05	4.41E-03
4,4-DDT	1	80	7.50E-06	1.00E-02	9.00E-05	9.00E-05	2.21E-03
Methoxychlor	3	45	3.50E-05	1.60E-03	1.50E-04	3.70E-04	2.12E-04
Endrin aldehyde	1	80	1.20E-05	1.00E-02	2.00E-04	2.00E-04	2.22E-03
Aroclor 1232	2	42	1.00E-03	0.25	1.40E-03	1.40E-03	0.10
Aroclor 1254	1	80	1.00E-03	0.25	3.80E-03	3.80E-03	0.06
Acetone	15	79	1.00E-02	1.00E-02	1.30E-03	2.40	0.04
Cis-1,2-Dichloroethene	51	79	1.00E-02	1.00E-02	7.00E-04	2.40	0.16
2-Butanone	2	79	1.00E-02	1.00E-02	0.56	6.90	0.10
4-Methyl-2-pentanone	4	79	1.00E-02	1.00E-02	1.00E-03	18	0.28
2-Hexanone	1	79	1.00E-02	0.20	1.40E-03	1.40E-03	6.16E-03
Xylenes (total)	14	79	1.00E-02	1.00E-02	7.00E-04	5.00	0.09
Vinyl acetate	4	78	1.00E-02	0.20	8.00E-04	0.02	6.48E-03
1,1,1-Trichloroethane	19	91	1.00E-02	0.20	6.00E-04	0.02	6.14E-03
Benzene	16	91	1.00E-02	1.00E-02	6.00E-04	0.20	8.02E-03
Bromodichloromethane	3	91	1.00E-02	0.20	9.00E-04	3.40E-03	5.94E-03
Chloroform	30	91	1.00E-02	0.20	6.00E-04	0.04	6.86E-03
Ethylbenzene	3	91	1.00E-02	1.00E-02	0.93	4.90	0.09
Methylene chloride	20	91	1.00E-02	0.20	5.00E-04	0.05	6.28E-03
Trans-1,2-Dichloroethene	11	91	1.00E-02	0.20	8.00E-04	0.29	9.81E-03
Tetrachloroethene	58	91	1.00E-02	1.00E-02	6.70E-04	0.33	0.03

Table 2
Summary Statistics For Chemicals Detected in Groundwater Samples
(Total)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Toluene	3	91	1.00E-02	1.00E-02	2.50	20	0.33
1,1,2-Trichloroethane	3	91	1.00E-02	0.20	6.00E-04	0.02	6.15E-03
Trichloroethene	59	91	1.00E-02	1.00E-02	3.00E-04	0.74	0.05
Vinyl chloride	24	91	1.00E-02	1.00E-02	1.90E-03	0.61	0.03
1,1-Dichloroethane	4	91	1.00E-02	0.20	6.00E-04	1.00E-03	5.86E-03
1,1-Dichloroethene	12	91	1.00E-02	0.20	4.00E-04	9.30E-03	5.83E-03
1,2-Dichloroethane	25	91	1.00E-02	0.20	6.00E-04	0.30	9.66E-03
1,2-Dichloropropane	2	90	1.00E-02	0.20	9.00E-04	1.10E-03	5.97E-03

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 3
Summary Statistics For Chemicals Detected in Background Groundwater Samples
(Total)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Diethylphthalate	1	2	1.00E-02	1.00E-02	1.00E-04	1.00E-04	2.55E-03
Phenanthrene	1	2	1.00E-02	1.00E-02	2.50E-03	2.50E-03	3.75E-03
Di-n-butylphthalate	1	2	1.00E-02	1.00E-02	1.60E-03	1.60E-03	3.30E-03
Fluoranthene	1	2	1.00E-02	1.00E-02	3.60E-03	3.60E-03	4.30E-03
Benzylbutylphthalate	1	2	1.00E-02	1.00E-02	2.70E-03	2.70E-03	3.85E-03
Bis(2-ethylhexyl)phthalate	2	2			5.10E-03	0.03	0.02
Chrysene	1	2	1.00E-02	1.00E-02	1.60E-03	1.60E-03	3.30E-03
Calcium	1	1			15	15	15
Copper	1	1			0.08	0.08	0.08
Iron	1	1			28	28	28
Magnesium	1	1			10.00	10.00	10.00
Manganese	1	1			0.88	0.88	0.88
Nickel	1	1			0.03	0.03	0.03
Potassium	1	1			9.60	9.60	9.60
Sodium	1	1			14	14	14
Zinc	1	1			0.17	0.17	0.17
Tetrachloro-m-xylene	1	1			2.30E-04	2.30E-04	2.30E-04
Decachlorobiphenyl	1	1			8.70E-05	8.70E-05	8.70E-05
Endosulfan II	1	2	1.00E-02	1.00E-02	1.00E-04	1.00E-04	2.55E-03
Methylene chloride	1	2	1.00E-02	1.00E-02	3.30E-03	3.30E-03	4.15E-03

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 4
Summary Statistics For Chemicals Detected in Groundwater Samples
(Dissolved)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Antimony	1	79	0.40	0.40	0.05	0.05	0.20
Arsenic	26	79	5.00E-03	0.05	2.50E-03	0.06	7.74E-03
Barium	8	91	0.50	0.50	0.07	2.00	0.34
Beryllium	2	79	1.00E-03	0.02	0.02	0.04	0.01
Cadmium	14	91	1.00E-02	1.00E-02	5.00E-03	0.11	8.78E-03
Calcium	78	79	0.10	0.10	0.60	570	121
Chromium	19	91	1.00E-02	0.40	0.04	0.60	0.06
Copper	57	91	0.02	0.02	0.02	9.70	0.35
Iron	72	91	0.02	0.03	0.03	530	30
Lead	7	79	2.00E-03	0.06	0.06	0.25	0.04
Magnesium	79	79			0.29	700	78
Manganese	78	91	0.02	0.05	0.02	17	2.84
Nickel	55	91	0.03	0.03	0.03	2.30	0.21
Potassium	79	79			2.50	55	15
Silver	4	79	3.00E-03	0.03	0.03	0.05	0.02
Sodium	91	91			9.40	970	165
Zinc	90	91	1.00E-02	1.00E-02	1.00E-02	10.00	0.71
Cobalt	5	43	1.00E-02	0.10	0.10	0.19	0.06

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 5
Summary Statistics For Chemicals Detected in Background Groundwater Samples
(Dissolved)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Arsenic	1	2	5.00E-03	5.00E-03	1.00E-02	1.00E-02	6.25E-03
Barium	1	2	0.50	0.50	0.78	0.78	0.51
Calcium	2	2			13	34	24
Chromium	1	2	0.04	0.04	0.60	0.60	0.31
Copper	1	2	0.02	0.02	1.70	1.70	0.86
Iron	1	2	0.03	0.03	210	210	105
Lead	1	2	0.06	0.06	0.30	0.30	0.17
Magnesium	2	2			2.20	36	19
Manganese	1	2	0.05	0.05	2.70	2.70	1.36
Nickel	1	2	0.03	0.03	0.36	0.36	0.19
Potassium	2	2			3.60	18	11
Sodium	2	2			14	120	67
Zinc	2	2			0.03	1.30	0.67

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 6
Summary Statistics For Upgradient Branch Brook Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Acenaphthene	1	4	0.33	0.33	0.06	0.06	0.14
Dibenzofuran	1	4	0.33	0.33	0.04	0.04	0.13
Diethylphthalate	3	4	0.33	0.33	0.03	0.07	0.07
Fluorene	1	4	0.33	0.33	0.05	0.05	0.14
Phenanthrene	2	4	0.33	0.33	0.20	0.31	0.21
Anthracene	1	4	0.33	0.33	0.05	0.05	0.14
Di-n-butylphthalate	4	4			0.14	0.22	0.18
Fluoranthene	3	4	0.33	0.33	0.05	0.60	0.35
Pyrene	4	4			0.04	0.93	0.37
Butylbenzylphthalate	1	4	0.33	0.33	0.13	0.13	0.16
Bis(2-ethylhexyl)phthalate	1	4	0.33	0.33	0.13	0.13	0.16
Benzo(b)fluoranthene	1	4	0.33	0.33	0.18	0.18	0.17
Benzo(k)fluoranthene	1	4	0.33	0.33	0.18	0.18	0.17
Benzo(a)pyrene	1	4	0.33	0.33	0.19	0.19	0.17
Antimony	1	2	8.00	8.00	8.00	8.00	6.00
Barium	2	2			29	400	215
Chromium	2	2			8.80	13	11
Cobalt	2	2			6.00	7.60	6.80
Copper	2	2			6.60	12	9.30
Lead	2	2			1.60	410	206
Nickel	1	2	0.60	0.60	12	12	6.15
Zinc	2	2			22	170	96
Aldrin	1	2	8.80E-03	8.80E-03	1.30E-03	1.30E-03	2.85E-03
Tetrachloro-m-xylene	2	2			0.02	0.02	0.02
Decachlorobiphenyl	2	2			0.02	0.02	0.02
Methylene chloride	4	4			7.40E-03	0.01	8.88E-03
Acetone	1	4	1.00E-02	1.00E-02	6.40E-03	6.40E-03	5.35E-03
Chloroform	3	4	1.00E-02	1.00E-02	8.00E-04	1.00E-03	1.92E-03
TOC	2	2			3400	4820	4110

Table 6
Summary Statistics For Upgradient Branch Brook Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 7
Summary Statistics For Downgradient Branch Brook Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Diethylphthalate	9	12	0.33	0.33	0.03	2.00	0.30
Phenanthrene	6	12	0.33	0.33	0.07	0.49	0.19
Anthracene	4	12	0.33	0.33	0.02	0.11	0.13
Di-n-butylphthalate	11	12	0.33	0.33	0.11	1.40	0.27
Fluoranthene	8	12	0.33	0.33	0.02	1.60	0.43
Pyrene	6	12	0.33	0.33	0.15	1.40	0.36
Bis(2-ethylhexyl)phthalate	2	12	0.33	0.33	0.14	0.46	0.19
Benzo(b)fluoranthene	7	12	0.33	0.33	0.05	0.57	0.18
Benzo(k)fluoranthene	7	12	0.33	0.33	0.04	0.55	0.18
Benzo(a)pyrene	5	12	0.33	0.33	0.06	0.60	0.18
Barium	6	6			18	37	25
Chromium	6	6			5.00	12	8.37
Cobalt	6	6			4.40	8.80	6.80
Copper	6	6			8.00	17	12
Lead	5	6	1.20	1.20	1.20	8.00	4.17
Nickel	6	6			7.80	13	10
Zinc	6	6			20	44	29
Methoxychlor	1	6	4.10E-03	0.01	3.70E-03	3.70E-03	3.50E-03
Aldrin	3	6	4.40E-04	0.01	1.80E-03	0.02	6.92E-03
Dieldrin	1	6	4.10E-03	5.10E-03	0.03	0.03	6.29E-03
4,4-DDT	1	6	1.30E-03	0.05	7.90E-03	7.90E-03	0.01
Tetrachloro-m-xylene	6	6			0.02	0.02	0.02
Decachlorobiphenyl	6	6			0.02	0.03	0.03
Methylene chloride	12	12			2.60E-03	0.02	8.72E-03
Acetone	8	12	1.00E-02	1.00E-02	1.80E-03	0.04	9.90E-03
Cis-1,2-Dichloroethene	1	12	1.00E-02	1.00E-02	1.10E-03	1.10E-03	4.67E-03
Chloroform	10	12	1.00E-02	1.00E-02	6.00E-04	1.70E-03	1.59E-03
2-Butanone	2	12	1.00E-02	1.00E-02	1.20E-03	8.30E-03	4.96E-03
Trichloroethene	1	12	1.00E-02	1.00E-02	1.30E-03	1.30E-03	4.69E-03

Table 7
Summary Statistics For Downgradient Branch Brook Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Tetrachloroethene	1	12	1.00E-02	1.00E-02	3.00E-03	3.00E-03	4.83E-03
TOC	6	6			584	14200	4114

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 8
Summary Statistics For Upgradient Naugatuck River Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
2,4,5-Trichlorophenol	1	7	0.33	0.33	0.30	0.30	0.18
Acenaphthene	1	7	0.33	0.33	0.06	0.06	0.15
Dibenzofuran	1	7	0.33	0.33	0.03	0.03	0.15
Diethylphthalate	1	7	0.33	0.33	0.04	0.04	0.15
Fluorene	4	7	0.33	0.33	0.06	0.15	0.12
Phenanthrene	6	7	0.33	0.33	0.26	3.00	1.07
Anthracene	1	7	0.33	0.33	0.42	0.42	0.20
Di-n-butylphthalate	6	7	0.33	0.33	0.08	0.39	0.19
Fluoranthene	7	7			0.57	8.00	2.71
Pyrene	7	7			0.14	2.90	1.46
Butylbenzylphthalate	1	7	0.33	0.33	0.13	0.13	0.16
Bis(2-ethylhexyl)phthalate	3	7	0.33	0.33	0.07	0.22	0.16
Benzo(b)fluoranthene	7	7			0.19	1.80	0.77
Benzo(k)fluoranthene	7	7			0.21	2.10	0.77
Benzo(a)pyrene	7	7			0.10	1.50	0.62
Barium	4	4			24	41	31
Cadmium	1	4	0.20	0.20	1.10	1.10	0.35
Chromium	4	4			12	25	16
Cobalt	4	4			3.80	5.60	4.65
Copper	4	4			28	92	47
Lead	4	4			7.20	29	16
Nickel	4	4			7.00	13	9.00
Zinc	4	4			62	170	95
Heptachlor	1	4	2.20E-04	2.70E-04	6.30E-04	6.30E-04	2.49E-04
Tetrachloro-m-xylene	4	4			0.01	0.02	0.02
Decachlorobiphenyl	4	4			5.50E-03	0.02	0.01
Methylene chloride	8	8			4.50E-03	7.00E-03	5.31E-03
Acetone	6	8	1.00E-02	1.00E-02	6.40E-03	0.04	0.01
Chloroform	4	8	1.00E-02	1.00E-02	8.00E-04	1.80E-03	3.09E-03

Table 8
Summary Statistics For Upgradient Naugatuck River Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
2-Butanone	4	8	1.00E-02	1.00E-02	1.20E-03	8.80E-03	4.17E-03
TOC	4	4			1580	7200	3858

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 9
Summary Statistics For Downgradient Naugatuck River Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Naphthalene	1	8	0.33	0.33	0.09	0.09	0.16
Acenaphthene	1	8	0.33	0.33	0.10	0.10	0.16
Dibenzofuran	1	8	0.33	0.33	0.02	0.02	0.15
Fluorene	7	8	0.33	0.33	0.02	0.05	0.06
Phenanthrene	8	8			0.12	1.80	1.05
Anthracene	5	8	0.33	0.33	0.09	0.21	0.16
Di-n-butylphthalate	8	8			0.07	0.40	0.16
Fluoranthene	8	8			0.33	5.60	2.99
Pyrene	8	8			0.20	2.30	1.47
Bis(2-ethylhexyl)phthalate	3	8	0.33	0.33	0.07	0.48	0.21
Benzo(b)fluoranthene	8	8			0.14	2.40	1.15
Benzo(k)fluoranthene	8	8			0.06	2.20	1.08
Benzo(a)pyrene	8	8			0.14	1.60	0.89
Arsenic	1	5	1.00	1.00	0.43	0.43	0.49
Barium	5	5			23	38	32
Cadmium	4	5	0.51	0.51	0.22	1.10	0.50
Chromium	5	5			12	78	32
Cobalt	5	5			2.10	7.40	4.22
Copper	5	5			34	101	71
Lead	5	5			11	21	18
Nickel	5	5			7.80	22	13
Silver	3	5	0.60	0.60	0.60	2.20	0.90
Vanadium	1	5	20	20	7.00	7.00	9.40
Zinc	5	5			80	140	106
Potassium	1	1			770	770	770
Heptachlor	1	4	2.00E-04	2.40E-03	7.05E-04	7.05E-04	5.69E-04
Methoxychlor	1	4	0.01	0.02	6.60E-03	6.60E-03	8.34E-03
Dieldrin	1	4	2.20E-03	0.01	2.37E-03	2.37E-03	3.02E-03
Tetrachloro-m-xylene	4	4			0.02	0.02	0.02

Table 9
Summary Statistics For Downgradient Naugatuck River Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Decachlorobiphenyl	4	4			0.01	0.02	0.02
Methylene chloride	8	8			5.60E-03	0.04	0.01
Acetone	5	8	1.00E-02	1.00E-02	2.90E-03	0.01	6.06E-03
Chloroform	4	8	1.00E-02	1.00E-02	1.20E-03	0.04	8.24E-03
2-Butanone	1	8	1.00E-02	1.00E-02	1.20E-03	1.20E-03	4.52E-03
Bromodichloromethane	1	8	7.50E-03	1.00E-02	2.10E-03	2.10E-03	4.48E-03
Tetrachloroethene	1	8	7.50E-03	1.00E-02	1.50E-03	1.50E-03	4.41E-03
TOC	4	4			4560	12500	7970

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 10
Summary Statistics for Chemicals Detected in On-Site Boring Samples
(0-1 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
2-Butanone	4	24	0.01	0.01	3.40E-03	6.50E-03	4.98E-03
4-Methyl-2-pentanone	9	24	0.01	0.01	6.83E-04	5.90E-03	4.12E-03
Acetone	22	24	0.01	0.01	1.90E-03	0.02	7.71E-03
Carbon disulfide	1	24	0.01	0.01	1.20E-03	1.20E-03	4.84E-03
Carbon tetrachloride	1	24	0.01	0.01	2.70E-03	2.70E-03	4.90E-03
Chloroform	24	24	0.00E+00	0.00E+00	6.02E-04	5.69E-03	3.73E-03
Cis-1,2-Dichloroethene	2	24	0.01	0.01	1.10E-03	1.20E-03	4.68E-03
Ethylbenzene	15	24	0.01	0.01	4.98E-04	4.59E-03	3.18E-03
Methylene chloride	16	24	0.01	0.01	1.70E-03	0.01	4.64E-03
Styrene	1	24	0.01	0.01	6.37E-04	6.37E-04	4.82E-03
Tetrachloroethene	19	24	0.01	0.01	4.05E-04	4.50E-03	2.44E-03
Toluene	18	24	0.01	0.01	5.09E-04	0.02	7.06E-03
Trichloroethene	12	24	0.01	0.01	4.05E-04	5.20E-03	3.44E-03
Xylenes (total)	20	24	0.01	0.01	4.05E-04	0.02	5.63E-03
2-Methylnaphthalene	4	24	0.33	0.97	0.02	0.21	0.17
Acenaphthene	2	24	0.33	0.97	0.04	0.04	0.18
Anthracene	12	24	0.33	0.37	0.01	0.31	0.11
Benzo(a)pyrene	14	24	0.33	0.37	0.01	1.50	0.18
Benzo(b)fluoranthene	14	24	0.33	0.37	0.01	1.40	0.18
Benzo(k)fluoranthene	14	24	0.33	0.37	0.01	1.60	0.18
Bis(2-ethylhexyl)phthalate	23	24	0.97	0.97	0.02	0.64	0.19
Di-n-butylphthalate	23	24	0.33	0.33	0.01	0.10	0.05
Di-n-octylphthalate	17	24	0.33	0.33	6.00E-03	0.19	0.08
Dibenzofuran	2	24	0.33	0.97	0.04	0.05	0.18
Diethylphthalate	5	24	0.33	0.97	0.01	0.02	0.15
Fluoranthene	17	24	0.33	0.37	0.01	3.80	0.31
Fluorene	3	24	0.33	0.42	0.05	0.06	0.16

Table 10
Summary Statistics for Chemicals Detected in On-Site Boring Samples
(0-1 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Methoxychlor	1	24	0.02	0.02	4.80E-03	4.80E-03	8.85E-03
Naphthalene	3	24	0.33	0.97	9.00E-03	0.03	0.17
Phenanthrene	19	24	0.33	0.33	0.01	1.50	0.15
Pyrene	19	24	0.33	0.33	0.01	3.90	0.29
4,4'-DDE	6	24	3.30E-03	4.20E-03	9.72E-04	0.05	4.02E-03
4,4-DDT	14	24	3.30E-03	4.20E-03	3.70E-04	0.05	4.19E-03
Aroclor 1254	16	24	0.03	0.04	3.90E-03	1.10	0.07
Aroclor 1260	5	24	0.03	0.04	0.03	0.45	0.04
Delta-BHC	1	24	1.70E-03	2.09E-03	3.94E-04	3.94E-04	8.77E-04
Endrin aldehyde	2	24	3.30E-03	4.20E-03	2.09E-03	3.90E-03	1.86E-03
Gamma-BHC (Lindane)	5	24	1.70E-03	2.09E-03	6.94E-05	7.18E-04	7.97E-04
Antimony	1	22	7.90	9.80	9.40	9.40	4.45
Arsenic	22	22	0.00E+00	0.00E+00	0.30	3.10	1.17
Barium	22	22	0.00E+00	0.00E+00	21	85	44
Beryllium	12	22	0.21	0.40	0.33	2.00	0.49
Cadmium	18	22	0.20	0.43	0.46	5.60	1.72
Chromium	22	22	0.00E+00	0.00E+00	5.20	300	96
Cobalt	22	22	0.00E+00	0.00E+00	3.00	16	7.41
Copper	22	22	0.00E+00	0.00E+00	15	1000	260
Lead	20	22	1.20	1.20	4.80	134	26
Mercury	1	22	0.02	0.12	0.05	0.05	0.04
Nickel	22	22	0.00E+00	0.00E+00	2.40	280	66
Selenium	2	16	0.21	0.26	0.43	0.56	0.16
Silver	13	22	0.60	0.76	0.60	19	1.97
Thallium	6	22	0.21	8.00	0.26	0.44	1.26
Tin	2	22	2.70	16	5.50	20	3.98
Vanadium	19	22	20	20	12	66	26
Zinc	22	22	0.00E+00	0.00E+00	13	1600	226

Table 10
Summary Statistics for Chemicals Detected in On-Site Boring Samples
(0-1 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 11
Summary Statistics for Chemicals Detected in On-Site Boring Samples
(0-15 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
1,1,1-Trichloroethane	3	98	5.00E-03	900	1.50E-03	8.30E-03	5.11
1,1-Dichloroethene	2	98	5.00E-03	900	4.98E-04	0.01	5.11
2-Butanone	29	97	0.01	94	1.10E-03	2100	25
2-Hexanone	2	98	0.01	900	1.20E-03	2.00E-03	5.11
4-Methyl-2-pentanone	45	98	0.01	1.40	4.98E-04	7900	89
Acetone	87	98	0.01	94	1.90E-03	590	7.04
Acrylonitrile	1	4	0.05	0.05	0.87	0.87	0.24
Benzene	9	97	5.00E-03	94	1.40E-03	30	0.84
Carbon disulfide	18	97	0.01	900	1.20E-03	0.03	5.17
Carbon tetrachloride	1	98	5.00E-03	900	2.70E-03	2.70E-03	5.11
Chlorobenzene	2	98	5.00E-03	900	1.30E-03	0.38	5.11
Chloroform	64	98	5.00E-03	94	6.02E-04	93	1.48
Cis-1,2-Dichloroethene	13	97	0.01	1.50	4.98E-04	70	1.05
Ethylbenzene	46	98	5.00E-03	0.01	4.98E-04	3100	40
Methylene chloride	69	97	0.01	94	3.01E-04	85	1.40
Styrene	9	98	5.00E-03	1.90	6.37E-04	2300	30
Tetrachloroethene	61	98	0.01	1.50	4.05E-04	3100	37
Toluene	66	98	0.01	0.01	4.05E-04	15000	176
Trans-1,2-Dichloroethene	9	98	0.01	1.50	9.95E-04	70	1.03
Trichloroethene	39	97	0.01	1.50	4.05E-04	3300	37
Xylenes (total)	68	98	5.00E-03	0.01	4.05E-04	16000	195
1,2,4-Trichlorobenzene	1	36	0.33	240	0.87	0.87	4.38
2,4-Dimethylphenol	2	33	0.33	240	0.01	0.05	4.73
2-Methylnaphthalene	16	74	0.33	240	7.00E-03	4.00	2.04
2-Methylphenol	3	20	0.33	240	0.04	3.60	7.86
4-Methylphenol	2	20	0.33	240	0.04	0.05	7.69
Acenaphthene	5	87	0.33	240	0.04	0.89	1.92

Table 11
Summary Statistics for Chemicals Detected in On-Site Boring Samples
(0-15 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Acenaphthylene	4	36	0.33	240	6.00E-03	0.11	4.34
Anthracene	29	87	0.33	240	3.00E-03	0.40	1.86
Benzo(a)anthracene	6	36	0.33	240	0.01	0.22	4.34
Benzo(a)pyrene	39	87	0.33	240	8.00E-03	1.50	1.89
Benzo(b)fluoranthene	41	87	0.33	240	5.00E-03	1.40	1.75
Benzo(g,h,i)perylene	2	36	0.33	240	0.04	0.09	4.35
Benzo(k)fluoranthene	40	87	0.33	240	4.00E-03	1.60	1.76
Benzoic acid	1	1	0.00E+00	0.00E+00	1.60	1.60	1.60
Bis(2-ethylhexyl)phthalate	83	87	0.33	0.97	0.02	6500	87
Butylbenzylphthalate	10	87	0.33	240	4.00E-03	34	2.23
Chrysene	6	36	0.33	240	0.01	0.35	4.34
Di-n-butylphthalate	73	87	0.33	0.33	0.01	3100	42
Di-n-octylphthalate	47	87	0.33	240	6.00E-03	5.30	1.72
Dibenzo(a,h)anthracene	1	36	0.33	240	0.03	0.03	4.35
Dibenzofuran	7	74	0.33	240	8.00E-03	0.44	2.21
Diethyl phthalate	4	14	0.33	0.33	0.02	0.04	0.13
Diethylphthalate	18	73	0.33	240	7.00E-03	3.50	2.27
Fluoranthene	53	87	0.03	240	8.00E-03	3.80	1.84
Fluorene	11	87	0.33	240	0.02	0.54	1.90
Indeno(1,2,3-cd)pyrene	2	36	0.33	240	0.04	0.11	4.35
Isophorone	4	36	0.33	19	0.05	68	2.97
Methoxychlor	2	68	2.40E-03	0.24	4.80E-03	4.80E-03	0.01
N-Nitrosodiphenylamine	1	87	0.33	240	0.26	0.26	1.91
Naphthalene	24	87	0.33	19	7.00E-03	160	2.46
Phenacetin	1	3	0.33	0.33	0.03	0.03	0.12
Phenanthrene	51	87	0.33	240	8.00E-03	2.70	1.79
Phenol	4	31	0.33	19	0.28	170	7.23
Pyrene	55	87	0.33	240	9.00E-03	3.90	1.81
4,4'-DDD	1	30	3.30E-03	0.33	0.01	0.01	0.07
4,4'-DDE	13	81	3.30E-03	0.33	2.89E-04	0.05	0.03

Table 11
Summary Statistics for Chemicals Detected in On-Site Boring Samples
(0-15 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
4,4-DDT	33	81	3.30E-03	0.33	3.70E-04	0.05	0.03
Alpha-BHC	1	30	1.70E-03	0.33	2.31E-04	2.31E-04	0.07
Aroclor 1016	1	30	0.03	8.20	0.46	0.46	1.81
Aroclor 1221	1	30	0.07	8.20	0.96	0.96	1.84
Aroclor 1232	1	30	0.03	8.20	0.46	0.46	1.81
Aroclor 1242	1	81	0.03	8.20	0.46	0.46	0.68
Aroclor 1248	3	30	0.03	8.20	0.10	1.20	1.84
Aroclor 1254	40	81	0.03	8.20	3.90E-03	26	1.18
Aroclor 1260	18	81	0.03	8.20	9.50E-03	5.90	0.79
Carbazole	2	19	0.33	240	0.02	0.04	8.09
Delta-BHC	6	80	1.70E-03	0.33	3.94E-04	1.50E-03	0.03
Dieldrin	3	81	3.30E-03	0.33	3.24E-04	6.60E-04	0.03
Endrin aldehyde	4	81	3.30E-03	0.33	2.09E-03	6.10E-03	0.03
Gamma Chlordane	1	17	1.70E-03	0.02	0.19	0.19	0.01
Gamma-BHC (Lindane)	16	80	1.70E-03	0.33	6.94E-05	0.51	0.03
Heptachlor epoxide	1	30	1.70E-03	0.33	3.82E-04	3.82E-04	0.07
Antimony	2	72	7.60	11	9.40	96	5.62
Arsenic	81	87	0.10	1.00	0.18	7.50	1.64
Barium	87	87	0.00E+00	0.00E+00	13	1710	80
Beryllium	44	72	0.21	0.40	0.25	35	1.23
Cadmium	62	87	0.20	0.57	0.46	394	17
Chromium	87	87	0.00E+00	0.00E+00	5.20	7300	819
Cobalt	72	72	0.00E+00	0.00E+00	2.00	46	8.47
Copper	87	87	0.00E+00	0.00E+00	13	29000	2772
Lead	82	87	1.20	1.20	1.60	13000	352
Mercury	28	87	0.02	0.16	0.02	12	0.30
Nickel	87	87	0.00E+00	0.00E+00	0.58	3470	308
Selenium	19	71	0.21	2.00	0.21	48	1.20
Silver	52	87	0.60	0.85	0.60	79	6.86
Thallium	27	71	0.21	8.00	0.22	21	2.04

Table 11
Summary Statistics for Chemicals Detected in On-Site Boring Samples
(0-15 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Tin	9	72	2.60	20	3.30	500	18
Vanadium	61	72	20	20	6.20	84	24
Zinc	87	87	0.00E+00	0.00E+00	6.60	12000	1055

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 12
Summary Statistics For Background Soil Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
1,1,1-Trichloroethane	5	8	1.00E-02	1.00E-02	4.00E-04	1.90E-03	2.46E-03
Acetone	8	8	0.00E+00	0.00E+00	5.30E-03	9.40E-03	7.12E-03
Bromodichloromethane	1	8	1.00E-02	1.00E-02	1.50E-03	1.50E-03	4.56E-03
Chloroform	8	8	0.00E+00	0.00E+00	2.20E-03	0.02	5.24E-03
Methylene chloride	2	8	1.00E-02	1.00E-02	0.01	0.01	6.87E-03
Tetrachloroethene	6	8	1.00E-02	1.00E-02	5.00E-04	1.40E-03	1.90E-03
Toluene	5	8	1.00E-02	1.00E-02	1.20E-03	4.00E-03	3.45E-03
Trichloroethene	4	8	1.00E-02	1.00E-02	5.00E-04	1.10E-03	2.84E-03
Xylenes (total)	6	8	1.00E-02	1.00E-02	7.00E-04	1.90E-03	2.11E-03
Anthracene	6	8	0.33	0.38	0.01	0.07	0.07
Benzo(a)pyrene	8	8	0.00E+00	0.00E+00	0.02	0.34	0.12
Benzo(b)fluoranthene	8	8	0.00E+00	0.00E+00	0.01	0.40	0.13
Benzo(k)fluoranthene	8	8	0.00E+00	0.00E+00	0.02	0.42	0.14
Bis(2-ethylhexyl)phthalate	8	8	0.00E+00	0.00E+00	0.03	0.13	0.07
Butylbenzylphthalate	1	8	0.33	0.40	0.01	0.01	0.16
Di-n-butylphthalate	8	8	0.00E+00	0.00E+00	0.01	0.04	0.02
Diethylphthalate	2	8	0.33	0.40	6.00E-03	1.00E-02	0.13
Fluoranthene	8	8	0.00E+00	0.00E+00	0.03	0.69	0.26
Fluorene	1	8	0.33	0.40	8.00E-03	8.00E-03	0.16
Phenanthrene	8	8	0.00E+00	0.00E+00	0.01	0.32	0.12
Pyrene	8	8	0.00E+00	0.00E+00	0.03	0.69	0.23
4,4'-DDE	2	8	3.30E-03	3.90E-03	3.20E-04	2.20E-03	1.65E-03
4,4-DDT	5	8	3.30E-03	3.80E-03	1.70E-03	8.00E-03	3.19E-03
Aroclor 1254	3	8	0.03	0.04	0.01	0.07	0.03
Dieldrin	1	8	3.30E-03	3.80E-03	9.70E-04	9.70E-04	1.62E-03
Gamma-BHC (Lindane)	1	8	1.70E-03	2.00E-03	1.60E-04	1.60E-04	8.14E-04
Arsenic	8	8	0.00E+00	0.00E+00	0.32	1.30	0.95
Barium	8	8	0.00E+00	0.00E+00	37	88	59
Beryllium	4	8	0.40	0.40	0.40	1.40	0.50

Table 12
Summary Statistics For Background Soil Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Cadmium	4	8	0.20	0.20	0.24	2.50	0.60
Chromium	8	8	0.00E+00	0.00E+00	10.00	170	49
Cobalt	8	8	0.00E+00	0.00E+00	5.60	10.00	7.95
Copper	8	8	0.00E+00	0.00E+00	15	370	99
Lead	8	8	0.00E+00	0.00E+00	6.80	140	30
Mercury	4	8	0.05	0.05	0.02	0.04	0.03
Nickel	8	8	0.00E+00	0.00E+00	10.00	76	26
Silver	5	8	0.60	0.60	0.60	2.80	0.99
Vanadium	5	8	20	20	26	31	22
Zinc	8	8	0.00E+00	0.00E+00	36	270	88

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 13
Summary Statistics For Upgradient Branch Brook Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Tetrachloro-m-xylene	3	3			2.50E-04	2.60E-04	2.53E-04
Decachlorobiphenyl	3	3			2.20E-04	2.50E-04	2.33E-04
Methylene chloride	3	6	1.00E-02	1.00E-02	1.60E-03	1.60E-03	3.30E-03
Acetone	2	6	1.00E-02	1.00E-02	2.80E-03	3.20E-03	4.33E-03
Di-n-butylphthalate	2	6	1.00E-02	1.00E-02	1.30E-03	2.30E-03	3.93E-03
Calcium	5	5			7.50	8.40	8.02
Copper	1	5	0.02	0.02	0.02	0.02	0.01
Iron	5	5			0.04	0.26	0.13
Magnesium	5	5			2.40	2.80	2.64
Manganese	1	5	0.02	0.06	0.05	0.05	0.02
Mercury	2	5	5.00E-03	5.00E-03	5.00E-03	5.00E-03	3.50E-03
Potassium	5	5			1.30	2.00	1.78
Sodium	5	5			7.00	12	9.56
Zinc	2	5	1.00E-02	1.00E-02	1.00E-02	0.01	7.40E-03

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the

Table 14
Summary Statistics For Downgradient Branch Brook Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Tetrachloro-m-xylene	7	7			2.40E-04	3.00E-04	2.64E-04
Decachlorobiphenyl	7	7			2.30E-04	2.70E-04	2.53E-04
Methylene chloride	1	14	1.00E-02	1.00E-02	1.60E-03	1.60E-03	4.76E-03
Di-n-butylphthalate	1	14	1.00E-02	1.00E-02	1.60E-03	1.60E-03	4.76E-03
Calcium	14	14			7.70	11	8.50
Copper	1	14	0.02	0.02	0.02	0.02	0.01
Iron	14	14			0.04	0.35	0.15
Magnesium	14	14			2.30	3.30	2.63
Manganese	12	14	0.02	0.05	0.02	0.06	0.05
Mercury	6	14	5.00E-03	5.00E-03	5.00E-03	5.00E-03	3.57E-03
Potassium	14	14			1.60	2.70	1.89
Sodium	14	14			5.90	25	11
Zinc	13	14	1.00E-02	1.00E-02	1.00E-02	0.01	0.01
Cyanide	1	12	1.00E-02	1.00E-02	0.03	0.03	6.75E-03

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the

Table 15
Summary Statistics For Upgradient Naugatuck River Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Gamma-BHC (Lindane)	1	3	5.00E-05	5.20E-05	8.00E-06	8.00E-06	1.97E-05
Tetrachloro-m-xylene	3	3			2.50E-04	2.70E-04	2.60E-04
Decachlorobiphenyl	3	3			1.60E-04	3.10E-04	2.17E-04
Methylene chloride	2	6	1.00E-02	1.00E-02	6.00E-04	1.40E-03	3.67E-03
Acetone	2	6	1.00E-02	1.00E-02	4.90E-03	5.90E-03	5.13E-03
Trichloroethene	6	6			4.00E-04	9.20E-04	6.78E-04
Calcium	6	6			9.20	12	11
Iron	6	6			0.15	0.39	0.27
Magnesium	6	6			3.10	3.60	3.33
Manganese	4	6	0.07	0.07	0.05	0.06	0.05
Potassium	6	6			2.60	3.70	2.95
Sodium	6	6			18	22	20
Zinc	5	6	1.00E-02	1.00E-02	1.00E-02	0.02	0.01

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 16
Summary Statistics For Downgradient Naugatuck River Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Tetrachloro-m-xylene	5	5			2.30E-04	2.90E-04	2.62E-04
Decachlorobiphenyl	5	5			1.60E-04	2.50E-04	1.96E-04
Methylene chloride	4	10	1.00E-02	1.00E-02	4.00E-04	1.70E-03	3.42E-03
Acetone	5	10	1.00E-02	1.00E-02	2.40E-03	6.60E-03	4.33E-03
Trichloroethene	9	10	1.00E-02	1.00E-02	4.00E-04	7.30E-04	9.96E-04
Tetrachloroethene	3	10	1.00E-02	1.00E-02	3.00E-04	7.00E-04	3.65E-03
Di-n-butylphthalate	2	10	1.00E-02	1.00E-02	1.30E-03	1.30E-03	4.26E-03
Bis(2-ethylhexyl)phthalate	1	10	1.00E-02	1.00E-02	2.20E-03	2.20E-03	4.72E-03
Calcium	10	10			8.80	13	10
Iron	10	10			0.12	0.39	0.28
Magnesium	10	10			3.10	3.70	3.34
Manganese	6	10	0.05	0.07	0.04	0.07	0.04
Potassium	10	10			2.50	4.70	3.35
Sodium	10	10			16	29	20
Zinc	8	10	1.00E-02	1.00E-02	0.01	0.02	0.01

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 17
Summary Statistics for Chemicals Detected in On-Site Leachate Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
1,1,1-Trichloroethane	1	10	0.01	0.01	3.60E-03	3.60E-03	4.86E-03
1,2-Dichloroethane	3	33	5.00E-03	0.13	9.95E-04	1.60E-03	4.88E-03
1,2-Dichloropropane	1	10	0.01	0.01	0.01	0.01	5.70E-03
2-Butanone	6	33	0.01	0.01	0.02	0.45	0.03
4-Methyl-2-pentanone	1	10	0.01	0.01	7.99E-04	7.99E-04	4.58E-03
Acetone	10	10	0.00E+00	0.00E+00	1.10E-03	0.14	0.02
Benzene	3	33	5.00E-03	0.01	9.95E-04	0.03	3.95E-03
Carbon disulfide	4	10	0.01	0.01	2.60E-03	0.02	6.38E-03
Chloroform	6	33	5.00E-03	0.01	9.95E-04	0.02	3.57E-03
Ethylbenzene	1	10	0.01	0.01	4.98E-04	4.98E-04	4.55E-03
Methylene chloride	9	10	0.01	0.01	1.50E-03	0.03	6.58E-03
Styrene	3	10	0.01	0.01	1.60E-03	0.08	0.01
Tetrachloroethene	18	33	5.00E-03	0.01	6.02E-04	1.50	0.06
Toluene	2	10	0.01	0.01	4.98E-04	7.99E-04	4.13E-03
Trichloroethene	14	33	5.00E-03	0.01	3.01E-04	2.80	0.09
Xylenes (total)	3	10	0.01	0.01	6.02E-04	1.81E-03	3.84E-03
1,2,4-Trichlorobenzene	1	5	0.01	0.01	5.00E-03	5.00E-03	5.00E-03
2,4,6-Trichlorophenol	1	43	0.01	0.10	2.00E-03	2.00E-03	9.93E-03
2,4-Dichlorophenol	1	8	0.01	0.01	0.03	0.03	8.38E-03
2-Methylphenol	3	35	0.02	0.02	0.02	0.50	0.02
4-Methylphenol	3	34	0.02	0.02	0.05	1.20	0.05
Bis(2-ethylhexyl)phthalate	6	12	0.01	0.01	9.95E-04	0.03	5.42E-03
Di-n-butylphthalate	3	8	0.01	0.01	6.02E-04	9.95E-04	3.41E-03
Naphthalene	3	8	0.01	0.01	0.01	0.10	0.02
Pyridine	1	35	0.02	0.02	0.29	0.29	0.02
Decachlorobiphenyl	2	2	0.00E+00	0.00E+00	2.55E-04	2.66E-04	2.65E-04

Table 17
Summary Statistics for Chemicals Detected in On-Site Leachate Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Heptachlor	1	59	0.00E+00	0.01	3.47E-05	3.47E-05	5.35E-04
Tetrachloro-m-xylene	2	2	0.00E+00	0.00E+00	2.08E-04	2.08E-04	2.10E-04
Arsenic	5	66	5.00E-03	0.03	5.69E-03	0.03	6.76E-03
Barium	34	79	0.50	0.50	0.05	0.51	0.26
Cadmium	21	81	2.00E-03	0.01	2.09E-03	5.71	0.08
Chromium	45	99	2.00E-03	0.04	2.09E-03	4.40	0.06
Cobalt	4	46	0.10	0.10	0.10	0.13	0.06
Copper	34	46	0.02	0.02	0.03	0.58	0.10
Lead	15	80	0.02	0.06	0.02	11	0.17
Mercury	1	70	9.95E-04	0.02	8.00E-03	8.00E-03	1.74E-03
Nickel	29	46	0.03	0.03	0.03	0.15	0.05
Silver	1	73	3.00E-03	0.03	0.04	0.04	0.01
Zinc	45	46	0.01	0.01	0.02	0.32	0.08

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 18
Summary Statistics For Upgradient Branch Brook Piezometer Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Tetrachloro-m-xylene	1	1			2.60E-04	2.60E-04	2.60E-04
Decachlorobiphenyl	1	1			2.20E-04	2.20E-04	2.20E-04
Calcium	2	2			14	19	17
Iron	1	2	0.03	0.03	0.16	0.16	0.09
Magnesium	2	2			3.40	4.20	3.80
Manganese	1	2	0.05	0.05	0.05	0.05	0.04
Potassium	2	2			5.70	6.50	6.10
Sodium	2	2			32	46	39
Zinc	2	2			0.30	0.34	0.32

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a

Table 19
Summary Statistics For Downgradient Branch Brook Piezometer Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Dieldrin	1	3	1.00E-04	1.00E-04	1.40E-05	1.40E-05	3.80E-05
Tetrachloro-m-xylene	3	3			2.40E-04	2.50E-04	2.43E-04
Decachlorobiphenyl	3	3			1.60E-04	2.20E-04	1.87E-04
Calcium	6	6			8.10	56	20
Iron	5	6	0.03	0.03	0.04	1.60	0.46
Magnesium	6	6			1.60	15	5.10
Manganese	2	6	0.02	0.05	0.11	0.18	0.06
Potassium	6	6			2.80	7.80	4.47
Sodium	6	6			11	32	23
Zinc	6	6			0.28	2.40	1.45

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a

Table 20
Summary Statistics For Upgradient Naugatuck River Piezometer Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Dieldrin	1	1			2.00E-05	2.00E-05	2.00E-05
Tetrachloro-m-xylene	1	1			1.90E-04	1.90E-04	1.90E-04
Decachlorobiphenyl	1	1			1.10E-04	1.10E-04	1.10E-04
Calcium	3	3			8.00	9.10	8.67
Copper	1	3	0.02	0.02	0.04	0.04	0.02
Iron	3	3			2.60	6.60	4.00
Magnesium	3	3			2.00	2.90	2.53
Manganese	3	3			0.52	0.68	0.58
Potassium	3	3			2.00	2.80	2.53
Sodium	3	3			15	17	16
Zinc	3	3			0.45	1.30	1.02

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a

Table 21
Summary Statistics For Downgradient Naugatuck River Piezometer Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (ppm)		Range of Detected Concentrations (ppm)		Mean of all Samples[2] (ppm)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Delta-BHC	1	3	5.00E-05	5.00E-05	7.00E-06	7.00E-06	1.90E-05
Tetrachloro-m-xylene	3	3			2.20E-04	2.60E-04	2.43E-04
Decachlorobiphenyl	3	3			1.70E-04	1.90E-04	1.80E-04
Trichloroethene	1	3	1.00E-02	1.00E-02	5.00E-04	5.00E-04	3.50E-03
Calcium	9	9			7.60	12	9.12
Copper	9	9			0.02	0.04	0.03
Iron	9	9			0.03	0.31	0.11
Magnesium	9	9			2.40	3.80	2.84
Manganese	5	9	0.05	0.05	0.04	0.39	0.12
Potassium	9	9			2.10	3.60	2.67
Sodium	9	9			13	22	16
Zinc	9	9			0.28	1.20	0.76

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a

Table 22
Summary of Chemicals Eliminated From Risk Assessment

Chemical	Frequency of Detection	Essential Nutrients	Toxicity Values Unavailable	Toxicity Screen	Retained
Volatile Compounds					
1,1,1-Trichloroethane				√	
1,1,2-Trichloroethane	√				
1,1-Dichloroethane	√				
1,1-Dichloroethene				√	
1,2-Dichloroethane				√	
1,2-Dichloropropane	√				
2-Butanone				√	
2-Hexanone	√				
4-Methyl-2-pentanone			√		
Acetone					√
Acrylonitrile				√	
Benzene				√	
Bromodichloromethane	√				
Carbon disulfide				√	
Carbon tetrachloride				√	
Chlorobenzene				√	
Chloroform				√	
Cis-1,2-Dichloroethene					√
Ethylbenzene					√
Methylene chloride					√
Styrene				√	
Tetrachloroethene					√
Toluene					√
Trans-1,2-Dichloroethene				√	
Trichloroethene					√
Vinyl acetate				√	
Vinyl chloride					√
Xylenes (total)				√	
Semivolatile Compounds					
1,2,4-Trichlorobenzene				√	
1,2-Dichlorobenzene			√		
2,4,5-Trichlorophenol				√	
2,4,6-Trichlorophenol				√	
2,4-Dichlorophenol					√
2,4-Dimethylphenol	√				
2,6-Dichlorophenol			√		
2-Chloronaphthalene	√				
2-Chlorophenol	√				
2-Methylnaphthalene			√		
2-Methylphenol				√	
3,3'-Dichlorobenzidine				√	
3,3'-Dimethylbenzidine			√		
4-Chloro-3-methylphenol	√				
4-Methylphenol			√		

Table 22 Summary of Chemicals Eliminated From Risk Assessment					
Chemical	**Frequency of Detection**	**Essential Nutrients**	**Toxicity Values Unavailable**	**Toxicity Screen**	**Retained**
4-Nitrophenol	√				
Acenaphthene				√	
Acenaphthylene	√				
Anthracene				√	
Benzo(a)anthracene				√	
Benzo(a)pyrene				√	
Benzo(b)fluoranthene				√	
Benzo(g,h,i)perylene			√		
Benzo(k)fluoranthene				√	
Benzoic acid				√	
Benzylbutylphthalate				√	
Bis(2-chloroisopropyl)ether	√				
Bis(2-ethylhexyl)phthalate					√
Butylbenzylphthalate				√	
Chrysene				√	
Di-n-butylphthalate				√	
Di-n-octylphthalate				√	
Dibenzo(a,h)anthracene			√		
Dibenzofuran			√		
Diethyl phthalate				√	
Diethylphthalate				√	
Dimethylphthalate	√				
Fluoranthene				√	
Fluorene				√	
Hexachlorobutadiene	√				
Indeno(1,2,3-cd)pyrene			√		
Isophorone				√	
Methoxychlor				√	
N-Nitrosodimethylamine					√
N-Nitrosodiphenylamine	√				
Naphthalene			√		
Pentachlorophenol	√				
Phenacetin			√		
Phenanthrene			√		
Phenol	√				
Pyrene				√	
Pyridine				√	
PCBs/Pesticides					
4,4'-DDD				√	
4,4'-DDE				√	
4,4-DDT				√	
Aldrin					√
Alpha-BHC	√				
Aroclor 1016				√	
Aroclor 1221				√	
Aroclor 1232				√	

Table 22 Summary of Chemicals Eliminated From Risk Assessment					
Chemical	**Frequency of Detection**	**Essential Nutrients**	**Toxicity Values Unavailable**	**Toxicity Screen**	**Retained**
Aroclor 1242				√	
Aroclor 1248				√	
Aroclor 1254					√
Aroclor 1260				√	
Beta-BHC				√	
Carbazole				√	
Delta-BHC			√		
Dieldrin					√
Endosulfan I	√				
Endosulfan II	√				
Endosulfan sulfate	√				
Endrin aldehyde				√	
Gamma Chlordane				√	
Gamma-BHC (Lindane)					√
Heptachlor				√	
Heptachlor epoxide	√				
Tetrachloro-m-xylene					
Inorganic Compounds					
Antimony	√				
Arsenic					√
Barium					√
Beryllium				√	
Cadmium					√
Calcium		√			
Chromium					√
Cobalt			√		
Copper					√
Cyanide					√
Iron		√			
Lead			√		
Magnesium		√			
Manganese		√			
Mercury					√
Nickel					√
Potassium		√			
Selenium				√	
Silver					√
Sodium		√			
Thallium					√
Tin				√	
Vanadium					√
Zinc					√
Total	**23**	**6**	**16**	**56**	**27**

Table 23
Carcinogenic Toxicity Screen Scores for Chemicals Detected in Groundwater

Chemical[1]	Maximum Concentration (mg/kg)	Slope Factor 1/(mg/kg-day)	Carcinogenic Factor
Chromium	**0.60**	**42**	**25**
Nickel	**2.30**	**0.84**	**1.93**
N-Nitrosodimethylamine	**0.03**	**51**	**1.43**
Vinyl chloride	**0.61**	**1.90**	**1.16**
Arsenic	**0.07**	**15**	**0.98**
Cadmium	**0.11**	**6.30**	**0.69**
Beryllium	**0.04**	**4.30**	**0.18** ←
Aroclor 1254	3.80E-03	7.70	0.03
1,2-Dichloroethane	0.30	0.09	0.03
Dieldrin	1.30E-03	16	0.02
Aroclor 1232	1.40E-03	7.70	0.01
Benzene	0.20	0.03	5.81E-03
1,1-Dichloroethene	9.31E-03	0.60	5.58E-03
Benzo(a)pyrene	6.02E-04	7.30	4.39E-03
Bis(2-ethylhexyl)phthalate	0.23	0.01	3.22E-03
Chloroform	0.04	0.08	3.14E-03
2,4,6-Trichlorophenol	0.18	0.01	2.01E-03
Heptachlor	1.97E-04	4.55	8.95E-04
Beta-BHC	4.28E-04	1.86	7.94E-04
Benzo(b)fluoranthene	6.02E-04	0.73	4.39E-04
Benzo(a)anthracene	4.98E-04	0.73	3.63E-04
Methylene chloride	0.05	7.50E-03	3.45E-04
Aldrin	1.16E-05	17	1.98E-04
Gamma-BHC (Lindane)	5.79E-05	1.30	7.52E-05
Benzo(k)fluoranthene	6.02E-04	0.07	4.39E-05
4,4-DDT	9.26E-05	0.34	3.15E-05
Di-n-octylphthalate	1.90E-03	0.01	2.66E-05

Table 24
Noncarcinogenic Toxicity Screen Scores for Chemicals Detected in Groundwater

Chemical[1]	Maximum Concentration (mg/kg)	Reference Dose (mg/kg-day)	Noncarcinogenic Factor
2,4-Dichlorophenol	**1.40**	**3.00E-03**	**467**
Cis-1,2-Dichloroethene	**2.40**	**0.01**	**240**
Cadmium	**0.11**	**5.00E-04**	**220**
Arsenic	**0.07**	**3.00E-04**	**217**
Aroclor 1254	**3.80E-03**	**2.00E-05**	**190**
Chromium	**0.60**	**5.00E-03**	**120**
Nickel	**2.30**	**0.02**	**115**
Toluene	**20**	**0.20**	**100**
Ethylbenzene	**4.90**	**0.10**	**49**
Zinc	**10.00**	**0.30**	**33**
Tetrachloroethene	**0.33**	**0.01**	**33**
Barium	**2.00**	**0.07**	**29**
Dieldrin	**1.30E-03**	**5.00E-05**	**26**
Acetone	**2.40**	**0.10**	**24** ←
Trans-1,2-Dichloroethene	0.30	0.02	15
2-Butanone	6.90	0.60	12
Bis(2-ethylhexyl)phthalate	0.23	0.02	12
Silver	0.05	5.00E-03	10.00
Beryllium	0.04	5.00E-03	8.20
Copper	9.70	1.30	7.46
Mercury	1.40E-03	3.00E-04	4.67
Chloroform	0.04	0.01	3.90
Acenaphthene	0.18	0.06	3.00
Xylenes (total)	5.00	2.00	2.50
2,4,5-Trichlorophenol	0.17	0.10	1.70
1,1-Dichloroethene	9.31E-03	9.00E-03	1.03
Methylene chloride	0.05	0.06	0.77

Table 23
Carcinogenic Toxicity Screen Scores for Chemicals Detected in Groundwater

Chemical[1]	Maximum Concentration (mg/kg)	Slope Factor 1/(mg/kg-day)	Carcinogenic Factor
Chrysene	1.60E-03	7.30E-03	1.17E-05
4,4'-DDE	1.16E-05	0.34	3.94E-06
1,1,1-Trichloroethane	0.02	NA	NA
2,4,5-Trichlorophenol	0.17	NA	NA
2,4-Dichlorophenol	1.40	NA	NA
2,6-Dichlorophenol	0.04	NA	NA
2-Butanone	6.90	NA	NA
3,3'-Dimethylbenzidine	1.30E-03	NA	NA
4-Methyl-2-pentanone	18	NA	NA
Acenaphthene	0.18	NA	NA
Acetone	2.40	NA	NA
Barium	2.00	NA	NA
Benzylbutylphthalate	0.02	NA	NA
Cis-1,2-Dichloroethene	2.40	NA	NA
Cobalt	0.24	NA	NA
Copper	9.70	NA	NA
Decachlorobiphenyl	2.55E-04	NA	NA
Delta-BHC	4.63E-05	NA	NA
Di-n-butylphthalate	0.03	NA	NA
Diethylphthalate	0.01	NA	NA
Endrin aldehyde	1.97E-04	NA	NA
Ethylbenzene	4.90	NA	NA
Fluoranthene	3.60E-03	NA	NA
Lead	0.30	NA	NA
Mercury	1.40E-03	NA	NA
Methoxychlor	3.70E-04	NA	NA
Naphthalene	0.04	NA	NA
Phenanthrene	2.50E-03	NA	NA

Table 24
Noncarcinogenic Toxicity Screen Scores for Chemicals Detected in Groundwater

Chemical[1]	Maximum Concentration (mg/kg)	Reference Dose (mg/kg-day)	Noncarcinogenic Factor
Endrin aldehyde	1.97E-04	3.00E-04	0.66
Heptachlor	1.97E-04	5.00E-04	0.39
Aldrin	1.16E-05	3.00E-05	0.39
Di-n-butylphthalate	0.03	0.10	0.31
1,1,1-Trichloroethane	0.02	0.09	0.26
Gamma-BHC (Lindane)	5.79E-05	3.00E-04	0.19
4,4-DDT	9.26E-05	5.00E-04	0.19
Benzylbutylphthalate	0.02	0.20	0.10
Di-n-octylphthalate	1.90E-03	0.02	0.09
Fluoranthene	3.60E-03	0.04	0.09
Methoxychlor	3.70E-04	5.00E-03	0.07
Pyrene	1.10E-03	0.03	0.04
Vinyl acetate	0.02	1.00	0.02
Diethylphthalate	0.01	0.80	0.01
1,2-Dichloroethane	0.30	NA	NA
2,4,6-Trichlorophenol	0.18	NA	NA
2,6-Dichlorophenol	0.04	NA	NA
3,3'-Dimethylbenzidine	1.30E-03	NA	NA
4,4'-DDE	1.16E-05	NA	NA
4-Methyl-2-pentanone	18	NA	NA
Aroclor 1232	1.40E-03	NA	NA
Benzene	0.20	NA	NA
Benzo(a)anthracene	4.98E-04	NA	NA
Benzo(a)pyrene	6.02E-04	NA	NA
Benzo(b)fluoranthene	6.02E-04	NA	NA
Benzo(k)fluoranthene	6.02E-04	NA	NA
Beta-BHC	4.28E-04	NA	NA
Chrysene	1.60E-03	NA	NA

Table 23
Carcinogenic Toxicity Screen Scores for Chemicals Detected in Groundwater

Chemical[1]	Maximum Concentration (mg/kg)	Slope Factor 1/(mg/kg-day)	Carcinogenic Factor
Pyrene	1.10E-03	NA	NA
Silver	0.05	NA	NA
Tetrachloro-m-xylene	3.36E-04	NA	NA
Tetrachloroethene	0.33	NA	NA
Toluene	20	NA	NA
Trans-1,2-Dichloroethene	0.30	NA	NA
Trichloroethene	0.74	NA	NA
Vinyl acetate	0.02	NA	NA
Xylenes (total)	5.00	NA	NA
Zinc	10.00	NA	NA
Totals			**32**

[1]Chemicals in bold have a carcinogenic factor greater than one percent of the total carcinogenic factor.

Table 24
Noncarcinogenic Toxicity Screen Scores for Chemicals Detected in Groundwater

Chemical[1]	Maximum Concentration (mg/kg)	Reference Dose (mg/kg-day)	Noncarcinogenic Factor
Cobalt	0.24	NA	NA
Decachlorobiphenyl	2.55E-04	NA	NA
Delta-BHC	4.63E-05	NA	NA
Lead	0.30	NA	NA
N-Nitrosodimethylamine	0.03	NA	NA
Naphthalene	0.04	NA	NA
Phenanthrene	2.50E-03	NA	NA
Tetrachloro-m-xylene	3.36E-04	NA	NA
Trichloroethene	0.74	NA	NA
Vinyl chloride	0.61	NA	NA
Totals			**1946**

[1]Chemicals in bold have a noncarcinogenic factor greater than one percent of the total noncarcinogenic factor.

Table 25
Carcinogenic Toxicity Screen Scores for Chemicals Detected in Sediment

Chemical[1]	Maximum Concentration (mg/kg)	Slope Factor 1/(mg/kg-day)	Carcinogenic Factor
Chromium	**78**	**42**	**3289** ←
Nickel	22	0.84	18
Benzo(a)pyrene	1.60	7.30	12
Cadmium	1.10	6.30	6.93
Arsenic	0.43	15	6.47
Benzo(b)fluoranthene	2.40	0.73	1.75
Dieldrin	0.03	16	0.43
Aldrin	0.02	17	0.36
Benzo(k)fluoranthene	2.20	0.07	0.16
Bis(2-ethylhexyl)phthalate	0.48	0.01	6.72E-03
Heptachlor	7.06E-04	4.55	3.21E-03
Chloroform	0.04	0.08	2.90E-03
4,4-DDT	7.91E-03	0.34	2.69E-03
Methylene chloride	0.04	7.50E-03	2.63E-04
2,4,5-Trichlorophenol	0.30	NA	NA
2-Butanone	8.80E-03	NA	NA
Acenaphthene	0.10	NA	NA
Acetone	0.04	NA	NA
Anthracene	0.42	NA	NA
Barium	400	NA	NA
Butylbenzylphthalate	0.13	NA	NA
Cis-1,2-Dichloroethene	1.10E-03	NA	NA
Cobalt	8.80	NA	NA
Copper	101	NA	NA
Decachlorobiphenyl	0.03	NA	NA
Di-n-butylphthalate	1.40	NA	NA
Dibenzofuran	0.04	NA	NA
Diethylphthalate	2.00	NA	NA

Table 26
Noncarcinogenic Toxicity Screen Scores for Chemicals Detected in Sediment

Chemical[1]	Maximum Concentration (mg/kg)	Reference Dose (mg/kg-day)	Noncarcinogenic Factor
Chromium	**78**	**5.00E-03**	**15660**
Barium	**400**	**0.07**	**5714**
Cadmium	**1.10**	**5.00E-04**	**2200**
Arsenic	**0.43**	**3.00E-04**	**1433**
Nickel	**22**	**0.02**	**1100**
Vanadium	**7.00**	**7.00E-03**	**1000**
Aldrin	**0.02**	**3.00E-05**	**700**
Zinc	**170**	**0.30**	**567**
Dieldrin	**0.03**	**5.00E-05**	**534**
Silver	**2.20**	**5.00E-03**	**440** ←
Fluoranthene	8.00	0.04	200
Pyrene	2.90	0.03	97
Copper	101	1.30	78
Bis(2-ethylhexyl)phthalate	0.48	0.02	24
4,4-DDT	7.91E-03	5.00E-04	16
Di-n-butylphthalate	1.40	0.10	14
Fluorene	0.15	0.04	3.75
Chloroform	0.04	0.01	3.60
2,4,5-Trichlorophenol	0.30	0.10	3.00
Diethylphthalate	2.00	0.80	2.50
Acenaphthene	0.10	0.06	1.66
Heptachlor	7.06E-04	5.00E-04	1.41
Anthracene	0.42	0.30	1.40
Methoxychlor	6.60E-03	5.00E-03	1.32
Butylbenzylphthalate	0.13	0.20	0.65
Methylene chloride	0.04	0.06	0.58
Acetone	0.04	0.10	0.37
Tetrachloroethene	3.00E-03	0.01	0.30

Table 25
Carcinogenic Toxicity Screen Scores for Chemicals Detected in Sediment

Chemical[1]	Maximum Concentration (mg/kg)	Slope Factor 1/(mg/kg-day)	Carcinogenic Factor
Fluoranthene	8.00	NA	NA
Fluorene	0.15	NA	NA
Lead	410	NA	NA
Methoxychlor	6.60E-03	NA	NA
Naphthalene	0.09	NA	NA
Phenanthrene	3.00	NA	NA
Pyrene	2.90	NA	NA
Silver	2.20	NA	NA
Tetrachloro-m-xylene	0.02	NA	NA
Tetrachloroethene	3.00E-03	NA	NA
Trichloroethene	1.30E-03	NA	NA
Vanadium	7.00	NA	NA
Zinc	170	NA	NA
Totals			**3335**

[1]Chemicals in bold have a carcinogenic factor greater than one percent of the total carcinogenic factor.

Table 26
Noncarcinogenic Toxicity Screen Scores for Chemicals Detected in Sediment

Chemical[1]	Maximum Concentration (mg/kg)	Reference Dose (mg/kg-day)	Noncarcinogenic Factor
Cis-1,2-Dichloroethene	1.10E-03	0.01	0.11
2-Butanone	8.80E-03	0.60	0.01
Benzo(a)pyrene	1.60	NA	NA
Benzo(b)fluoranthene	2.40	NA	NA
Benzo(k)fluoranthene	2.20	NA	NA
Cobalt	8.80	NA	NA
Decachlorobiphenyl	0.03	NA	NA
Dibenzofuran	0.04	NA	NA
Lead	410	NA	NA
Naphthalene	0.09	NA	NA
Phenanthrene	3.00	NA	NA
Tetrachloro-m-xylene	0.02	NA	NA
Trichloroethene	1.30E-03	NA	NA
Totals			**29797**

[1]Chemicals in bold have a noncarcinogenic factor greater than one percent of the total noncarcinogenic factor.

Table 27
Carcinogenic Toxicity Screen Scores for Chemicals Detected in Soil

Chemical[1]	Maximum Concentration (mg/kg)	Slope Factor 1/(mg/kg-day)	Carcinogenic Factor
Chromium	**7300**	**42**	**306600** ←
Nickel	3470	0.84	2915
Cadmium	394	6.30	2482
Isophorone	68	8.40	571
Aroclor 1254	26	7.70	200
Beryllium	35	4.30	151
Arsenic	7.50	15	113
Bis(2-ethylhexyl)phthalate	6500	0.01	91
Aroclor 1260	5.90	7.70	45
Trichloroethene	3300	0.01	36
Benzo(a)pyrene	1.50	7.30	11
Aroclor 1248	1.20	7.70	9.24
Chloroform	93	0.08	7.49
Aroclor 1221	0.96	7.70	7.39
Aroclor 1016	0.46	7.70	3.54
Aroclor 1232	0.46	7.70	3.54
Aroclor 1242	0.46	7.70	3.54
Benzo(b)fluoranthene	1.40	0.73	1.02
Benzene	30	0.03	0.87
Gamma-BHC (Lindane)	0.51	1.30	0.66
Methylene chloride	85	7.50E-03	0.64
Acrylonitrile	0.87	0.54	0.47
Gamma Chlordane	0.19	1.30	0.25
Benzo(a)anthracene	0.22	0.73	0.16
Benzo(k)fluoranthene	1.60	0.07	0.12
Di-n-octylphthalate	5.30	0.01	0.07
4,4'-DDE	0.05	0.34	0.02

Table 28
Noncarcinogenic Toxicity Screen Scores for Chemicals Detected in Soil

Chemical[1]	Maximum Concentration (mg/kg)	Reference Dose (mg/kg-day)	Noncarcinogenic Factor
Chromium	**7300**	**5.00E-03**	**1460000**
Aroclor 1254	**26**	**2.00E-05**	**1300000**
Cadmium	**394**	**5.00E-04**	**788000**
Bis(2-ethylhexyl)phthalate	**6500**	**0.02**	**325000**
Tetrachloroethene	**3100**	**0.01**	**310000**
Thallium	**21**	**7.00E-05**	**300000**
Nickel	**3470**	**0.02**	**173500**
Toluene	**15000**	**0.20**	**75000** ←
Mercury	12	3.00E-04	40000
Zinc	12000	0.30	40000
Di-n-butylphthalate	3100	0.10	31000
Ethylbenzene	3100	0.10	31000
Arsenic	7.50	3.00E-04	25000
Barium	1710	0.07	24429
Copper	29000	1.30	22308
Silver	79	5.00E-03	15700
Vanadium	84	7.00E-03	12000
Styrene	2300	0.20	11500
Selenium	48	5.00E-03	9500
Chloroform	93	0.01	9300
Xylenes (total)	16000	2.00	8000
Beryllium	35	5.00E-03	7000
Cis-1,2-Dichloroethene	70	0.01	7000
Aroclor 1016	0.46	7.00E-05	6571
Acetone	590	0.10	5900
2-Butanone	2100	0.60	3500
Trans-1,2-Dichloroethene	70	0.02	3500

Table 27
Carcinogenic Toxicity Screen Scores for Chemicals Detected in Soil

Chemical[1]	Maximum Concentration (mg/kg)	Slope Factor 1/(mg/kg-day)	Carcinogenic Factor
4,4-DDT	0.05	0.34	0.02
Dieldrin	9.70E-04	16	0.02
1,1-Dichloroethene	0.01	0.60	8.40E-03
4,4'-DDD	0.01	0.24	2.64E-03
Chrysene	0.35	7.30E-03	2.56E-03
Carbazole	0.04	0.02	8.40E-04
Carbon tetrachloride	2.70E-03	0.13	3.51E-04
1,1,1-Trichloroethane	8.30E-03	NA	NA
1,2,4-Trichlorobenzene	0.87	NA	NA
2-Butanone	2100	NA	NA
2-Methylnaphthalene	4.00	NA	NA
2-Methylphenol	3.60	NA	NA
4-Methyl-2-pentanone	7900	NA	NA
4-Methylphenol	0.05	NA	NA
Acenaphthene	0.89	NA	NA
Acetone	590	NA	NA
Anthracene	0.40	NA	NA
Barium	1710	NA	NA
Benzo(g,h,i)perylene	0.09	NA	NA
Benzoic acid	1.60	NA	NA
Butylbenzylphthalate	34	NA	NA
Carbon disulfide	0.03	NA	NA
Chlorobenzene	0.38	NA	NA
Cis-1,2-Dichloroethene	70	NA	NA
Cobalt	46	NA	NA
Copper	29000	NA	NA
Gamma BHC	1.50E-03	NA	NA
Di-n-octylphthalate	3100	NA	NA

Table 28
Noncarcinogenic Toxicity Screen Scores for Chemicals Detected in Soil

Chemical[1]	Maximum Concentration (mg/kg)	Reference Dose (mg/kg-day)	Noncarcinogenic Factor
Gamma Chlordane	0.19	6.00E-05	3167
Gamma-BHC (Lindane)	0.51	3.00E-04	1700
Methylene chloride	85	0.06	1417
Acrylonitrile	0.87	1.00E-03	870
Tin	500	0.60	833
Isophorone	68	0.20	340
Di-n-octylphthalate	5.30	0.02	265
Butylbenzylphthalate	34	0.20	170
Pyrene	3.90	0.03	130
Fluoranthene	3.80	0.04	95
4,4-DDT	0.05	5.00E-04	92
1,2,4-Trichlorobenzene	0.87	0.01	87
2-Methylphenol	3.60	0.05	72
Endrin aldehyde	6.10E-03	3.00E-04	20
Dieldrin	9.70E-04	5.00E-05	19
Chlorobenzene	0.38	0.02	19
Acenaphthene	0.89	0.06	15
Fluorene	0.54	0.04	14
Diethylphthalate	3.50	0.80	4.38
Carbon tetrachloride	2.70E-03	7.00E-04	3.85
1,1-Dichloroethene	0.01	9.00E-03	1.56
Anthracene	0.40	0.30	1.33
Methoxychlor	4.80E-03	5.00E-03	0.96
Benzoic acid	1.60	4.00	0.40
Carbon disulfide	0.03	0.10	0.27
1,1,1-Trichloroethane	8.30E-03	0.09	0.09
Diethyl phthalate	0.04	0.80	0.05
2-Methylnaphthalene	4.00	NA	NA

Table 27
Carcinogenic Toxicity Screen Scores for Chemicals Detected in Soil

Chemical[1]	Maximum Concentration (mg/kg)	Slope Factor 1/(mg/kg-day)	Carcinogenic Factor
Dibenzo(a,h)anthracene	0.03	NA	NA
Dibenzofuran	0.44	NA	NA
Diethyl phthalate	0.04	NA	NA
Diethylphthalate	3.50	NA	NA
Endrin aldehyde	6.10E-03	NA	NA
Ethylbenzene	3100	NA	NA
Fluoranthene	3.80	NA	NA
Fluorene	0.54	NA	NA
Indeno(1,2,3-cd)pyrene	0.11	NA	NA
Lead	13000	NA	NA
Mercury	12	NA	NA
Methoxychlor	4.80E-03	NA	NA
Naphthalene	160	NA	NA
Phenacetin	0.03	NA	NA
Phenanthrene	2.70	NA	NA
Pyrene	3.90	NA	NA
Selenium	48	NA	NA
Silver	79	NA	NA
Styrene	2300	NA	NA
Tetrachloroethene	3100	NA	NA
Thallium	21	NA	NA
Tin	500	NA	NA
Toluene	15000	NA	NA
Trans-1,2-Dichloroethene	70	NA	NA
Vanadium	84	NA	NA
Xylenes (total)	16000	NA	NA
Zinc	12000	NA	NA
Totals			**313255**

Table 28
Noncarcinogenic Toxicity Screen Scores for Chemicals Detected in Soil

Chemical[1]	Maximum Concentration (mg/kg)	Reference Dose (mg/kg-day)	Noncarcinogenic Factor
4,4'-DDD	0.01	NA	NA
4,4'-DDE	0.05	NA	NA
4-Methyl-2-pentanone	7900	NA	NA
4-Methylphenol	0.05	NA	NA
Aroclor 1221	0.96	NA	NA
Aroclor 1232	0.46	NA	NA
Aroclor 1242	0.46	NA	NA
Aroclor 1248	1.20	NA	NA
Aroclor 1260	5.90	NA	NA
Benzene	30	NA	NA
Benzo(a)anthracene	0.22	NA	NA
Benzo(a)pyrene	1.50	NA	NA
Benzo(b)fluoranthene	1.40	NA	NA
Benzo(g,h,i)perylene	0.09	NA	NA
Benzo(k)fluoranthene	1.60	NA	NA
Carbazole	0.04	NA	NA
Chrysene	0.35	NA	NA
Cobalt	46	NA	NA
Delta-BHC	1.50E-03	NA	NA
Dibenzo(a,h)anthracene	0.03	NA	NA
Dibenzofuran	0.44	NA	NA
Indeno(1,2,3-cd)pyrene	0.11	NA	NA
Lead	13000	NA	NA
Naphthalene	160	NA	NA
Phenacetin	0.03	NA	NA
Phenanthrene	2.70	NA	NA
Trichloroethene	3300	NA	NA
Grand Total			**5054045**

Table 27
Carcinogenic Toxicity Screen Scores for Chemicals Detected in Soil

Chemical[1]	Maximum Concentration (mg/kg)	Slope Factor 1/(mg/kg-day)	Carcinogenic Factor

[1]Chemicals in bold have a carcinogenic factor greater than one percent of the total carcinogenic factor.

Table 28
Noncarcinogenic Toxicity Screen Scores for Chemicals Detected in Soil

Chemical[1]	Maximum Concentration (mg/kg)	Reference Dose (mg/kg-day)	Noncarcinogenic Factor

[1]Chemicals in bold have a noncarcinogenic factor greater than one percent of the total noncarcinogenic factor.

Table 29
Carcinogenic Toxicity Screen Scores for Chemicals Detected in Surface Water

Chemical[1]	Maximum Concentration (mg/kg)	Slope Factor 1/(mg/kg-day)	Carcinogenic Factor
Bis(2-ethylhexyl)phthalate	**2.20E-03**	**0.01**	**3.08E-05**
Gamma-BHC (Lindane)	**1.16E-05**	**1.30**	**1.50E-05**
Methylene chloride	**1.70E-03**	**7.50E-03**	**1.28E-05**
Trichloroethene	**9.14E-04**	**0.01**	**1.01E-05** ←
Acetone	6.60E-03	NA	NA
Copper	0.02	NA	NA
Cyanide	0.03	NA	NA
Decachlorobiphenyl	3.13E-04	NA	NA
Di-n-butylphthalate	2.30E-03	NA	NA
Mercury	5.00E-03	NA	NA
Tetrachloro-m-xylene	3.01E-04	NA	NA
Tetrachloroethene	6.94E-04	NA	NA
Zinc	0.02	NA	NA
Totals			**6.87E-05**

[1]Chemicals in bold have a carcinogenic factor greater than one percent of the total carcinogenic factor.

Table 30
Noncarcinogenic Toxicity Screen Scores for Chemicals Detected in Surface Water

Chemical[1]	Maximum Concentration (mg/kg)	Reference Dose (mg/kg-day)	Noncarcinogenic Factor
Mercury	**5.00E-03**	**3.00E-04**	**17**
Cyanide	**0.03**	**0.02**	**1.30** ←
Bis(2-ethylhexyl)phthalate	2.20E-03	0.02	0.11
Zinc	0.02	0.30	0.07
Tetrachloroethene	6.94E-04	0.01	0.07
Acetone	6.60E-03	0.10	0.07
Gamma-BHC (Lindane)	1.16E-05	3.00E-04	0.04
Methylene chloride	1.70E-03	0.06	0.03
Di-n-butylphthalate	2.30E-03	0.10	0.02
Copper	0.02	1.30	0.02
Decachlorobiphenyl	3.13E-04	NA	NA
Tetrachloro-m-xylene	3.01E-04	NA	NA
Trichloroethene	9.14E-04	NA	NA
Totals			**18**

[1]Chemicals in bold have a noncarcinogenic factor greater than one percent of the total noncarcinogenic factor.

Table 31
Slope Factors and Reference Doses Used in the Toxicity Screen

Chemical	Oral SF $(mg/kg/day)^{-1}$	Inhaltion SF $(\mu g/m^3)^{-1}$	Oral RfD (mg/kg/day)	Inhalation RfD (mg/m^3)
1,1,1-Trichloroethane			0.09	1
1,1,2-Trichloroethane				
1,1-Dichloroethane				
1,1-Dichloroethene	6.00E-01	5.00E-05	9.00E-03	
1,2,4-Trichlorobenzene			1.00E-02	
1,2-Dichlorobenzene				
1,2-Dichloroethane	9.10E-02	2.60E-05		
1,2-Dichloropropane				
2,4,5-Trichlorophenol			0.1	
2,4,6-Trichlorophenol	1.10E-02	3.10E-06		
2,4-Dichlorophenol			3.00E-03	
2,4-Dimethylphenol				
2,6-Dichlorophenol				
2-Butanone			6.00E-01	1
2-Chloronaphthalene				
2-Chlorophenol				
2-Hexanone				
2-Methylnaphthalene				
2-Methylphenol			5.00E-02	
3,3'-Dichlorobenzidine	0.45			
3,3'-Dimethylbenzidine				
4,4'-DDD	2.40E-01			
4,4'-DDE	3.40E-01			
4,4-DDT	3.40E-01	9.70E-05	5.00E-04	
4-Chloro-3-methylphenol				
4-Methyl-2-pentanone				
4-Methylphenol				
4-Nitrophenol				
Acenaphthene			6.00E-02	
Acenaphthylene				
Acetone			1.00E-01	
Acrylonitrile	5.40E-01	6.80E-05	1.00E-03	2.00E-03
Aldrin	17	4.90E-03	3.00E-05	
Alpha-BHC				
Anthracene			0.3	
Antimony				
Aroclor 1016	7.7 a		7.00E-05	
Aroclor 1221	7.7 a			
Aroclor 1232	7.7 a			
Aroclor 1242	7.7 a			
Aroclor 1248	7.7 a			
Aroclor 1254	7.7 a		2.00E-05	
Aroclor 1260	7.7 a			
Arsenic	1.8	4.30E-03	3.00E-04	

Table 31
Slope Factors and Reference Doses Used in the Toxicity Screen

Chemical	Oral SF $(mg/kg/day)^{-1}$	Inhaltion SF $(\mu g/m^3)^{-1}$	Oral RfD (mg/kg/day)	Inhalation RfD (mg/m^3)
Barium			7.00E-02	5.00E-04
Benzene	2.90E-02	8.30E-06		
Benzo(a)anthracene	7.30E-01 b			
Benzo(a)pyrene	7.3 b			
Benzo(b)fluoranthene	7.30E-01 b			
Benzo(g,h,i)perylene				
Benzo(k)fluoranthene	7.30E-02 b			
Benzoic acid			4	
Benzylbutylphthalate			2.00E-01	
Beryllium	4.3		5.00E-03	
Beta-BHC	1.8	5.30E-04		
Bis(2-chloroisopropyl)ether	7.00E-02	1.00E-05	4.00E-02	
Bis(2-ethylhexyl)phthalate	1.40E-02		2.00E-02	
Bromodichloromethane	6.20E-02		2.00E-02	
Butylbenzylphthalate			2.00E-01	
Cadmium		1.80E-03	5.00E-04	
Calcium				
Carbazole	2.00E-02			
Carbon disulfide			1.00E-01	1.00E-02
Carbon tetrachloride	1.30E-01	1.50E-05	7.00E-04	
Chlorobenzene			2.00E-02	
Chloroform	6.10E-03	2.30E-05	1.00E-02	
Chromium		1.20E-02 c	5.00E-03 c	
Chrysene	7.30E-03 b			
Cis-1,2-Dichloroethene			1.00E-02	
Cobalt				
Copper			1.3 g/l	
Cyanide			0.02	
Decachlorobiphenyl				
Delta-BHC				
Di-n-butylphthalate			1.00E-01	
Di-n-octylphthalate	1.40E-02		2.00E-02	
Dibenzo(a,h)anthracene				
Dibenzofuran				
Dieldrin	16	4.60E-03	5.00E-05	
Diethyl phthalate			8.00E-01	
Diethylphthalate			8.00E-01	
Dimethylphthalate				
Endosulfan I				
Endosulfan II				
Endosulfan sulfate				
Endrin aldehyde			3.00E-04 d	
Ethylbenzene			1.00E-01	1
Fluoranthene			4.00E-02	

Table 31 Slope Factors and Reference Doses Used in the Toxicity Screen				
Chemical	Oral SF $(mg/kg/day)^{-1}$	Inhaltion SF $(\mu g/m^3)^{-1}$	Oral RfD (mg/kg/day)	Inhalation RfD (mg/m^3)
Fluorene			4.00E-02	
Gamma-BHC (Lindane)	1.3		3.00E-04	
Gamma Chlordane	1.3 e	3.70E-04 e	6.00E-05 e	
Heptachlor	4.5	1.30E-03	5.00E-04	
Heptachlor epoxide	9.1	2.60E-03	1.30E-05	
Hexachlorobutadiene				
Indeno(1,2,3-cd)pyrene				
Iron				
Isophorone	4.3	2.40E-03	2.00E-01	
Lead				
Magnesium				
Manganese				
Mercury			3.00E-04	
Methoxychlor			5.00E-03	
Methylene chloride	7.50E-03	4.70E-07	6.00E-02	3
N-Nitrosodimethylamine	51	1.40E-02		
N-Nitrosodiphenylamine	4.90E-03			
Naphthalene				
Nickel		2.40E-04 f	2.00E-02 g	
Pentachlorophenol	1.20E-01		3.00E-02	
Phenacetin				
Phenanthrene				
Phenol			6.00E-01	
Potassium				
Pyrene			3.00E-02	
Pyridine			1.00E-03	
Selenium			5.00E-03	
Silver			5.00E-03	
Sodium				
Styrene			2.00E-01	1
Tetrachloro-m-xylene				
Tetrachloroethene			1.00E-02	
Thallium			7.00E-05 h	
Tin			6.00E-01	
TOC				
Toluene			2.00E-01	4.00E-01
Trans-1,2-Dichloroethene			2.00E-02	
Trichloroethene	1.10E-02	1.70E-06		
Vanadium			7.00E-03	
Vinyl acetate			1	2.00E-01
Vinyl chloride	1.9	8.40E-05		
Xylenes (total)			2	
Zinc			3.00E-01	

Table 31
Slope Factors and Reference Doses Used in the Toxicity Screen

Chemical	Oral SF $(mg/kg/day)^{-1}$	Inhaltion SF $(\mu g/m^3)^{-1}$	Oral RfD (mg/kg/day)	Inhalation RfD (mg/m^3)

Notes:
(a)Oral slope factor for PCBS
(b) Analogy to benzo(a)pyrene
(c) Chromium (VI)
(d) Analogy to endrin
(e) Analogy to chlordane
(f) Nickel refinery dust
(g) Nickel soluble salts
(h) Oral RFD for thallic oxide

Sources:
Integrated Risk Information System (IRIS)
Health Effects Assessment Summary Tables (HEAST)

Table 32
Consideration of Background Ground Water Samples
(Total)

Chemical	Background Statistics			On-Site Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
3,3'-Dimethylbenzidine	0	0		2	6	1.30E-03	
2-Chloronaphthalene	0	1		1	36	1.00E-02	
N-Nitrosodimethylamine	0	2		17	77	0.03	
Phenol	0	2		1	79	0.03	
2-Chlorophenol	0	2		3	80	1.20E-03	
1,2-Dichlorobenzene	0	2		3	91	2.40E-03	
Bis(2-chloroisopropyl)ether	0	2		1	75	6.10E-03	
2,4-Dimethylphenol	0	2		2	80	0.07	
2,4-Dichlorophenol	0	2		17	80	1.40	
Naphthalene	0	2		9	80	0.04	
2,6-Dichlorophenol	0	1		5	44	0.04	
Hexachlorobutadiene	0	2		1	80	1.00E-02	
4-Chloro-3-methylphenol	0	2		2	76	4.30E-03	
2,4,6-Trichlorophenol	0	2		8	80	0.18	
2,4,5-Trichlorophenol	0	1		12	45	0.17	
Dimethylphthalate	0	2		1	79	5.90E-03	
Acenaphthylene	0	2		1	80	2.00E-04	
Acenaphthene	0	2		1	79	0.18	
4-Nitrophenol	0	2		1	76	8.00E-04	
Diethylphthalate	1	2	1.00E-04	4	80	1.00E-02	
N-Nitrosodiphenylamine	0	2		2	80	1.00E-02	
Pentachlorophenol	0	2		1	80	1.00E-03	
Phenanthrene	1	2	2.50E-03	3	80	9.00E-04	X
Di-n-butylphthalate	1	2	1.60E-03	48	80	0.03	
Fluoranthene	1	2	3.60E-03	3	80	1.60E-03	X
Benzylbutylphthalate	1	2	2.70E-03	17	80	0.02	
Benzo(a)anthracene	0	2		1	80	5.00E-04	

Table 32
Consideration of Background Ground Water Samples
(Total)

Chemical	Background Statistics			On-Site Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Bis(2-ethylhexyl)phthalate	2	2	0.03	51	79	0.23	
Di-n-octylphthalate	0	2		2	80	1.90E-03	
Chrysene	1	2	1.60E-03	2	80	7.00E-04	X
Benzo(b)fluoranthene	0	2		1	80	6.00E-04	
Benzo(k)fluoranthene	0	2		1	80	6.00E-04	
Benzo(a)pyrene	0	2		1	80	6.00E-04	
Arsenic	0	1		15	41	0.05	
Barium	0	1		8	41	1.70	
Cadmium	0	1		7	41	0.09	
Calcium	1	1	15	41	41	480	
Chromium	0	1		13	41	0.53	
Copper	1	1	0.08	35	41	6.70	
Iron	1	1	28	40	41	400	
Lead	0	1		6	41	0.17	
Magnesium	1	1	10.00	41	41	690	
Manganese	1	1	0.88	41	41	20	
Mercury	0	1		1	41	1.40E-03	
Nickel	1	1	0.03	32	41	2.10	
Potassium	1	1	9.60	41	41	64	
Sodium	1	1	14	41	41	780	
Zinc	1	1	0.17	41	41	5.90	
Cobalt	0	1		9	38	0.24	
Tetrachloro-m-xylene	1	1	2.30E-04	45	45	3.30E-04	X
Decachlorobiphenyl	1	1	8.70E-05	45	45	2.60E-04	
Alpha-BHC	0	1		1	42	1.30E-05	
Beta-BHC	0	2		4	80	4.30E-04	
Delta-BHC	0	2		2	80	5.00E-05	
Gamma-BHC (Lindane)	0	2		1	80	5.50E-05	

Table 32
Consideration of Background Ground Water Samples
(Total)

Chemical	Background Statistics			On-Site Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Heptaclor	0	2		9	80	2.00E-04	
Aldrin	0	2		3	80	1.70E-05	
Heptaclor epoxide	0	1		1	42	2.00E-05	
Endosulfan I	0	2		1	80	2.10E-05	
Dieldrin	0	2		7	80	1.30E-03	
4,4'-DDE	0	2		1	80	8.50E-06	
Endosulfan II	1	2	1.00E-04	2	80	1.60E-04	X
Endosulfan sulfate	0	1		2	42	7.30E-05	
4,4-DDT	0	2		1	80	9.00E-05	
Methoxychlor	0	1		3	45	3.70E-04	
Endrin aldehyde	0	2		1	80	2.00E-04	
Aroclor 1232	0	1		2	42	1.40E-03	
Aroclor 1254	0	2		1	80	3.80E-03	
Acetone	0	2		15	79	2.40	
Cis-1,2-Dichloroethene	0	2		51	79	2.40	
2-Butanone	0	2		2	79	6.90	
4-Methyl-2-pentanone	0	2		4	79	18	
2-Hexanone	0	2		1	79	1.40E-03	
Xylenes (total)	0	2		14	79	5.00	
Vinyl acetate	0	2		4	78	0.02	
1,1,1-Trichloroethane	0	2		19	91	0.02	
Benzene	0	2		16	91	0.20	
Bromodichloromethane	0	2		3	91	3.40E-03	
Chloroform	0	2		30	91	0.04	
Ethylbenzene	0	2		3	91	4.90	
Methylene chloride	1	2	3.30E-03	20	91	0.05	
Trans-1,2-Dichloroethene	0	2		11	91	0.29	
Tetrachloroethene	0	2		58	91	0.33	

Table 32
Consideration of Background Ground Water Samples
(Total)

Chemical	Background Statistics			On-Site Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Toluene	0	2		3	91	20	
1,1,2-Trichloroethane	0	2		3	91	0.02	
Trichloroethene	0	2		59	91	0.74	
Vinyl chloride	0	2		24	91	0.61	
1,1-Dichloroethane	0	2		4	91	1.00E-03	
1,1-Dichloroethene	0	2		12	91	9.30E-03	
1,2-Dichloroethane	0	2		25	91	0.30	
1,2-Dichloropropane	0	2		2	90	1.10E-03	

[1]Chemicals that had a maximum detected background concentration greater than one-half of their maximum detected on-site concentration were considered probable background constituents.

Table 33
Consideration of Background Ground Water Samples
(Dissolved)

Chemical	Background Statistics			On-Site Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Antimony	0	2		1	79	0.05	
Arsenic	1	2	1.00E-02	26	79	0.06	
Barium	1	2	0.78	8	91	2.00	
Beryllium	0	2		2	79	0.04	
Cadmium	0	2		14	91	0.11	
Calcium	2	2	34	78	79	570	
Chromium	1	2	0.60	19	91	0.60	X
Copper	1	2	1.70	57	91	9.70	
Iron	1	2	210	72	91	530	
Lead	1	2	0.30	7	79	0.25	X
Magnesium	2	2	36	79	79	700	
Manganese	1	2	2.70	78	91	17	
Nickel	1	2	0.36	55	91	2.30	
Potassium	2	2	18	79	79	55	
Silver	0	2		4	79	0.05	
Sodium	2	2	120	91	91	970	
Zinc	2	2	1.30	90	91	10.00	
Cobalt	0	1		5	43	0.19	

[1]Chemicals that had a maximum detected background concentration greater than one-half of their maximum detected on-site concentration were considered probable background constituents.

Table 34
Consideration of Background Sediment Samples in Branch Brook

Chemical	Upgradient Statistics			Downgradient Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Acenaphthene	1	4	0.06	0	12		X
Dibenzofuran	1	4	0.04	0	12		X
Diethylphthalate	3	4	0.07	9	12	2.00	
Phenanthrene	2	4	0.31	6	12	0.49	X
Anthracene	1	4	0.05	4	12	0.11	
Di-n-butylphthalate	4	4	0.22	11	12	1.40	
Fluoranthene	3	4	0.60	8	12	1.60	
Pyrene	4	4	0.93	6	12	1.40	X
Bis(2-ethylhexyl)phthalate	1	4	0.13	2	12	0.46	
Benzo(b)fluoranthene	1	4	0.18	7	12	0.57	
Benzo(k)fluoranthene	1	4	0.18	7	12	0.55	
Benzo(a)pyrene	1	4	0.19	5	12	0.60	
Barium	2	2	400	6	6	37	X
Chromium	2	2	13	6	6	12	X
Cobalt	2	2	7.60	6	6	8.80	X
Copper	2	2	12	6	6	17	X
Lead	2	2	410	5	6	8.00	X
Nickel	1	2	12	6	6	13	X
Zinc	2	2	170	6	6	44	X
Methoxychlor	0	2		1	6	3.70E-03	
Aldrin	1	2	1.30E-03	3	6	0.02	
Dieldrin	0	2		1	6	0.03	
4,4-DDT	0	2		1	6	7.90E-03	
Tetrachloro-m-xylene	2	2	0.02	6	6	0.02	X
Decachlorobiphenyl	2	2	0.02	6	6	0.03	X
Methylene chloride	4	4	0.01	12	12	0.02	X
Acetone	1	4	6.40E-03	8	12	0.04	
Cis-1,2-Dichloroethene	0	4		1	12	1.10E-03	

Table 34
Consideration of Background Sediment Samples in Branch Brook

Chemical	Upgradient Statistics			Downgradient Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Chloroform	3	4	1.00E-03	10	12	1.70E-03	X
2-Butanone	0	4		2	12	8.30E-03	
Trichloroethene	0	4		1	12	1.30E-03	
Tetrachloroethene	0	4		1	12	3.00E-03	
TOC	2	2	4820	6	6	14200	

[1]Chemicals that had a maximum detected background concentration greater than one-half of their maximum detected on-site concentration were considered probable background constituents.

Table 35
Consideration of Background Sediment Samples in the Naugatuck River

Chemical	Upgradient Statistics			Downgradient Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Naphthalene	0	7		1	8	0.09	
2,4,5-Trichlorophenol	1	7	0.30	0	8		X
Acenaphthene	1	7	0.06	1	8	0.10	X
Dibenzofuran	1	7	0.03	1	8	0.02	X
Diethylphthalate	1	7	0.04	0	8		X
Fluorene	4	7	0.15	7	8	0.05	X
Phenanthrene	6	7	3.00	8	8	1.80	X
Anthracene	1	7	0.42	5	8	0.21	X
Di-n-butylphthalate	6	7	0.39	8	8	0.40	X
Fluoranthene	7	7	8.00	8	8	5.60	X
Pyrene	7	7	2.90	8	8	2.30	X
Butylbenzylphthalate	1	7	0.13	0	8		X
Bis(2-ethylhexyl)phthalate	3	7	0.22	3	8	0.48	
Benzo(b)fluoranthene	7	7	1.80	8	8	2.40	X
Benzo(k)fluoranthene	7	7	2.10	8	8	2.20	X
Benzo(a)pyrene	7	7	1.50	8	8	1.60	X
Arsenic	0	4		1	5	0.43	
Barium	4	4	41	5	5	38	X
Cadmium	1	4	1.10	4	5	1.10	X
Chromium	4	4	25	5	5	78	
Cobalt	4	4	5.60	5	5	7.40	X
Copper	4	4	92	5	5	101	X
Lead	4	4	29	5	5	21	X
Nickel	4	4	13	5	5	22	X
Silver	0	4		3	5	2.20	
Vanadium	0	4		1	5	7.00	
Zinc	4	4	170	5	5	140	X
Potassium	0	0		1	1	770	

Table 35
Consideration of Background Sediment Samples in the Naugatuck River

Chemical	Upgradient Statistics			Downgradient Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Heptachlor	1	4	6.30E-04	1	4	7.05E-04	X
Methoxychlor	0	4		1	4	6.60E-03	
Dieldrin	0	4		1	4	2.37E-03	
Tetrachloro-m-xylene	4	4	0.02	4	4	0.02	X
Decachlorobiphenyl	4	4	0.02	4	4	0.02	X
Methylene chloride	8	8	7.00E-03	8	8	0.04	
Acetone	6	8	0.04	5	8	0.01	X
Chloroform	4	8	1.80E-03	4	8	0.04	
2-Butanone	4	8	8.80E-03	1	8	1.20E-03	X
Bromodichloromethane	0	8		1	8	2.10E-03	
Tetrachloroethene	0	8		1	8	1.50E-03	
TOC	4	4	7200	4	4	12500	

[1]Chemicals that had a maximum detected background concentration greater than one-half of their maximum detected on-site concentration were considered probable background constituents.

Table 36
Consideration of Background Soil Samples

Chemical	Background Statistics			On-Site Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
1,1,1-Trichloroethane	5	8	1.90E-03	3	20	8.30E-03	
1,1-Dichloroethene	0	0		2	23	0.01	
1,2,4-Trichlorobenzene	0	0		1	14	0.87	
2,4-Dimethylphenol	0	0		2	19	0.05	
2-Butanone	0	0		33	101	2100	
2-Hexanone	0	0		2	14	2.00E-03	
2-Methylnaphthalene	0	0		20	88	4.00	
2-Methylphenol	0	0		3	18	3.60	
4,4'-DDD	0	0		1	16	0.01	
4,4'-DDE	2	8	2.20E-03	19	65	0.05	
4,4-DDT	5	8	8.00E-03	47	91	0.05	
4-Methyl-2-pentanone	0	0		54	120	7900	
4-Methylphenol	0	0		2	18	0.05	
Acenaphthene	0	0		7	61	0.89	
Acenaphthylene	0	0		4	34	0.11	
Acetone	8	8	9.40E-03	109	122	590	
Acrylonitrile	0	0		1	3	0.87	
Alpha-BHC	0	0		1	16	2.31E-04	
Anthracene	6	8	0.07	41	109	0.40	
Antimony	0	0		3	27	96	
Aroclor 1016	0	0		1	2	0.46	
Aroclor 1221	0	0		1	2	0.96	
Aroclor 1232	0	0		1	2	0.46	
Aroclor 1242	0	0		1	2	0.46	
Aroclor 1248	0	0		3	18	1.20	
Aroclor 1254	3	8	0.07	56	93	26	
Aroclor 1260	0	0		23	91	5.90	
Arsenic	8	8	1.30	103	109	7.50	

Table 36
Consideration of Background Soil Samples

Chemical	Background Statistics			On-Site Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Barium	8	8	88	109	109	1710	
Benzene	0	0		9	40	30	
Benzo(a)anthracene	0	0		6	34	0.22	
Benzo(a)pyrene	8	8	0.34	53	103	1.50	
Benzo(b)fluoranthene	8	8	0.40	55	105	1.40	
Benzo(g,h,i)perylene	0	0		2	20	0.09	
Benzo(k)fluoranthene	8	8	0.42	54	91	1.60	
Benzoic acid	0	0		1	1	1.60	
Beryllium	4	8	1.40	56	94	35	
Bis(2-ethylhexyl)phthalate	8	8	0.13	106	111	6500	
Bromodichloromethane	1	8	1.50E-03	0	0		X
Butylbenzylphthalate	1	8	0.01	10	38	34	
Cadmium	4	8	2.50	80	109	394	
Carbazole	0	0		2	17	0.04	
Carbon disulfide	0	0		19	74	0.03	
Carbon tetrachloride	0	0		2	34	2.70E-03	
Chlorobenzene	0	0		2	23	0.38	
Chloroform	8	8	0.02	88	120	93	
Chromium	8	8	170	109	109	7300	
Chrysene	0	0		6	34	0.35	
Cis-1,2-Dichloroethene	0	0		15	73	70	
Cobalt	8	8	10.00	94	94	46	
Copper	8	8	370	109	109	29000	
Delta-BHC	0	0		7	48	1.50E-03	
Di-n-butylphthalate	8	8	0.04	96	111	3100	
Di-n-octylphthalate	0	0		64	107	5.30	
Dibenzo(a,h)anthracene	0	0		1	20	0.03	
Dibenzofuran	0	0		9	84	0.44	
Dieldrin	1	8	9.70E-04	3	30	6.60E-04	X

Table 36
Consideration of Background Soil Samples

Chemical	Background Statistics			On-Site Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Diethyl phthalate	0	0		4	14	0.04	
Diethylphthalate	2	8	1.00E-02	23	91	3.50	
Endrin aldehyde	0	0		6	18	6.10E-03	
Ethylbenzene	0	0		61	122	3100	
Fluoranthene	8	8	0.69	70	111	3.80	
Fluorene	1	8	8.00E-03	14	101	0.54	
Gamma-BHC□(Lindane)	0	0		21	102	0.51	
Gamma-BHC (Lindane)	1	8	1.60E-04	0	0		X
gamma-Chlordane	0	0		1	15	0.19	
Heptachlor epoxide	0	0		1	16	3.82E-04	
Indeno(1,2,3-cd)pyrene	0	0		2	20	0.11	
Isophorone	0	0		4	22	68	
Lead	8	8	140	102	109	13000	
Mercury	4	8	0.04	29	81	12	
Methoxychlor	0	0		3	34	4.80E-03	
Methylene chloride	2	8	0.01	85	117	85	
N-Nitrosodiphenylamine	0	0		1	20	0.26	
Naphthalene	0	0		27	103	160	
Nickel	8	8	76	109	109	3470	
Phenacetin	0	0		1	2	0.03	
Phenanthrene	8	8	0.32	70	111	2.70	
Phenol	0	0		4	31	170	
Pyrene	8	8	0.69	74	111	3.90	
Selenium	0	0		21	81	48	
Silver	5	8	2.80	65	109	79	
Styrene	0	0		10	59	2300	
Tetrachloroethene	6	8	1.40E-03	80	120	3100	
Thallium	0	0		33	91	21	
Tin	0	0		11	64	500	

Table 36
Consideration of Background Soil Samples

Chemical	Background Statistics			On-Site Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Toluene	5	8	4.00E-03	84	122	15000	
Trans-1,2-Dichloroethene	0	0		9	23	70	
Trichloroethene	4	8	1.10E-03	51	119	3300	
Vanadium	5	8	31	80	92	84	
Xylenes (total)	6	8	1.90E-03	88	122	16000	
Zinc	8	8	270	109	109	12000	

[1]Chemicals that had a maximum detected background concentration greater than one-half of their maximum detected on-site concentration were considered probable background constituents.

Table 37
Consideration of Background Surface Water Samples in Branch Brook

Chemical	Upgradient Statistics			Downgradient Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Tetrachloro-m-xylene	3	3	2.60E-04	7	7	3.00E-04	X
Decachlorobiphenyl	3	3	2.50E-04	7	7	2.70E-04	X
Methylene chloride	3	6	1.60E-03	1	14	1.60E-03	X
Acetone	2	6	3.20E-03	0	14		X
Di-n-butylphthalate	2	6	2.30E-03	1	14	1.60E-03	X
Calcium	5	5	8.40	14	14	11	X
Copper	1	5	0.02	1	14	0.02	X
Iron	5	5	0.26	14	14	0.35	X
Magnesium	5	5	2.80	14	14	3.30	X
Manganese	1	5	0.05	12	14	0.06	X
Mercury	2	5	5.00E-03	6	14	5.00E-03	X
Potassium	5	5	2.00	14	14	2.70	X
Sodium	5	5	12	14	14	25	
Zinc	2	5	0.01	13	14	0.01	X
Cyanide	0	5		1	12	0.03	

[1]Chemicals that had a maximum detected background concentration greater than one-half of their maximum detected on-site concentration were considered probable background constituents.

Table 38
Consideration of Background Surface Water Samples in Naugatuck River

Chemical	Upgradient Statistics			Downgradient Statistics			Probable Background Constituent[1]
	Detects	Samples	Maximum	Detects	Samples	Maximum	
Gamma-BHC (Lindane)	1	3	8.00E-06	0	5		X
Tetrachloro-m-xylene	3	3	2.70E-04	5	5	2.90E-04	X
Decachlorobiphenyl	3	3	3.10E-04	5	5	2.50E-04	X
Methylene chloride	2	6	1.40E-03	4	10	1.70E-03	X
Acetone	2	6	5.90E-03	5	10	6.60E-03	X
Trichloroethene	6	6	9.20E-04	9	10	7.30E-04	X
Tetrachloroethene	0	6		3	10	7.00E-04	
Di-n-butylphthalate	0	6		2	10	1.30E-03	
Bis(2-ethylhexyl)phthalate	0	6		1	10	2.20E-03	
Calcium	6	6	12	10	10	13	X
Iron	6	6	0.39	10	10	0.39	X
Magnesium	6	6	3.60	10	10	3.70	X
Manganese	4	6	0.06	6	10	0.07	X
Potassium	6	6	3.70	10	10	4.70	X
Sodium	6	6	22	10	10	29	X
Zinc	5	6	0.02	8	10	0.02	X

[1]Chemicals that had a maximum detected background concentration greater than one-half of their maximum detected on-site concentration were considered probable background constituents.

TABLE 39
Matrix of Potential Current Exposure Routes

Exposure Medium/Exposure Route	Commercial/ Industrial Population	Off-site Residential Population	Trespasser	Recreational Population
Soil/Dust				
Incidental Ingestion	A	A, C	T	A, C
Dermal Contact	A	A, C	T	A, C
Air				
Inhalation of Vapors	A	A, C	T	A, C
Inhalation of Particulates	A	A, C	T	A, C
Surface Water				
Ingestion	--	--	--	A, C (incidental)
Dermal Contact	--	--	--	A, C
Sediment				
Ingestion	--	--	--	A, C (incidental)
Dermal Contact	--	--	--	A, C
Ground Water				
Ingestion	--	--	--	--
Dermal Contact	A	--	--	--
Inhalation	A	--	--	--

A Adult residents are assumed to be exposed for 24 years. Adult workers are assumed to be exposed for 25 years.
C Children are assumed to be exposed for 6 years. Exposure in children may be significantly greater than adults.
T Trespassers are assumed to be exposed for 9 years.
-- Exposure of this population is not likely to occur.

TABLE 40
Matrix of Potential Future Exposure Routes

Exposure Medium/Exposure Route	Commercial/ Industrial Population	Off-site Residential Population	Trespasser	Recreational Population
Soil/Dust				
Incidental Ingestion	A	A, C	T	A, C
Dermal Contact	A	A, C	T	A, C
Air				
Inhalation of Vapors	A	A, C	T	A, C
Inhalation of Particulates	A	A, C	T	A, C
Surface Water				
Ingestion	--	--	--	A, C (incidental)
Dermal Contact	--	--	--	A, C
Sediment				
Ingestion	--	--	--	A, C (incidental)
Dermal Contact	--	--	--	A, C
Ground Water				
Ingestion	--	--	--	--
Dermal Contact	A	--	--	--
Inhalation	A	--	--	--

A Adult residents are assumed to be exposed for 24 years. Adult workers are assumed to be exposed for 25 years.
C Children are assumed to be exposed for 6 years. Exposure in children may be significantly greater than adults.
T Trespassers are assumed to be exposed for 9 years.
-- Exposure of this population is not likely to occur.

TABLE 41
Reasonable Maximum Exposure Assumptions for Ingestion of Soil

$$Chemical\ Intake\ (mg/kg\text{-}day) = \frac{CS \times IR \times \frac{1\ kg}{10^6 mg} \times FI \times EF \times ED}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
CS = Chemical Concentration in Soil (mg/kg)	Chemical specific						—
IR = Ingestion Rate (mg/day)	50	100	200	100	100	200	USEPA 1991a
FI = Fraction Ingested from Contaminated Source (unitless)	To be determined by site-specific data						—
EF = Exposure Frequency (days/yr)	250	350	350	24	26	26	USEPA 1991a for worker/ resident
ED = Exposure Duration (yrs)	25	24	6	9	24	6	USEPA 1991a
BW = Body Weight (kg)	70	70	15	35	70	15	USEPA 1991a
AT = Averaging Time (days)							
Noncarcinogens	9,125	8,760	2,190	3,285	8,760	2,190	USEPA 1991a
Carcinogens	25,550	25,550	25,550	25,550	25,550	25,550	

TABLE 42
Reasonable Maximum Exposure Assumptions for Dermal Contact with Soil

$$Chemical\ Intake\ (mg/kg\text{-}day) = \frac{CS \times 1\ kg/10^6\ mg \times FC \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
CS = Chemical Concentration in Soil (mg/kg)	Chemical specific						—
FC = Fraction Contacted from Contaminated Source (unitless)	To be determined by site-specific data						—
SA = Skin Surface Area Available for Contact (cm^2/day)	3,800 [a]	5,100 [b]	1,440 [c]	3,900 [d]	5,100 [b]	1,440 [c]	USEPA 1992d
AF = Soil to Skin Adherence Factor (mg/cm^2)	1.0						USEPA 1992d
ABS= Absorption Factor (unitless)	0.50 (volatile organic compounds and pesticides with low sorption to soils) 0.05 (PAHs, PCBs, and pesticides with high sorption to soils) negligible (inorganic compounds)						USEPA 1989b
EF = Exposure Frequency (days/yr)	250	350	350	24	26	26	USEPA 1991a for worker/ resident
ED = Exposure Duration (yrs)	25	24	6	9	24	6	USEPA 1991a
BW = Body Weight (kg)	70	70	15	35	70	15	USEPA 1991a

TABLE 42
Reasonable Maximum Exposure Assumptions for Dermal Contact with Soil

$$Chemical\ Intake\ (mg/kg\text{-}day) = \frac{CS \times 1\ kg/10^6\ mg \times FC \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
AT = Averaging Time (days)							
Noncarcinogens	9,125	8,760	2,190	3,285	8,760	2,190	USEPA 1991a
Carcinogens	25,550	25,550	25,550	25,550	25,550	25,550	

[a] Calculated assuming dermal contact with soil on face (or ½ the head) and two-thirds of the upper limbs. Surface areas are based on a total body surface area of 23,000 cm^2 from USEPA (1992d) and percentage of total body surface area by body part from USEPA (1990a, Table 4-2).

[b] Calculated assuming dermal contact with soil on face (or ½ the head), and two-thirds of the upper limbs and one half of the lower limbs during the warm weather months and on the face and hands during the cool weather months. Surface areas are based on percentages of total body surface area of potentially exposed body parts for men and women from USEPA (1992d) and mean total body surface area for men and women from USEPA (1990a, Table 4-1). This is assumed to apply to a resident that would garden around their home.

[c] Calculated assuming dermal contact with soil on face (or ½ the head), and two-thirds of the upper limbs and one half of the lower limbs during the warm weather months and on the face and hands during the cool weather months. Surface areas are based on percentages of total body surface area of potentially exposed body parts for children between the ages of 3 and 4 from USEPA (1992d) and the 95 percentile total body surface area for children between the ages of 3 and 4 from USEPA (1990a, Table 4-1).

[D] Calculated assuming dermal contact with soil on face (or ½ the head), and two-thirds of the upper limbs and one half of the lower limbs during the warm weather months and on the face and hands during the cool weather months. Surface areas are based on percentages of total body surface area of potentially exposed body parts for children between the ages of 12 and 13 from USEPA (1992d) and the 95 percentile total body surface area for children between the ages of 12 and 13 from USEPA (1990a, Table 4-1).

TABLE 43
Reasonable Maximum Exposure Assumptions for Inhalation of Vapors

$$Chemical\ Intake\ (mg/kg\text{-}day) = \frac{CA \times InhR \times FE \times EF \times ED}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
CA = Airborne Vapor Chemical Concentration (mg/m^3)	Chemical specific						—
InhR = Inhalation Rate (m^3/day)	20 [a]	20 [a]	9.6 [b]	19.2 [c]	20 [a]	9.6 [b]	see footnotes
FE = Fraction of Day Exposed (unitless)	To be determined by site-specific data						—
EF = Exposure Frequency (days/yr)	250	350	350	24	26	26	USEPA 1991a for worker/ resident
ED = Exposure Duration (yrs)	25	24	6	9	24	6	USEPA 1991a
BW = Body Weight (kg)	70	70	15	35	70	15	USEPA 1991a
AT = Averaging Time (days)							
Noncarcinogens	9,125	8,760	2,190	3,285	8,760	2,190	USEPA 1991a
Carcinogens	25,550	25,550	25,550	25,550	25,550	25,550	

[a] Based on recommended exposure assumptions given in EPA's proposed rule (USEPA 1990b).
[b] Average of inhalation rates for an infant (ICRP 1984) and 6-year old (USEPA 1990a) assuming for the latter 16 hours of light activity and 8 hours at rest.
[c] Based on inhalation rate for a 10-year old (USEPA 1990a), assuming 16 hours of light activity and 8 hours of rest.

TABLE 44
Reasonable Maximum Exposure Assumptions for Inhalation of Particulates

$$Chemical\ Intake\ (mg/kg\text{-}day) = \frac{CP \times InhR \times FE \times EF \times ED}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
CP = Chemical Particulate Concentration in Air (mg/m^3)	Chemical specific						—
InhR = Inhalation Rate (m^3/day)	20 [a]	20 [a]	9.6 [b]	19.2 [c]	20 [a]	9.6 [b]	see footnotes
FE = Fraction of Day Exposed (unitless)	To be determined by site-specific data						—
EF = Exposure Frequency (days/yr)	250	350	350	24	26	26	USEPA 1991a for worker/ resident
ED = Exposure Duration (yrs)	25	24	6	9	24	6	USEPA 1991a
BW = Body Weight (kg)	70	70	15	35	70	15	USEPA 1991a
AT = Averaging Time (days)							
Noncarcinogens	9,125	8,760	2,190	3,285	8,760	2190	USEPA 1991a
Carcinogens	25,550	25,550	25,550	25,550	25,550	25,550	

[a] Based on recommended exposure assumptions given in EPA's proposed rule (USEPA 1990b).
[b] Average of inhalation rates for an infant (ICRP 1984) and 6-year old (USEPA 1990a) assuming for the latter 16 hours of light activity and 8 hours at rest.
[c] Based on inhalation rate for a 10-year old (USEPA 1990a), assuming 16 hours of light activity and 8 hours of rest.

TABLE 45
Reasonable Maximum Exposure Assumptions for Ingestion of Surface Water

$$Chemical\ Intake\ (mg/kg\text{-}day) = \frac{CW \times IR \times EF \times ET \times ED}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
CW = Chemical Concentration in Water (mg/L)	Chemical specific						—
IR = Ingestion Rate (L/hr)	NA	NA	NA	NA	0.05	0.05	USEPA 1989a
EF = Exposure Frequency (days/yr)	NA	NA	NA	NA	26	26	professional judgement
ET = Exposure Time (hr/day)	NA	NA	NA	NA	1	1	professional judgement
ED = Exposure Duration (yrs)	NA	NA	NA	NA	24	6	USEPA 1991a
BW = Body Weight (kg)	NA	NA	NA	NA	70	15	USEPA 1991a
AT = Averaging Time (days) Noncarcinogens Carcinogens	NA	NA	NA	NA	8,760 25,550	2,190 25,550	USEPA 1991a

TABLE 46
Reasonable Maximum Exposure Assumptions for Dermal Contact with Surface Water

$$\text{Chemical Intake (mg/kg-day)} = \frac{DA \times EF \times ED \times \frac{1\ L}{1000\ cm^3}}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
DA = Absorbed Dose (mg/cm^2-event)	Chemical specific (calculated value)						USEPA 1992d
EF = Exposure Frequency (event/yr)	NA	NA	NA	NA	26	26	professional judgement
ED = Exposure Duration (yrs)	NA	NA	NA	NA	24	6	USEPA 1991a
BW = Body Weight (kg)	NA	NA	NA	NA	70	15	USEPA 1991a
AT = Averaging Time (days)							
Noncarcinogens	NA	NA	NA	NA	8,760	2,190	USEPA 1991a
Carcinogens					25,550	25,550	

TABLE 47
Reasonable Maximum Exposure Assumptions for Ingestion of Sediment

$$Chemical\ Intake\ (mg/kg\text{-}day) = \frac{CS \times IR \times \frac{1\ kg}{10^6 mg} \times FI \times EF \times ED}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
CS = Chemical Concentration in Sediment (mg/kg)	Chemical specific						—
IR = Ingestion Rate (mg/day)	NA	NA	NA	NA	100	200	USEPA 1991a
FI = Fraction Ingested from Contaminated Source (unitless)	To be determined by site-specific data						—
EF = Exposure Frequency (days/yr)	NA	NA	NA	NA	26	26	professional judgement
ED = Exposure Duration (yrs)	NA	NA	NA	NA	24	6	USEPA 1991a
BW = Body Weight (kg)	NA	NA	NA	NA	70	15	USEPA 1991a
AT = Averaging Time (days) Noncarcinogens Carcinogens	NA	NA	NA	NA	8,760 25,550	2,190 25,550	USEPA 1991a

TABLE 48
Reasonable Maximum Exposure Assumptions for Dermal Contact with Sediment

$$Chemical\ Intake\ (mg/kg\text{-}day) = \frac{CS \times 1\ kg/10^6\ mg \times FC \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
CS = Chemical Concentration in Sediment (mg/kg)	Chemical specific						—
FC = Fraction Contacted from Contaminated Source (unitless)	To be determined by site-specific data						—
SA = Skin Surface Area Available for Contact (cm^2/day)	NA	NA	NA	NA	23,000 [a]	2,700 [b]	see footnote
AF = Sediment to Skin Adherence Factor (mg/cm^2)	1.0						USEPA 1992d
ABS = Absorption Factor (unitless)	0.50 (volatile organic compounds and pesticides with low sorption to soils) 0.05 (PAHs, PCBs, and pesticides with high sorption to soils) negligible (inorganic compounds)						USEPA 1989b
EF = Exposure Frequency (days/yr)	NA	NA	NA	NA	26	26	professional judgement
ED = Exposure Duration (yrs)	NA	NA	NA	NA	24	6	USEPA 1991a
BW = Body Weight (kg)	NA	NA	NA	NA	70	15	USEPA 1991a

TABLE 48
Reasonable Maximum Exposure Assumptions for Dermal Contact with Sediment

$$Chemical\ Intake\ (mg/kg\text{-}day) = \frac{CS \times 1\ kg/10^6\ mg \times FC \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
AT = Averaging Time (days)							
Noncarcinogens	NA	NA	NA	NA	8,760	2,190	USEPA 1991a
Carcinogens					25,550	25,550	

a Full body exposed (USEPA 1992d).
b Legs and feet exposed (USEPA 1990a).

TABLE 49
Reasonable Maximum Exposure Assumptions for Dermal Contact with Ground Water (Showering)

$$Chemical\ Intake\ (mg/kg\text{-}day) = \frac{DA \times EF \times ED \times \frac{1\ L}{1000\ cm^3}}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
DA = Absorbed Dose (mg/cm^2-event)	Chemical specific (calculated value)						USEPA 1992d
EF = Exposure Frequency (event/yr)	250	NA	NA	NA	NA	NA	USEPA 1991a
ED = Exposure Duration (yrs)	25	NA	NA	NA	NA	NA	USEPA 1991a
BW = Body Weight (kg)	70	NA	NA	NA	NA	NA	USEPA 1991a
AT = Averaging Time (days)							
Noncarcinogens	9,125	NA	NA	NA	NA	NA	USEPA 1991a
Carcinogens	25,550						

TABLE 50
Reasonable Maximum Exposure Assumptions for Inhalation of Airborne Chemicals in Ground Water (Showering)

$$Chemical\ Intake\ (mg/kg\text{-}d) = \frac{CA \times InhR \times FE \times EF \times ED}{BW \times AT}$$

Parameter	Assumed Values for Worker	Assumed Values for Resident		Assumed Values for Trespasser	Assumed Values for Recreational Population		Reference
		Adult	Child		Adult	Child	
CA = Chemical Concentration in Air (mg/m^3)	Chemical specific						—
InhR = Inhalation Rate (m^2/day)	20	NA	NA	NA	NA	NA	USEPA 1991a
EF = Fraction of Day Exposed (unitless)	0.0083 [a]	NA	NA	NA	NA	NA	professional judgement
EF = Exposure Frequency (days/yr)	250	NA	NA	NA	NA	NA	USEPA 1991a
ED = Exposure Duration (yrs)	25	NA	NA	NA	NA	NA	USEPA 1991a
BW = Body Weight (kg)	70	NA	NA	NA	NA	NA	USEPA 1991a
AT = Averaging Time (days) Noncarcinogens Carcinogens	9,125 25,550	NA	NA	NA	NA	NA	USEPA 1991a

[a] This value, 0.0083 or 0.2 hours/24 hours, is equivalent to a 12-minute shower.

Table 51
Summary Statistics For Downgradient Branch Brook Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (µg/L)		Range of Detected Concentrations (µg/L)		Mean of all Samples[2] (µg/L)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Volatile Compounds:							
1,1,1-Trichloroethane	0	14	10.00	10.00			5.00
1,1,2,2-Tetrachloroethane	0	14	10.00	10.00			5.00
1,1,2-Trichloroethane	0	14	10.00	10.00			5.00
1,1-Dichloroethane	0	14	10.00	10.00			5.00
1,1-Dichloroethene	0	14	10.00	10.00			5.00
1,2-Dichloroethane	0	14	10.00	10.00			5.00
1,2-Dichloropropane	0	14	10.00	10.00			5.00
2-Butanone	0	14	10.00	10.00			5.00
2-Chloroethyl vinyl ether	0	14	10.00	10.00			5.00
2-Hexanone	0	14	10.00	10.00			5.00
4-Methyl-2-pentanone	0	14	10.00	10.00			5.00
Acetone	0	14	10.00	10.00			5.00
Benzene	0	14	10.00	10.00			5.00
Bromodichloromethane	0	14	10.00	10.00			5.00
Bromoform	0	14	10.00	10.00			5.00
Bromomethane	0	14	10.00	10.00			5.00
Carbon disulfide	0	14	10.00	10.00			5.00
Carbon tetrachloride	0	14	10.00	10.00			5.00
Chlorobenzene	0	14	10.00	10.00			5.00
Chloroethane	0	14	10.00	10.00			5.00
Chloroform	0	14	10.00	10.00			5.00
Chloromethane	0	14	10.00	10.00			5.00
Cis-1,2-Dichloroethene	0	14	10.00	10.00			5.00
Cis-1,3-dichloropropene	0	14	10.00	10.00			5.00
Dibromochloromethane	0	14	10.00	10.00			5.00
Ethylbenzene	0	14	10.00	10.00			5.00
Methylene chloride	1	14	10.00	10.00	1.60	1.60	4.76
Styrene	0	14	10.00	10.00			5.00
Tetrachloroethene	0	14	10.00	10.00			5.00
Toluene	0	14	10.00	10.00			5.00
Trans-1,2-Dichloroethene	0	14	10.00	10.00			5.00
Trans-1,3-dichloropropene	0	14	10.00	10.00			5.00
Trichloroethene	0	14	10.00	10.00			5.00

Table 51
Summary Statistics For Downgradient Branch Brook Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (µg/L)		Range of Detected Concentrations (µg/L)		Mean of all Samples[2] (µg/L)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Vinyl acetate	0	14	10.00	10.00			5.00
Vinyl chloride	0	14	10.00	10.00			5.00
Xylenes (total)	0	14	10.00	10.00			5.00
Semivolatile Compounds:							
2,4,5-Trichlorophenol	0	14	10.00	10.00			5.00
2,4,6-Trichlorophenol	0	14	10.00	10.00			5.00
2,4-Dichlorophenol	0	14	10.00	10.00			5.00
2,6-Dichlorophenol	0	14	10.00	10.00			5.00
2-Chlorophenol	0	14	10.00	10.00			5.00
2-Methylnaphthalene	0	14	10.00	10.00			5.00
Acenaphthene	0	14	10.00	10.00			5.00
Anthracene	0	14	10.00	10.00			5.00
Benzo(a)pyrene	0	14	10.00	10.00			5.00
Benzo(b)fluoranthene	0	14	10.00	10.00			5.00
Benzo(k)fluoranthene	0	14	10.00	10.00			5.00
Benzylbutylphthalate	0	14	10.00	10.00			5.00
Bis(2-ethylhexyl)phthalate	0	14	10.00	10.00			5.00
Di-n-butylphthalate	1	14	10.00	10.00	1.60	1.60	4.76
Di-n-octylphthalate	0	14	10.00	10.00			5.00
Dibenzofuran	0	14	10.00	10.00			5.00
Diethylphthalate	0	14	10.00	10.00			5.00
Fluoranthene	0	14	10.00	10.00			5.00
Fluorene	0	14	10.00	10.00			5.00
Methoxychlor	0	7	0.50	0.50			0.25
N-Nitrosodimethylamine	0	14	10.00	10.00			5.00
N-Nitrosodiphenylamine	0	14	10.00	10.00			5.00
Naphthalene	0	14	10.00	10.00			5.00
Phenanthrene	0	14	10.00	10.00			5.00
Pyrene	0	14	10.00	10.00			5.00
PCBs/Pesticides:							
2,4,5-T	0	13	0.10	0.10			0.05
2,4,5-TP (Silvex)	0	13	0.10	0.10			0.05
2,4-D	0	13	1.00	1.00			0.50
4,4'-DDE	0	7	0.10	0.10			0.05

Table 51
Summary Statistics For Downgradient Branch Brook Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (µg/L)		Range of Detected Concentrations (µg/L)		Mean of all Samples[2] (µg/L)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
4,4-DDT	0	7	0.10	0.10			0.05
Aldrin	0	7	0.05	0.05			0.02
Aroclor 1242	0	7	1.00	1.00			0.50
Aroclor 1254	0	7	1.00	1.00			0.50
Beta-BHC	0	7	0.05	0.05			0.02
Decachlorobiphenyl	7	7			0.23	0.27	0.25
Delta-BHC	0	7	0.05	0.05			0.02
Dieldrin	0	7	0.10	0.10			0.05
Dinoseb	0	13	1.00	1.00			0.50
Endosulfan I	0	7	0.05	0.05			0.02
Endosulfan II	0	7	0.10	0.10			0.05
Endrin aldehyde	0	7	0.10	0.10			0.05
Gamma-BHC (Lindane)	0	7	0.05	0.05			0.02
Heptachlor	0	7	0.05	0.05			0.02
Tetrachloro-m-xylene	7	7			0.24	0.30	0.26
Inorganic Compounds:							
Antimony	0	14	400	400			200
Arsenic	0	14	5.00	5.00			2.50
Barium	0	14	500	500			250
Beryllium	0	14	20	20			10.00
Cadmium	0	14	10.00	10.00			5.00
Calcium	14	14			7700	11000	8500
Chromium	0	14	40	40			20
Cobalt	0	7	100	100			50
Copper	1	14	20	20	20	20	11
Cyanide	1	12	10.00	10.00	26	26	6.75
Iron	14	14			40	350	153
Lead	0	14	60	60			30
Magnesium	14	14			2300	3300	2629
Manganese	12	14	20	50	22	63	47
Mercury	6	14	5.00	5.00	5.00	5.00	3.57
Nickel	0	14	30	30			15
Potassium	14	14			1600	2700	1886
Selenium	0	7	5.00	5.00			2.50

Table 51
Summary Statistics For Downgradient Branch Brook Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (µg/L)		Range of Detected Concentrations (µg/L)		Mean of all Samples[2] (µg/L)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Silver	0	14	30	30			15
Sodium	14	14			5900	25000	10514
Thallium	0	14	400	400			200
Tin	0	7	800	800			400
Vanadium	0	7	1000	1000			500
Zinc	13	14	10.00	10.00	10.00	14	10
Other:							
TOC	0	12	5000	5000			2500

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the

Table 52
Summary Statistics For Downgradient Naugatuck River Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (µg/L)		Range of Detected Concentrations (µg/L)		Mean of all Samples[2] (µg/L)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Volatile Compounds:							
1,1,1-Trichloroethane	0	10	10.00	10.00			5.00
1,1,2,2-Tetrachloroethane	0	10	10.00	10.00			5.00
1,1,2-Trichloroethane	0	10	10.00	10.00			5.00
1,1-Dichloroethane	0	10	10.00	10.00			5.00
1,1-Dichloroethene	0	10	10.00	10.00			5.00
1,2-Dichloroethane	0	10	10.00	10.00			5.00
1,2-Dichloropropane	0	10	10.00	10.00			5.00
2-Butanone	0	10	10.00	10.00			5.00
2-Chloroethyl vinyl ether	0	10	10.00	10.00			5.00
2-Hexanone	0	10	10.00	10.00			5.00
4-Methyl-2-pentanone	0	10	10.00	10.00			5.00
Acetone	5	10	10.00	10.00	2.40	6.60	4.33
Benzene	0	10	10.00	10.00			5.00
Bromodichloromethane	0	10	10.00	10.00			5.00
Bromoform	0	10	10.00	10.00			5.00
Bromomethane	0	10	10.00	10.00			5.00
Carbon disulfide	0	10	10.00	10.00			5.00
Carbon tetrachloride	0	10	10.00	10.00			5.00
Chlorobenzene	0	10	10.00	10.00			5.00
Chloroethane	0	10	10.00	10.00			5.00
Chloroform	0	10	10.00	10.00			5.00
Chloromethane	0	10	10.00	10.00			5.00
Cis-1,2-Dichloroethene	0	10	10.00	10.00			5.00
Cis-1,3-dichloropropene	0	10	10.00	10.00			5.00
Dibromochloromethane	0	10	10.00	10.00			5.00
Ethylbenzene	0	10	10.00	10.00			5.00
Methylene chloride	4	10	10.00	10.00	0.40	1.70	3.42
Styrene	0	10	10.00	10.00			5.00
Tetrachloroethene	3	10	10.00	10.00	0.30	0.70	3.65
Toluene	0	10	10.00	10.00			5.00

Table 52
Summary Statistics For Downgradient Naugatuck River Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (µg/L)		Range of Detected Concentrations (µg/L)		Mean of all Samples[2] (µg/L)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Trans-1,2-Dichloroethene	0	10	10.00	10.00			5.00
Trans-1,3-dichloropropene	0	10	10.00	10.00			5.00
Trichloroethene	9	10	10.00	10.00	0.40	0.73	1.00
Vinyl acetate	0	10	10.00	10.00			5.00
Vinyl chloride	0	10	10.00	10.00			5.00
Xylenes (total)	0	10	10.00	10.00			5.00
Semivolatile Compounds:							
2,4,5-Trichlorophenol	0	10	10.00	10.00			5.00
2,4,6-Trichlorophenol	0	10	10.00	10.00			5.00
2,4-Dichlorophenol	0	10	10.00	10.00			5.00
2,6-Dichlorophenol	0	10	10.00	10.00			5.00
2-Chlorophenol	0	10	10.00	10.00			5.00
2-Methylnaphthalene	0	10	10.00	10.00			5.00
Acenaphthene	0	10	10.00	10.00			5.00
Anthracene	0	10	10.00	10.00			5.00
Benzo(a)pyrene	0	10	10.00	10.00			5.00
Benzo(b)fluoranthene	0	10	10.00	10.00			5.00
Benzo(k)fluoranthene	0	10	10.00	10.00			5.00
Benzylbutylphthalate	0	10	10.00	10.00			5.00
Bis(2-ethylhexyl)phthalate	1	10	10.00	10.00	2.20	2.20	4.72
Di-n-butylphthalate	2	10	10.00	10.00	1.30	1.30	4.26
Di-n-octylphthalate	0	10	10.00	10.00			5.00
Dibenzofuran	0	10	10.00	10.00			5.00
Diethylphthalate	0	10	10.00	10.00			5.00
Fluoranthene	0	10	10.00	10.00			5.00
Fluorene	0	10	10.00	10.00			5.00
Methoxychlor	0	5	0.19	5.30			0.68
N-Nitrosodimethylamine	0	10	10.00	10.00			5.00
N-Nitrosodiphenylamine	0	10	10.00	10.00			5.00
Naphthalene	0	10	10.00	10.00			5.00
Phenanthrene	0	10	10.00	10.00			5.00

Table 52
Summary Statistics For Downgradient Naugatuck River Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (µg/L)		Range of Detected Concentrations (µg/L)		Mean of all Samples[2] (µg/L)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Pyrene	0	10	10.00	10.00			5.00
PCBs/Pesticides:							
2,4,5-T	0	10	0.10	0.10			0.05
2,4,5-TP (Silvex)	0	10	0.10	0.10			0.05
2,4-D	0	10	1.00	1.00			0.50
2,4-DB	0	0					
4,4'-DDE	0	5	0.10	0.11			0.05
4,4-DDT	0	5	0.10	0.11			0.05
Aldrin	0	5	0.01	0.05			0.02
Aroclor 1242	0	5	1.00	1.10			0.51
Aroclor 1254	0	5	1.00	1.10			0.51
Beta-BHC	0	5	0.02	0.05			0.02
Decachlorobiphenyl	5	5			0.16	0.25	0.20
Delta-BHC	0	5	0.01	0.05			0.02
Dieldrin	0	5	0.10	0.11			0.05
Dinoseb	0	10	1.00	1.00			0.50
Endosulfan I	0	5	0.05	0.05			0.03
Endosulfan II	0	5	0.10	0.11			0.05
Endrin aldehyde	0	5	0.10	1.00			0.14
Gamma-BHC (Lindane)	0	5	0.01	0.05			0.02
Heptachlor	0	5	0.05	0.05			0.03
Tetrachloro-m-xylene	5	5			0.23	0.29	0.26
Inorganic Compounds:							
Antimony	0	10	400	400			200
Arsenic	0	10	5.00	5.00			2.50
Barium	0	10	500	500			250
Beryllium	0	10	20	20			10.00
Cadmium	0	10	10.00	10.00			5.00
Calcium	10	10			8800	13000	10370
Chromium	0	10	40	40			20
Cobalt	0	5	100	100			50

Table 52
Summary Statistics For Downgradient Naugatuck River Surface Water Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (µg/L)		Range of Detected Concentrations (µg/L)		Mean of all Samples[2] (µg/L)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Copper	0	10	20	20			10.00
Cyanide	0	10	10.00	10.00			5.00
Iron	10	10			120	390	277
Lead	0	10	60	60			30
Magnesium	10	10			3100	3700	3340
Manganese	6	10	55	72	41	69	42
Mercury	0	10	1.00	5.00			1.50
Nickel	0	10	30	30			15
Potassium	10	10			2500	4700	3350
Selenium	0	5	5.00	5.00			2.50
Silver	0	10	30	30			15
Sodium	10	10			16000	29000	20100
Thallium	0	10	400	400			200
Tin	0	5	800	800			400
Vanadium	0	5	1000	1000			500
Zinc	8	10	10.00	10.00	14	21	15
Other:							
TOC	0	10	5000	5000			2500

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 53
Summary Statistics For Downgradient Branch Brook Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Volatile Compounds:							
1,1,1-Trichloroethane	0	12	0.010	0.010			0.005
1,1,2,2-Tetrachloroethane	0	12	0.010	0.010			0.005
1,1,2-Trichloroethane	0	12	0.010	0.010			0.005
1,1-Dichloroethane	0	12	0.010	0.010			0.005
1,1-Dichloroethene	0	12	0.010	0.010			0.005
1,2-Dichloroethane	0	12	0.010	0.010			0.005
1,2-Dichloropropane	0	12	0.010	0.010			0.005
2-Butanone	2	12	0.010	0.010	0.001	0.008	0.005
2-Chloroethyl vinyl ether	0	12	0.010	0.010			0.005
2-Hexanone	0	12	0.010	0.010			0.005
4-Methyl-2-pentanone	0	12	0.010	0.010			0.005
Acetone	8	12	0.010	0.010	0.002	0.037	0.010
Benzene	0	12	0.010	0.010			0.005
Bromodichloromethane	0	12	0.010	0.010			0.005
Bromoform	0	12	0.010	0.010			0.005
Bromomethane	0	12	0.010	0.010			0.005
Carbon disulfide	0	12	0.010	0.010			0.005
Carbon tetrachloride	0	12	0.010	0.010			0.005
Chlorobenzene	0	12	0.010	0.010			0.005
Chloroethane	0	12	0.010	0.010			0.005
Chloroform	10	12	0.010	0.010	0.001	0.002	0.002
Chloromethane	0	12	0.010	0.010			0.005
Cis-1,2-Dichloroethene	1	12	0.010	0.010	0.001	0.001	0.005
Cis-1,3-Dichloropropene	0	12	0.010	0.010			0.005
Dibromochloromethane	0	12	0.010	0.010			0.005
Ethylbenzene	0	12	0.010	0.010			0.005
Methylene chloride	12	12			0.003	0.016	0.009
Styrene	0	12	0.010	0.010			0.005

Table 53 Summary Statistics For Downgradient Branch Brook Sediment Samples							
Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Tetrachloroethene	1	12	0.010	0.010	0.003	0.003	0.005
Toluene	0	12	0.010	0.010			0.005
Trans-1,2-Dichloroethene	0	12	0.010	0.010			0.005
Trans-1,3-Dichloropropene	0	12	0.010	0.010			0.005
Trichloroethene	1	12	0.010	0.010	0.001	0.001	0.005
Vinyl acetate	0	12	0.010	0.010			0.005
Vinyl chloride	0	12	0.010	0.010			0.005
Xylenes (total)	0	12	0.010	0.010			0.005
Semivolatile Compounds:							
2,4,5-Trichlorophenol	0	12	0.330	0.330			0.165
2,4,6-Trichlorophenol	0	12	0.330	0.330			0.165
2,4-Dichlorophenol	0	12	0.330	0.330			0.165
2,6-Dichlorophenol	0	12	0.330	0.330			0.165
2-Chlorophenol	0	12	0.330	0.330			0.165
2-Methylnaphthalene	0	12	0.330	0.330			0.165
Acenaphthene	0	12	0.330	0.330			0.165
Anthracene	4	12	0.330	0.330	0.019	0.110	0.126
Benzo(a)pyrene	5	12	0.330	0.330	0.065	0.600	0.183
Benzo(b)fluoranthene	7	12	0.330	0.330	0.055	0.570	0.178
Benzo(k)fluoranthene	7	12	0.330	0.330	0.044	0.550	0.180
Bis(2-ethylhexyl)phthalate	2	12	0.330	0.330	0.140	0.460	0.188
Butylbenzylphthalate	0	12	0.330	0.330			0.165
Di-n-butylphthalate	11	12	0.330	0.330	0.110	1.40	0.272
Di-n-octylphthalate	0	12	0.330	0.330			0.165
Dibenzofuran	0	12	0.330	0.330			0.165
Diethylphthalate	9	12	0.330	0.330	0.026	2.00	0.304
Fluoranthene	8	12	0.330	0.330	0.022	1.60	0.434
Fluorene	0	12	0.330	0.330			0.165
Methoxychlor	1	6	0.004	0.012	0.004	0.004	0.003

Table 53
Summary Statistics For Downgradient Branch Brook Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
N-Nitrosodimethylamine	0	12	0.330	0.330			0.165
N-Nitrosodiphenylamine	0	12	0.330	0.330			0.165
Naphthalene	0	12	0.330	0.330			0.165
Phenanthrene	6	12	0.330	0.330	0.072	0.490	0.187
Pyrene	6	12	0.330	0.330	0.150	1.40	0.362
PCBs/Pesticides:							
2,4,5-T	0	6	0.050	0.050			0.025
2,4,5-TP (Silvex)	0	6	0.050	0.050			0.025
2,4-D	0	6	0.200	0.200			0.100
4,4'-DDE	0	5	0.001	0.004			0.001
4,4-DDT	1	6	0.001	0.053	0.008	0.008	0.011
Aldrin	3	6	0.000	0.011	0.002	0.021	0.007
Aroclor 1242	0	6	0.041	0.051			0.022
Aroclor 1254	0	6	0.041	0.051			0.022
Beta-BHC	0	6	0.001	0.004			0.001
Decachlorobiphenyl	6	6			0.021	0.033	0.026
Delta-BHC	0	6	0.001	0.002			0.001
Dieldrin	1	6	0.004	0.005	0.027	0.027	0.006
Dinoseb	0	6	0.200	0.200			0.100
Endosulfan I	0	6	0.002	0.002			0.001
Endosulfan II	0	6	0.003	0.025			0.004
Endrin aldehyde	0	6	0.004	0.005			0.002
Gamma-BHC (Lindane)	0	6	0.001	0.002			0.001
Heptachlor	0	6	0.001	0.002			0.001
Tetrachloro-m-xylene	6	6			0.017	0.021	0.019
Inorganic Compounds:							
Antimony	0	6	8.00	8.00			4.00
Arsenic	0	6	1.00	1.00			0.500
Barium	6	6			18	37	25

Table 53
Summary Statistics For Downgradient Branch Brook Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Beryllium	0	6	0.400	0.400			0.200
Cadmium	0	6	0.200	0.200			0.100
Chromium	6	6			5.00	12	8.37
Cobalt	6	6			4.40	8.80	6.80
Copper	6	6			8.00	17	12
Lead	5	6	1.20	1.20	1.20	8.00	4.17
Mercury	0	6	0.050	0.050			0.025
Nickel	6	6			7.80	13	10
Silver	0	6	0.600	0.600			0.300
Thallium	0	6	8.00	8.00			4.00
Tin	0	6	16	16			8.00
Vanadium	0	6	20	20			10.00
Zinc	6	6			20	44	29
Other:							
TOC	6	6			584	14200	4114

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 54
Summary Statistics For Downgradient Naugatuck River Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Volatile Compounds:							
1,1,1-Trichloroethane	0	8	0.007	0.010			0.005
1,1,2,2-Tetrachloroethane	0	8	0.007	0.010			0.005
1,1,2-Trichloroethane	0	8	0.007	0.010			0.005
1,1-Dichloroethane	0	8	0.007	0.010			0.005
1,1-Dichloroethene	0	8	0.007	0.010			0.005
1,2-Dichloroethane	0	8	0.007	0.010			0.005
1,2-Dichloropropane	0	8	0.007	0.010			0.005
2-Butanone	1	8	0.010	0.010	0.001	0.001	0.005
2-Chloroethyl vinyl ether	0	8	0.007	0.010			0.005
2-Hexanone	0	8	0.010	0.010			0.005
4-Methyl-2-pentanone	0	8	0.010	0.010			0.005
Acetone	5	8	0.010	0.010	0.003	0.011	0.006
Benzene	0	8	0.007	0.010			0.005
Bromodichloromethane	1	8	0.007	0.010	0.002	0.002	0.004
Bromoform	0	8	0.007	0.010			0.005
Bromomethane	0	8	0.010	0.010			0.005
Carbon disulfide	0	8	0.007	0.010			0.005
Carbon tetrachloride	0	8	0.007	0.010			0.005
Chlorobenzene	0	8	0.007	0.010			0.005
Chloroethane	0	8	0.010	0.010			0.005
Chloroform	4	8	0.010	0.010	0.001	0.036	0.008
Chloromethane	0	8	0.010	0.010			0.005
Cis-1,2-Dichloroethene	0	8	0.007	0.010			0.005
Cis-1,3-Dichloropropene	0	8	0.007	0.010			0.005
Dibromochloromethane	0	8	0.007	0.010			0.005
Ethylbenzene	0	8	0.007	0.010			0.005
Methylene chloride	8	8			0.006	0.035	0.013
Styrene	0	8	0.007	0.010			0.005

Table 54
Summary Statistics For Downgradient Naugatuck River Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Tetrachloroethene	1	8	0.007	0.010	0.002	0.002	0.004
Toluene	0	8	0.007	0.010			0.005
Trans-1,2-Dichloroethene	0	8	0.007	0.010			0.005
Trans-1,3-Dichloropropene	0	8	0.007	0.010			0.005
Trichloroethene	0	8	0.007	0.010			0.005
Vinyl acetate	0	8	0.010	0.010			0.005
Vinyl chloride	0	8	0.010	0.010			0.005
Xylenes (total)	0	8	0.007	0.010			0.005
Semivolatile Compounds:							
2,4,5-Trichlorophenol	0	8	0.330	0.330			0.165
2,4,6-Trichlorophenol	0	8	0.330	0.330			0.165
2,4-Dichlorophenol	0	8	0.330	0.330			0.165
2,6-Dichlorophenol	0	8	0.330	0.815			0.195
2-Chlorophenol	0	8	0.330	0.330			0.165
2-Methylnaphthalene	0	8	0.330	0.330			0.165
Acenaphthene	1	8	0.330	0.330	0.100	0.100	0.157
Anthracene	5	8	0.330	0.330	0.092	0.210	0.156
Benzo(a)pyrene	8	8			0.140	1.60	0.886
Benzo(b)fluoranthene	8	8			0.140	2.40	1.15
Benzo(k)fluoranthene	8	8			0.060	2.20	1.08
Bis(2-ethylhexyl)phthalate	3	8	0.330	0.330	0.067	0.480	0.209
Butylbenzylphthalate	0	8	0.330	0.330			0.165
Di-n-butylphthalate	8	8			0.075	0.400	0.164
Di-n-octylphthalate	0	8	0.330	0.330			0.165
Dibenzofuran	1	8	0.330	0.330	0.018	0.018	0.147
Diethylphthalate	0	8	0.330	0.330			0.165
Fluoranthene	8	8			0.330	5.60	2.99
Fluorene	7	8	0.330	0.330	0.022	0.054	0.058
Methoxychlor	1	4	0.014	0.020	0.007	0.007	0.008

Table 54
Summary Statistics For Downgradient Naugatuck River Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
N-Nitrosodimethylamine	0	8	0.330	0.330			0.165
N-Nitrosodiphenylamine	0	8	0.330	0.330			0.165
Naphthalene	1	8	0.330	0.330	0.093	0.093	0.156
Phenanthrene	8	8			0.120	1.80	1.05
Pyrene	8	8			0.200	2.30	1.47
PCBs/Pesticides:							
2,4,5-T	0	4	0.050	0.050			0.025
2,4,5-TP (Silvex)	0	4	0.050	0.050			0.025
2,4-D	0	4	0.200	0.200			0.100
4,4'-DDD	0	1	0.004	0.004			0.002
4,4'-DDE	0	4	0.001	0.009			0.003
4,4-DDT	0	4	0.004	0.007			0.003
Aldrin	0	4	0.000	0.002			0.001
Alpha-BHC	0	1	0.002	0.002			0.001
Aroclor 1016	0	1	0.043	0.043			0.022
Aroclor 1221	0	1	0.087	0.087			0.043
Aroclor 1232	0	1	0.043	0.043			0.022
Aroclor 1242	0	4	0.041	0.044			0.021
Aroclor 1248	0	1	0.043	0.043			0.022
Aroclor 1254	0	4	0.041	0.044			0.021
Aroclor 1260	0	1	0.043	0.043			0.022
Beta-BHC	0	4	0.002	0.019			0.003
Chlordane	0	1	0.009	0.009			0.004
Decachlorobiphenyl	4	4			0.014	0.017	0.016
Delta-BHC	0	4	0.005	0.019			0.006
Dieldrin	1	4	0.002	0.014	0.002	0.002	0.003
Endosulfan I	0	4	0.003	0.012			0.004
Endosulfan II	0	4	0.004	0.006			0.002
Endosulfan sulfate	0	1	0.004	0.004			0.002

Table 54
Summary Statistics For Downgradient Naugatuck River Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Endrin	0	1	0.004	0.004			0.002
Endrin aldehyde	0	4	0.004	0.004			0.002
Endrin ketone	0	1	0.004	0.004			0.002
Gamma-BHC (Lindane)	0	4	0.001	0.002			0.001
Heptachlor	1	4	0.000	0.002	0.001	0.001	0.001
Heptachlor epoxide	0	1	0.002	0.002			0.001
Tetrachloro-m-xylene	4	4			0.017	0.019	0.018
Toxaphene	0	1	0.043	0.043			0.022
Inorganic Compounds:							
Antimony	0	5	8.00	9.70			4.17
Arsenic	1	5	1.00	1.00	0.430	0.430	0.486
Barium	5	5			23	38	32
Beryllium	0	5	0.250	0.400			0.185
Cadmium	4	5	0.510	0.510	0.220	1.10	0.495
Chromium	5	5			12	78	32
Cobalt	5	5			2.10	7.40	4.22
Copper	5	5			34	101	71
Lead	5	5			11	21	18
Mercury	0	5	0.050	0.110			0.031
Nickel	5	5			7.80	22	13
Potassium	1	1			770	770	770
Silver	3	5	0.600	0.600	0.600	2.20	0.900
Thallium	0	5	0.250	8.00			3.22
Tin	0	5	3.30	16			6.73
Vanadium	1	5	20	20	7.00	7.00	9.40
Zinc	5	5			80	140	106
Other:							
TOC	4	4			4560	12500	7970

Table 54
Summary Statistics For Downgradient Naugatuck River Sediment Samples

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

Table 55
Summary Statistics for On-Site Boring Samples
(0-1 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Volatile Compounds:							
1,1,1-Trichloroethane	0	24	0.010	0.010			0.005
1,1,2,2-Tetrachloroethane	0	24	0.010	0.010			0.005
1,1,2-Trichloroethane	0	24	0.010	0.010			0.005
1,1-Dichloroethane	0	24	0.010	0.010			0.005
1,1-Dichloroethene	0	24	0.010	0.010			0.005
1,2-Dichloroethane	0	24	0.010	0.010			0.005
1,2-Dichloropropane	0	24	0.010	0.010			0.005
2-Butanone	4	24	0.010	0.010	0.0034	0.0065	0.005
2-Chloroethyl vinyl ether	0	24	0.010	0.010			0.005
2-Hexanone	0	24	0.010	0.010			0.005
4-Methyl-2-pentanone	9	24	0.010	0.010	0.0007	0.0059	0.004
Acetone	22	24	0.010	0.010	0.0019	0.0150	0.008
Benzene	0	24	0.010	0.010			0.005
Bromodichloromethane	0	24	0.010	0.010			0.005
Bromoform	0	24	0.010	0.010			0.005
Bromomethane	0	24	0.010	10.00			0.213
Carbon disulfide	1	24	0.010	0.010	0.0012	0.0012	0.005
Carbon tetrachloride	1	24	0.010	0.010	0.0027	0.0027	0.005
Chlorobenzene	0	24	0.010	0.010			0.005
Chloroethane	0	24	0.010	10.00			0.213
Chloroform	24	24			0.0006	0.0057	0.004
Chloromethane	0	24	0.010	10.00			0.213
Cis-1,2-Dichloroethene	2	24	0.010	0.010	0.0011	0.0012	0.005
Cis-1,3-Dichloropropene	0	24	0.010	0.010			0.005
Dibromochloromethane	0	24	0.010	0.010			0.005
Ethylbenzene	15	24	0.010	0.010	0.0005	0.0046	0.003
Methylene chloride	16	24	0.010	0.010	0.0017	0.0120	0.005
Styrene	1	24	0.010	0.010	0.0006	0.0006	0.005

Table 55
Summary Statistics for On-Site Boring Samples
(0-1 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Tetrachloroethene	19	24	0.010	0.010	0.0004	0.0045	0.002
Toluene	18	24	0.010	0.010	0.0005	0.0190	0.007
Trans-1,2-Dichloroethene	0	24	0.010	0.010			0.005
Trans-1,3-Dichloropropene	0	24	0.010	0.010			0.005
Trichloroethene	12	24	0.010	0.010	0.0004	0.0052	0.003
Vinyl acetate	0	24	0.010	0.010			0.005
Vinyl chloride	0	24	0.010	10.00			0.213
Xylenes (total)	20	24	0.010	0.010	0.0004	0.0180	0.006
Semivolatile Compounds:							
2,4,5-Trichlorophenol	0	24	0.800	2.35			0.451
2,4,6-Trichlorophenol	0	24	0.330	0.970			0.186
2,4-Dichlorophenol	0	24	0.330	0.970			0.186
2,6-Dichlorophenol	0	24	0.330	0.970			0.186
2-Chlorophenol	0	24	0.330	0.970			0.186
2-Methylnaphthalene	4	24	0.330	0.970	0.0170	0.2100	0.170
Acenaphthene	2	24	0.330	0.970	0.0420	0.0420	0.175
Anthracene	12	24	0.330	0.370	0.0100	0.3100	0.110
Benzo(a)pyrene	14	24	0.330	0.370	0.0120	1.50	0.180
Benzo(b)fluoranthene	14	24	0.330	0.370	0.0130	1.40	0.185
Benzo(k)fluoranthene	14	24	0.330	0.370	0.0100	1.60	0.182
Bis(2-ethylhexyl)phthalate	23	24	0.970	0.970	0.0240	0.6400	0.186
Butylbenzylphthalate	0	24	0.330	0.970			0.186
Di-n-butylphthalate	23	24	0.330	0.330	0.0140	0.1000	0.046
Di-n-octylphthalate	17	24	0.330	0.330	0.0060	0.1900	0.084
Dibenzofuran	2	24	0.330	0.970	0.0370	0.0480	0.175
Diethylphthalate	5	24	0.330	0.970	0.0100	0.0170	0.152
Fluoranthene	17	24	0.330	0.370	0.0100	3.80	0.312
Fluorene	3	24	0.330	0.416	0.0460	0.0550	0.158
Methoxychlor	1	24	0.017	0.021	0.0048	0.0048	0.009
N-Nitrosodimethylamine	0	24	0.330	0.970			0.186

Table 55
Summary Statistics for On-Site Boring Samples
(0-1 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
N-Nitrosodiphenylamine	0	24	0.330	0.970			0.186
Naphthalene	3	24	0.330	0.970	0.0090	0.0260	0.167
Phenanthrene	19	24	0.330	0.330	0.0110	1.50	0.154
Pyrene	19	24	0.330	0.330	0.0110	3.90	0.293
PCBs/Pesticides:							
4,4'-DDE	6	24	0.003	0.004	0.0010	0.0520	0.004
4,4-DDT	14	24	0.003	0.004	0.0004	0.0460	0.004
Aldrin	0	24	0.002	0.002			0.001
Aroclor 1242	0	24	0.033	0.042			0.018
Aroclor 1254	16	24	0.033	0.038	0.0039	1.10	0.075
Aroclor 1260	5	24	0.033	0.039	0.0250	0.4500	0.040
Beta-BHC	0	24	0.002	0.002			0.001
Delta-BHC	1	24	0.002	0.002	0.0004	0.0004	0.001
Dieldrin	0	24	0.003	0.004			0.002
Endosulfan I	0	24	0.002	0.002			0.001
Endosulfan II	0	24	0.003	0.004			0.002
Endrin aldehyde	2	24	0.003	0.004	0.0021	0.0039	0.002
Gamma-BHC (Lindane)	5	24	0.002	0.002	0.0001	0.0007	0.001
Heptachlor	0	24	0.002	0.002			0.001
Inorganic Compounds:							
Antimony	1	22	7.90	9.80	9.40	9.40	4.45
Arsenic	22	22			0.3000	3.10	1.17
Barium	22	22			21	85	44
Beryllium	12	22	0.210	0.400	0.3300	2.00	0.491
Cadmium	18	22	0.200	0.430	0.4600	5.60	1.72
Chromium	22	22			5.20	300	96
Cobalt	22	22			3.00	16	7.41
Copper	22	22			15	1000	260
Lead	20	22	1.20	1.20	4.80	134	26
Mercury	1	22	0.020	0.120	0.0470	0.0470	0.041

Table 55
Summary Statistics for On-Site Boring Samples
(0-1 feet)

Chemical	Detection Frequency		Range of Reported Quantitation Limits[1] (mg/kg)		Range of Detected Concentrations (mg/kg)		Mean of all Samples[2] (mg/kg)
	Detects	Samples	Minimum	Maximum	Minimum	Maximum	
Nickel	22	22			2.40	280	66
Selenium	2	16	0.210	0.260	0.4300	0.5600	0.159
Silver	13	22	0.600	0.760	0.6000	19	1.97
Thallium	6	22	0.210	8.00	0.2600	0.4400	1.26
Tin	2	22	2.70	16	5.50	20	3.98
Vanadium	19	22	20	20	12	66	26
Zinc	22	22			13	1600	226

[1]The range of reported quantitation limits is based on nondetects only.

[2]The mean was calculated using one-half the quantitation limit for nondetected chemicals. The mean could exceed the maximum detected concentration in cases in which the quantitation limit for one or more samples exceeds the maximum detected concentration for a chemical.

TABLE 56
Surface Water Evaluation - Branch Brook

Chemical	Frequency of Detection	Maximum (μg/L)	Mean[a] (μg/L)	Maximum Background Concentration (μg/L)[b]	Benchmark Value (μg/L)		Ref[c]	Benchmark Exceedences	
					Chronic	Acute		Chronic	Acute
Inorganics									
Calcium	14/14	11,000	8,500	8,400	116,000	NA[d]	2	0	--
Copper	1/14	20.0	10.0	20.0	4.8	14.3	3	1	1
Cyanide	1/12	30.0	6.75	ND[e]	5.2	22	1,3	1	1
Iron	14/14	350	150	260	1,000	NA	1	0	--
Magnesium	14/14	3,300	2,630	2,800	82,000	NA	2	0	--
Manganese	12/14	60	50	51	80	1,470	2	0	0
Mercury	6/14	5.0	3.57	5.0	0.012	2.4	1,3	6	6
Potassium	14/14	2,700	1,890	2,000	53,000	NA	2	0	--
Sodium	14/14	25,000	11,000	12,000	680,000	NA	2	0	--
Zinc	13/14	10	10	10	12.3	35.3	3	0	0
Organics									
Methylene chloride	1/14	1.60	***[f]	1.60	2,240	25,600	2	0	0
Di-n-butylphthalate	1/14	1.60	***	2.30	3.0	940	1	0	0

TABLE 56
Surface Water Evaluation - Branch Brook

Chemical	Frequency of Detection	Maximum (μg/L)	Mean[a] (μg/L)	Maximum Background Concentration (μg/L)[b]	Benchmark Value (μg/L)		Ref[c]	Benchmark Exceedences	
					Chronic	Acute		Chronic	Acute

[a] Half the quantitation limit was used for nondetect samples when calculating the mean.
[b] Maximum detected concentration in upstream samples.
[c] 1 - USEPA (1991); 2 - Suter and Mabrey (1994); 3 - CTDEP (1992); 4 - OHM/TADS (1995).
[d] NA - Not Available.
[e] ND - Not Detected.
[f] The calculated mean exceeded the maximum value.

TABLE 57
Surface Water Evaluation - Naugatuck River

Chemical	Frequency of Detection	Maximum (μg/L)	Mean[a] (μg/L)	Maximum Background Concentration (μg/L)[b]	Benchmark Value (μg/L)		Ref[c]	Benchmark Exceedences	
					Chronic	Acute		Chronic	Acute
Inorganics									
Calcium	10/10	13,000	10,000	12,000	116,000	NA[d]	2	0	--
Iron	10/10	390	280	390	1,000	NA	1	0	--
Magnesium	10/10	3,700	3,340	3,600	82,000	NA	2	0	--
Manganese	6/10	70	40	60	80	1,470	2	0	0
Potassium	10/10	4,700	3,350	3,700	53,000	NA	2	0	--
Sodium	10/10	29,000	20,000	22,000	680,000	NA	2	0	--
Zinc	8/10	20	10	20	12.3	35.3	3	8	0
Organics									
Methylene chloride	4/10	1.70	***[f]	1.40	2,240	25,600	2	0	0
Acetone	5/10	6.60	4.33	5.90	11,200	200,000	2	0	0
Trichloroethene	9/10	0.73	***	0.92	21,900	45,000	1	0	0
Tetrachloroethene	3/10	0.70	***	ND[e]	840	5,280	1	0	0
Di-n-butylphthalate	2/10	1.30	***	ND	3.0	940	1	0	0

TABLE 57
Surface Water Evaluation - Naugatuck River

Chemical	Frequency of Detection	Maximum (μg/L)	Mean[a] (μg/L)	Maximum Background Concentration (μg/L)[b]	Benchmark Value (μg/L)		Ref[c]	Benchmark Exceedences	
					Chronic	Acute		Chronic	Acute
Bis(2-ethylhexyl)phthalate	1/10	2.20	***	ND	3.0	940	1	0	0

[a] Half the quantitation limit was used for nondetect samples when calculating the mean.
[b] Maximum detected concentration in upstream samples.
[c] 1 - USEPA (1991); 2 - Suter and Mabrey (1994); 3 - CTDEP (1992); 4 - OHM/TADS (1995).
[d] NA - Not Available.
[e] ND - Not Detected.
[f] The calculated mean exceeded the maximum value.

TABLE 58
Sediment Evaluation - Branch Brook

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Maximum Background Concentration[b]	Benchmark Value (mg/kg)	Reference[c]	Benchmark Exceedences
Inorganics							
Barium	6/6	37	25	400	NA[d]	--	--
Chromium	6/6	12	8.4	13	26	2,3	0
Cobalt	6/6	8.8	6.8	7.6	50	3	0
Copper	6/6	17	12	12	16	3	1
Lead	5/6	8.0	4.2	410	27	2	0
Nickel	6/6	13	10	12	16	3	0
Zinc	6/6	44	29	170	85	2	0
Organics							
Acetone	8/12	0.04	0.0099	0.0064	0.064	4	0
Aldrin	3/6	0.02	0.0069	0.0013	0.002	3	2
Anthracene	4/12	0.11	***[f]	0.05	0.220	3	0
Benzo(a)pyrene	5/12	0.60	0.18	0.19	0.370	3	1
Benzo(b)fluoranthene	7/12	0.57	0.18	0.18	13.07	5	0
Benzo(k)fluoranthene	7/12	0.55	0.18	0.18	0.240	3	1

TABLE 58
Sediment Evaluation - Branch Brook

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Maximum Background Concentration[b]	Benchmark Value (mg/kg)	Reference[c]	Benchmark Exceedences
Bis(2-ethylhexyl)phthalate	2/12	0.46	0.19	0.13	13,000	4	0
2-Butanone	2/12	0.0083	0.0050	ND[e]	0.399	5	0
Chloroform	10/12	0.0017	0.0016	0.0010	0.175	4	0
4,4'-DDT	1/6	0.0079	***	ND	0.007	3	1
cis-1,2-Dichloroethene	1/12	0.0011	***	ND	0.023	4	0
Dieldrin	1/6	0.03	0.0063	ND	0.002	3	1
Diethylphthalate	9/12	2.00	0.30	0.07	0.761	4	1
Di-n-butylphthalate	11/12	1.40	0.27	0.22	2.74	4	0
Fluoranthene	8/12	1.60	0.43	0.60	0.750	3	2
Methoxychlor	1/6	0.0037	0.0035	ND	0.006	2	0
Methylene chloride	12/12	0.02	0.0087	0.01	0.427	4	0
Phenanthrene	6/12	0.49	0.19	0.31	0.560	3	0
Pyrene	6/12	1.40	0.36	0.93	0.490	3	2
Tetrachloroethene	1/12	0.003	***	ND	1.56	4	0
Trichloroethene	1/12	0.0013	***	ND	0.811	4	0

TABLE 58
Sediment Evaluation - Branch Brook

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Maximum Background Concentration[b]	Benchmark Value (mg/kg)	Reference[c]	Benchmark Exceedences

[a] Half the quantitation limit was used for nondetect samples when calculating the mean.
[b] Maximum detected concentration in upstream samples.
[c] 1 - Long and Morgan (1990); 2 - NYSDEC (1989); 3 - MOE (1993); 4 - Hull and Suter (1994); 5 - Equilibrium partitioning (1% TOC).
[d] NA - Not Available.
[e] ND - Not Detected.
[f] Calculated mean is greater than the maximum value.

TABLE 59
Sediment Evaluation - Naugatuck River

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Maximum Background Concentration[b]	Benchmark Value (mg/kg)	Reference[c]	Benchmark Exceedences
Inorganics							
Arsenic	1/5	0.43	***[f]	ND[e]	5	2	0
Barium	5/5	38	32	41	NA[d]	--	--
Cadmium	4/5	1.1	0.5	1.1	0.6	3	2
Chromium	5/5	78	32	25	26	2,3	2
Cobalt	5/5	7.4	4.2	5.6	50	3	0
Copper	5/5	101	71	92	16	3	5
Lead	5/5	21	18	29	27	2	0
Nickel	5/5	22	13	13	16	3	1
Potassium	1/1	770	--	--	NA	--	--
Silver	3/5	2.2	0.9	ND	1.0	1	2
Vanadium	1/5	7.0	***	ND	NA	--	--
Zinc	5/5	140	106	170	85	2	4
Organics							
Acenaphthene	1/8	0.10	***	0.06	0.150	1	0

TABLE 59
Sediment Evaluation - Naugatuck River

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Maximum Background Concentration[b]	Benchmark Value (mg/kg)	Reference[c]	Benchmark Exceedences
Acetone	5/8	0.01	0.0061	0.04	0.064	4	0
Anthracene	5/8	0.21	0.16	0.42	0.220	3	0
Benzo(a)pyrene	8/8	1.60	0.89	1.50	0.370	3	7
Benzo(b)fluoranthene	8/8	2.40	1.15	1.80	13.07	5	0
Benzo(k)fluoranthene	8/8	2.20	1.08	2.10	0.240	3	7
Bis(2-ethylhexyl)phthalate	3/8	0.48	0.21	0.22	13,000	4	0
Bromodichloromethane	1/8	0.0021	***	ND	3.46	5	0
2-Butanone	1/8	0.0012	***	0.0088	0.399	5	0
Chloroform	4/8	0.04	0.0082	0.0018	0.175	4	0
Dibenzofuran	1/8	0.02	***	0.03	2.29	4	0
Dieldrin	1/4	0.0024	***	ND	0.002	3	1
Di-n-butylphthalate	8/8	0.40	0.16	0.39	2.74	4	0
Fluoranthene	8/8	5.60	2.99	8.00	0.750	3	7
Fluorene	7/8	0.05	***	0.15	0.190	3	0
Heptachlor	1/4	0.0007	0.0006	0.0006	0.0003	3	1

TABLE 59
Sediment Evaluation - Naugatuck River

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Maximum Background Concentration[b]	Benchmark Value (mg/kg)	Reference[c]	Benchmark Exceedences
Methoxychlor	1/4	0.0066	***	ND	0.006	2	1
Methylene chloride	8/8	0.04	0.01	0.007	0.427	4	0
Naphthalene	1/8	0.09	***	ND	0.340	1	0
Phenanthrene	8/8	1.80	1.05	3.00	0.560	3	6
Pyrene	8/8	2.30	1.47	2.90	0.490	3	7
Tetrachloroethene	1/8	0.0015	***	ND	1.56	4	0

[a] Half the quantitation limit was used for nondetect samples when calculating the mean.
[b] Maximum detected concentration in upstream samples.
[c] 1 - Long and Morgan (1990); 2 - NYSDEC (1989); 3 - MOE (1993); 4 - Hull and Suter (1994); 5 - Equilibrium partitioning (1% TOC).
[d] NA - Not Available.
[e] ND - Not Detected.
[f] Calculated mean is greater than the maximum value.

TABLE 60
Surface Soil Evaluation - Inorganics

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Background Concentration (mg/kg)	Benchmark (mg/kg)	Reference[b]	Benchmark Exceedences
Antimony	1/22	9.4	4.5	ND[d]	5	1	1
Arsenic	22/22	3.1	1.2	1.3	10	1	0
Barium	22/22	85	44	88	500	1	0
Beryllium	12/22	2.0	0.5	1.4	10	1	0
Cadmium	18/22	5.6	1.7	2.5	3	1	5
Chromium	22/22	300	96	170	40	3	13
Cobalt	22/22	16	7.4	10	20	1	0
Copper	22/22	1,000	260	370	100	1	14
Lead	20/22	134	26	140	50	1	1
Mercury	1/22	0.05	0.04	0.04	1	2	0
Nickel	22/22	280	66	76	30	1	12
Selenium	2/16	0.56	0.16	NA[c]	1	1	0
Silver	13/22	19	2	2.8	2	1	4
Thallium	6/22	0.44	****[e]	ND	1	1	0
Tin	2/22	20	4	ND	50	1	0

TABLE 60
Surface Soil Evaluation - Inorganics

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Background Concentration (mg/kg)	Benchmark (mg/kg)	Reference[b]	Benchmark Exceedences
Vanadium	19/22	66	26	31	70	4	0
Zinc	22/22	1,600	226	270	50	1	17

[a] Half the quantitation limit was used for nondetect samples when calculating the mean.
[b] 1 - Will and Suter (1994); 2 - Eisler (1987); 3 - Environment Canada (1994); 4 - Fitchko (1989).
[c] NA - Not Available.
[d] ND - Not Detected.
[e] Calculated mean is greater than the maximum value.

TABLE 61
Surface Soil Evaluation - Organics

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Background Concentration (mg/kg)	Benchmark (mg/kg)	Reference[b]	Benchmark Exceedences
Acenaphthene	2/24	0.04	***[c]	ND[d]	0.926	4	0
Acetone	22/24	0.02	0.0077	0.0094	--	--	--
Anthracene	12/24	0.31	0.11	0.07	10	5	0
Aroclor-1254	16/24	1.10	0.07	0.07	1.7	2	0
Aroclor-1260	5/24	0.45	0.04	ND	1.7	2	0
Benzo(a)pyrene	14/24	1.5	0.18	0.34	1.0	5	1
Benzo(b)fluoranthene	14/24	1.4	0.18	0.40	NA[e]	--	--
Benzo(k)fluoranthene	14/24	1.6	0.18	0.42	NA	--	--
Bis(2-ethylhexyl)phthalate	23/24	0.64	0.19	0.13	--	--	--
2-Butanone	4/24	0.0065	0.0050	ND	--	--	--
Carbon disulfide	1/24	0.0012	***	ND	--	--	--
Carbon tetrachloride	1/24	0.0027	***	ND	--	--	--
Chloroform	24/24	0.0057	0.0037	0.02	100	6	0
4,4'-DDE	6/24	0.05	0.004	0.0022	0.5	5	0
4,4'-DDT	14/24	0.05	0.004	0.008	0.5	5	0

TABLE 61
Surface Soil Evaluation - Organics

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Background Concentration (mg/kg)	Benchmark (mg/kg)	Reference[b]	Benchmark Exceedences
Delta-BHC	1/24	0.0004	***	ND	--	--	--
Di-n-butylphthalate	23/24	0.10	0.05	0.04	200	1	0
Di-n-octylphthalate	17/24	0.19	0.08	ND	NA	--	--
Dibenzofuran	2/24	0.05	***	ND	--	--	--
cis-1,2-Dichloroethene	2/24	0.0012	***	ND	--	--	--
Diethylphthalate	5/24	0.02	***	0.01	--	--	--
Endrin aldehyde	2/24	0.039	0.0019	ND	--	--	--
Ethylbenzene	15/24	0.0046	0.0032	ND	8	3	0
Fluoranthene	17/24	3.8	0.31	0.69	10	5	0
Fluorene	3/24	0.06	***	0.008	NA	--	--
Lindane	5/24	0.0007	***	0.0002	0.0008	6	0
Methoxychlor	1/24	0.0048	***	ND	--	--	--
4-Methyl-2-Pentanone	9/24	0.0059	0.0041	ND	--	--	--
Methylene chloride	16/24	0.01	0.0046	0.01	--	--	--
2-Methylnaphthalene	4/24	0.21	0.17	ND	NA	--	--

TABLE 61
Surface Soil Evaluation - Organics

Chemical	Frequency of Detection	Maximum (mg/kg)	Mean[a] (mg/kg)	Background Concentration (mg/kg)	Benchmark (mg/kg)	Reference[b]	Benchmark Exceedences
Naphthalene	3/24	0.03	***	ND	10	6	0
Phenanthrene	19/24	1.5	0.15	0.32	5.0	5	0
Pyrene	19/24	3.9	0.29	0.69	10	5	0
Styrene	1/24	0.0006	***	ND	--	--	--
Tetrachloroethene	19/24	0.0045	***	0.0014	23	3	0
Toluene	18/24	0.02	0.0071	0.004	10	3	0
Trichloroethene	12/24	0.0052	0.0034	0.0011	51	3	0
Total xylenes	20/24	0.02	0.0056	0.0019	21	3	0

[a] Half the quantitation limit was used for nondetect samples when calculating the mean.
[b] 1 - Will and Suter (1994); 2 - Beyer and Stafford (1993); 3 - Environment Canada (1994); 4 - Levar and Ostergren (1943); 5 - Beyer (1990); 6 - Fitchko (1989).
[c] ND - Not Detected (Detection Limit).
[d] NA - Not Available.
[e] Calculated mean is greater than the maximum value.