517002

New York State Department of Environmental Conservation
Division of Environmental Remediation
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John P. Cahill
Commissioner

MEMORANDUM

RECEIVED
OCT 20 1998

To: A. Carlson, NYSDOH
J. Harrington, BPM
D. Munro, NYS Attorney General's Office
D. Steenberge, Region 5

From: Marsden Chen UAC for MC

Re: York Oil Site No. 517002

DATE: October 14, 1998

Attached is a copy of the Record of Decision for the second operable unit for the above referenced site for your records. If you have any questions please contact Victor Cardona at 457-3976.

Attachment

RECORD OF DECISION

York Oil Site
Moira, New York

U.S. Environmental Protection Agency
Region II
New York, New York
September 1998

DECLARATION FOR RECORD OF DECISION

SITE NAME AND LOCATION

York Oil Site, Moira, New York

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) documents the U.S. Environmental Protection Agency's (EPA's) selection of a remedy for the second operable unit or Contamination Pathways portion of the York Oil Superfund site (the "Site") in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §9601-9675, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300. This decision document explains the factual and legal basis for selecting the remedy for the Contamination Pathways portion of the Site.

The attached index (Appendix III) identifies the items that comprise the Administrative Record upon which the selection of the remedial action is based.

The New York State Department of Environmental Conservation (NYSDEC) was consulted on the proposed remedial action in accordance with CERCLA §121(f), 42 U.S.C. §9621(f), and it concurs with the selected remedy (see Appendix IV).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The major components of the selected remedy include the following:

- Excavation and/or dredging the lead- and PCB-contaminated sediments from the Western Wetland located immediately to the west and northwest of the Site Proper Western Drainage Area and in the drainage channel leading to North Lawrence Road, followed by solidification/stabilization and on-Site disposal. Excavation and/or dredging of sediments in the "remaining areas" of the Western Wetland will be contingent upon the results of design-phase sediment sampling to more accurately define the extent of contamination and the existence of any "channelized" contaminants, and design-phase studies to determine whether lead and/or PCBs in these sediments pose an ecological threat;

- Excavation and/or dredging the contaminated sediments from the Northwestern Wetland, followed by solidification/stabilization and on-Site disposal, contingent upon the results of design-phase studies to determine whether these sediments pose an ecological threat;
- Natural attenuation of the groundwater contamination;
- Implementation of institutional controls to prevent the installation and use of groundwater wells in the Southern Wetland; and
- Long-term groundwater monitoring.

The selected alternative will provide the best balance of trade offs among alternatives with respect to the evaluating criteria. EPA and NYSDEC believe that the selected alternative will be protective of human health and the environment, will comply with Applicable or Relevant and Appropriate Requirements, will be cost-effective, and will utilize permanent solutions to the maximum extent practicable.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy meets the requirements for remedial actions set forth in CERCLA §121, 42 U.S.C. §9621 in that it: (1) is protective of human health and the environment; (2) attains a level or standard of control of the hazardous substances, pollutants and contaminants, which at least attains the legally applicable or relevant and appropriate requirements under federal and state laws; (3) is cost effective; (4) utilizes alternative treatment (or resource recovery) technologies to the maximum extent practicable; and (5) satisfies the statutory preference for remedies that employ treatment to reduce the toxicity, mobility, or volume of the hazardous substances, pollutants or contaminants at a Site.

Because this remedy will result in contaminants remaining on the Site above health-based limits until the contaminant levels in the aquifer are reduced below Maximum Contaminant Levels, a review of the remedial action, pursuant to CERCLA §121(c), 42 U.S.C. §9621(c), will be conducted five years after the commencement of the remedial action and every five years thereafter, to ensure that the remedy continues to provide adequate protection to human health and the environment.

Jeanne M. Fox
Regional Administrator

9/29/98
Date

RECORD OF DECISION FACT SHEET
EPA REGION II

Site

Site name: York Oil

Site location: Moira, New York

HRS score: 47.70

Listed on the NPL: 9/1/83

Record of Decision

Date signed: 9/29/98

Selected remedy: Excavation and/or dredging the contaminated sediments, followed by solidification/stabilization and on-Site disposal. Natural attenuation of the groundwater contamination, institutional controls to prevent the installation and use of groundwater wells in the affected area, and long-term monitoring.

Capital cost: $3,170,000

Monitoring cost: $57,600

Present-worth cost: $3,890,000

Lead Project is PRP lead; EPA is the lead agency

Primary Contact: Arnold Bernas, Remedial Project Manager, (212) 637-3964

Secondary Contact: Joel Singerman, Chief, Central New York Remediation Section, (212) 637-4258

Main PRPs

Aluminum Co. of America, U.S. Dept. of the Air Force, U.S. Dept. of the Army, and U.S. Dept. of Transportation

Waste

Waste type: Metals, phenolics, and PCBs

Waste origin: Oil recycling

Contaminated medium: Groundwater and sediments

DECISION SUMMARY

York Oil Site
Moira, New York

U.S. Environmental Protection Agency
Region II
New York, New York

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SITE LOCATION AND DESCRIPTION

The former York Oil facility, located approximately one mile northwest of the Hamlet of Moira in Franklin County, New York, is situated to the southwest of North Lawrence Road. (See Figure 1.)

For investigation and remediation purposes, the Site has been divided into two areas—the "Site Proper" and the "Contamination Pathways."

The 17-acre Site Proper includes a fenced-in portion of land previously owned and used by the York Oil Company and a 1,000-foot by 200-foot strip of land west of the fenced area and north of an abandoned railroad grade, known as the "Western Drainage Area."

The Contamination Pathways, which is the subject of this second operable unit Record of Decision (ROD), includes areas impacted by the migration of contaminants from the Site Proper—uplands, wetlands, streams, and part of Lawrence Brook. The Contamination Pathways study area is divided into several areas—the "Western Wetland" and the "Southern Wetland," located immediately to the west and south of the Site Proper, respectively, and the "Northwestern Wetland," located to the northwest of the Western Wetland, along the drainage paths from the Site Proper.

The Western Wetland, bounded by the abandoned railroad grade to the south and North Lawrence Road to the north, consists of 17.2 acres of intermittent ponds, cattails, shrubs, seedlings, and a variety of larger trees connected by a west-northwesterly flowing, poorly-defined drainage channel.

The 82.4-acre Southern Wetland, located south of the abandoned railroad grade, consists of mixed forest and ponded surface water resulting from beaver dams. The Southern Wetland drains both to the east toward Lawrence Brook and to the northwest through a culvert below the abandoned railroad bed, which allows water to flow from the Southern Wetlands to the Western Wetlands.

The 50-acre Northwestern Wetland includes the entire length of the drainage channel between North Lawrence and Savage Roads. The hydraulic regime of this area is controlled by a well-established beaver dam that has caused the formation of a 5-6 acre pond. An emergent marsh community with seasonally saturated soil extends from this large, standing water area. The eastern edge of the Northwestern Wetland consists of a mixed-forest upland of evergreen and deciduous hardwoods.

The York Oil site (the "Site") is located within the Lawrence Brook watershed, which drains portions of northwestern Franklin County and northeastern St. Lawrence County. Two major tributaries, Alburg Brook and Joy Brook, flow north and merge to form Lawrence Brook. Lawrence Brook flows north, turning northwest near the Site Proper and then flows into the Deer River approximately 6.0 miles downstream. The Deer River flows into the St. Regis River, which then enters the St. Lawrence waterway at a total distance of approximately 20.5 miles from the Site.

Wetlands and woodlands comprise much of the area in the vicinity of the Site. Residences are present along the main roads interspersed with active/inactive agriculture and pasture land.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

The York Oil facility was constructed in the 1950s by the York Oil Company, which processed used oils collected from service stations, car dealers, and industrial facilities. The oils, some of which contained polychlorinated biphenyls (PCBs), were processed to remove impurities and resold to other businesses. The oil recycling operation was discontinued in the mid-1960s; the property was then used by Pierce Brothers Oil Services, Inc. for used oil storage. The collected oils were stored or processed in eight aboveground storage tanks, three earthen-dammed settling lagoons, and at least one underground storage tank. The recycled oil either was sold as No. 2 fuel oil or was used in dust control for the unpaved roads in the vicinity of the Site.

During heavy rains and spring thaws, the oil-water mixture from the lagoons would often overflow onto surrounding lands and into adjacent wetlands, which Pierce Brothers Oil Services, Inc. purchased in 1964. Contamination at the Site first was reported by a state road crew in 1979. In 1982, the County assumed title because of unpaid property taxes.

In 1980, the Environmental Protection Agency (EPA) began emergency cleanup activities at the Site. It secured the property to limit access and to reduce the threat of direct contact with hazardous substances, and it removed oil and contaminated water from the lagoons, which then were filled with a concrete by-product and sand. The top 3 feet of the oil-soaked soil were excavated from the neighboring wetlands. Contaminated oil was transferred to aboveground storage tanks, and contaminated soil was contained on-Site. Contaminated water from one of the lagoons was treated and discharged into the wetlands. An interceptor trench was dug to alter the flow of surface water and groundwater. In 1983, EPA conducted additional emergency actions including the collection of oil seeping into drainage ditches, the installation of a new filter fence system, and the posting of warning signs. EPA developed a schedule for collecting oily leachate and replacing sorbent pads and began monitoring the Site.

A remedial investigation and feasibility study (RI/FS) associated with the Site Proper was completed in November 1987 by Erdman, Anthony, Associates on behalf of the New York State Department of Environmental Conservation (NYSDEC). In February 1988, EPA signed a first operable unit ROD, selecting a remedy for controlling the source of the contamination at the Site Proper. The source control remedy includes the following components: (1) excavating approximately 30,000 cubic yards of contaminated soils and sediments and solidifying this material on-Site; (2) installing deep groundwater extraction wells at the downgradient boundary of the Site Proper to collect contaminated groundwater; (3) installing shallow dewatering wells to collect contaminated groundwater and oil that is encountered during the excavation of the contaminated soils; (4) treating these liquids and discharging the clean groundwater in accordance with state environmental requirements; (5) removing about 25,000 gallons of contaminated tank oil, as well as other oils collected at the Site, to an EPA-approved facility to be incinerated; (6) cleaning and demolishing the empty storage tanks; (7) backfilling the solidified soil and sediments into the excavated areas; (8) constructing a Resource Conservation and Recovery Act (RCRA) cover over the solidified soils and sediments; and (9) inspecting the Site every five years to assure that human health and the environment continue to be protected. In addition, the 1988 ROD called for the performance of treatability studies to determine the effectiveness of the solidification process for the Site's contaminated soils and sediments. Should the treatability study determine that solidification would not provide the desired degree of treatment, a treatability study would be performed to determine the effectiveness of thermally treating the soils at the Site[1].

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1 The treatability study, which was completed in April 1997, determined that solidification would provide the desired degree of treatment.

Due to protracted negotiations with the Potentially Responsible Parties (PRPs)[2], there was a delay in initiating the first operable unit remedial design and remedial action. As such, in September 1994, EPA issued a Unilateral Administrative Order (UAO) to one of the PRPs, the Aluminum Corporation of America (ALCOA), to perform several components of the selected remedy, including removing the contaminated tank oils and incinerating them at an EPA-approved facility and cleaning and demolishing the empty storage tanks. Under the UAO, 9,654 gallons of PCB-contaminated oil and 230 drums of PCB-contaminated debris were removed from the Site.

In December 1995, EPA issued a second UAO to ALCOA, requiring them to install another interceptor trench to collect oil seeping into the wetlands.

A settlement with a number of PRPs in the form of a Consent Decree was entered in August 1996, which provided for, among other things, the design and implementation of the remedy selected in the 1988 ROD. It is anticipated that the design will be completed by December 1998 and that construction will start in the summer of 1999.

The first stage of the long-term cleanup, as set forth in the 1988 ROD, deals with source control. The second phase, which is the subject of this ROD, involves the Contamination Pathways, particularly the contaminated sediments in downgradient wetlands and aquatic areas and the contaminated downgradient groundwater. New York State began an intensive investigation of the Contaminated Pathways in 1986, which was continued by the PRPs pursuant to a 1992 Administrative Order on Consent with EPA. The studies culminated in the completion of the Contamination Pathways RI/FS in the summer of 1998.

RI and pre-remedial design study field work, conducted by the PRPs from 1993 to 1996, included the characterization of groundwater,

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2 A Consent Decree was signed by EPA and several PRPs in 1990, in which they agreed to perform the design and the implementation of the source control remedy. The Consent Decree was lodged in federal district court in June 1991. In response to substantive comments that were received from non-settling PRPs during the public comment period, a revised Consent Decree was lodged on May 15, 1992. In 1993, it was decided to withdraw this Consent Decree and attempt a global settlement with all of the PRPs. In December 1994, a revised Consent Decree was signed by EPA and an expanded group of PRPs. This Consent Decree was entered by the court on August 10, 1996.

subsurface soil, surface soil, sediment, and surface water in the Contamination Pathways. An ecological investigation, consisting of wetlands identification and delineation, detailed flora and fauna surveys, and collection and analysis of biota samples, was performed in the Western Wetland and the Southern Wetland. Based upon the results from surface water, sediment, surface soil, and biota sampling in these areas, it was concluded that additional ecological investigations were not required beyond these areas.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The March 1998 Contamination Pathways RI/FS report (which describes the nature and extent of the contamination emanating from the Site, evaluates the associated risks, and identifies and evaluates various remedial alternatives) and the June 1998 Proposed Plan, were made available to the public in both the Administrative Record and information repositories maintained at the EPA Docket Room in the Region II New York City office and at the Moira Town Hall located at North Lawrence Road, Moira, New York. The notice of availability for these documents was published in the *Malone Telegraph* on June 24, 1998. A public comment period was held from June 24, through July 23, 1998. A public meeting was held on July 13, 1998 at the Moira Town Hall in Moira, New York. At this meeting, representatives from EPA presented the findings of the Contamination Pathways RI/FS and answered questions from the public about the Site and the remedial alternatives under consideration.

Responses to the comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary attached hereto as Appendix V.

SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

The first operable unit for the Site addressed the source of contamination and the bedrock aquifer in the Site Proper. The action described in this ROD represents the second and final operable unit for the Site. The primary objectives of this action are to prevent human exposure to contaminated groundwater and to minimize potential ecological impacts related to exposure to contaminated sediments in the wetlands and aquatic areas located in the vicinity of the Site Proper.

SUMMARY OF SITE CHARACTERISTICS

During the RI, groundwater, surface water, sediments, surface and subsurface soils, and biota were sampled. The results from these samples are summarized below.

Groundwater

A 400-foot wide and 500-foot long contaminant plume in the overburden (located above the bedrock) and bedrock aquifers emanates from the Site Proper, extending southward to the Southern Wetland. (Figure 2 illustrates the horizontal and vertical extent of the contaminant plume.) The concentrations of volatile organic compounds (VOCs) in the plume—benzene, trichloroethene (TCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), and toluene—decrease with increasing distance from the Site Proper. The maximum concentration of TCE in the plume was 9 micrograms per liter (µg/l) in a well located on the Site Proper. *Cis*-1,2-DCE, a breakdown product of TCE (which indicates that degradation is occurring), toluene, and PCBs were found at maximum concentrations of 1,400 µg/l, 340 µg/l, and 770 µg/l, respectively, in a well screened in the overburden in a mounded area on the Site Proper. A sample from a well screened within the overburden on the railroad bed (the southern boundary of the Site Proper), about 200 feet south of the mounded area, revealed 350 µg/l of *cis*-1,2-DCE, 10 µg/l of benzene, and 2 µg/l of toluene. A groundwater sample from a bedrock monitoring well located 200 feet further south in the Southern Wetland contained 210 µg/l *cis*-1,2-DCE and 5 µg/l benzene. Figures 3 and 4 summarize the volatile organic contamination present in the overburden and bedrock aquifers, respectively. PCBs were not detected in the groundwater in the Contamination Pathways study area.

Surface Water

In comparison to background samples, elevated concentrations of inorganic constituents (154 µg/l of barium, 111,000 µg/l of calcium, 854 µg/l of iron, 26,500 µg/l of magnesium, 183 µg/l of manganese, 5,720 µg/l of potassium, 973,000 µg/l of sodium, and 346 µg/l of zinc) were detected in surface water samples collected from the drainage ditch in the Western Drainage Area of the Site Proper. PCBs/pesticides, VOCs, and semi-volatile organic compounds (SVOCs) were not detected in any surface water samples. Elevated levels of mercury and total phenols were detected in samples collected in Lawrence Brook at 0.22 µg/l (collected approximately 1.5 miles downstream of the Site Proper) and

21 µg/l (collected approximately 2.7 miles downstream of the Site Proper), respectively[3]. Tables 1 and 2 summarize the surface water sample results. Figure 5 shows the sample locations.

Sediments

PCBs were detected at concentrations up to 212 milligrams per kilogram (mg/kg) in sediment samples collected in the Western Wetland near the Site Proper Western Drainage Area. With the exception of one detection of 4.0 mg/kg PCBs in a sample collected at the southern edge of the Northwestern Wetland, all PCB detections that were above 1.0 mg/kg were in samples collected from the Western Wetland near the Site Proper.

Inorganics were detected in sediment samples above background levels across the Contamination Pathways study area. Lead was found well above background at concentrations up to 2,430 mg/kg in samples from the Western Wetland and 423 mg/kg in the Northwestern Wetland (lead concentrations in a reference (background) wetland were 20-40 mg/kg). Arsenic, copper, nickel, and zinc were found approximately 2,000 feet east of the Site Proper at concentrations up to 16.8 mg/kg, 104 mg/kg, 24.6 mg/kg, and 393 mg/kg, respectively. The highest concentration of chromium was detected at 100 mg/kg in the Southern Wetland and the highest concentration of mercury, 2.5 mg/kg, was detected in the Western Wetland.

Figures 6, 7, 8, and 9 summarize the results of lead and PCBs in Western and Northwestern Wetland sediments. Tables 3 and 4 summarize the results of the sediment inorganics sampling.

Several pesticide compounds were detected at low levels in sediment samples collected from the Western Wetland and the Northwestern Wetland. A limited number of VOCs were detected, with the highest concentration of 13 mg/kg (toluene) being found in the Western Wetland

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3 NYSDEC's guidance value for mercury in surface water is 0.2 µg/l; NYSDEC's ambient water quality standard for total phenols is 1 µg/l (6 NYCRR Parts 700-705). Since elevated levels of mercury and phenols were not detected in upstream surface water samples, and although mercury was detected in sediment samples collected from upstream locations, on-Site disposal activities are a possible source of these two constituents in the downstream surface water samples, because elevated concentrations were observed in Site Proper and Contamination Pathways sediments.

near the Site Proper. Table 5 summarizes the VOC concentrations that were detected.

The highest concentrations of polycyclic aromatic hydrocarbons (PAHs) were found at the railroad bed, with concentrations ranging from 5.7 mg/kg for benzo(a)pyrene to 15 mg/kg for pyrene. Lower concentrations were detected in samples from the Western Wetland near North Lawrence Road (concentrations ranged from 1 mg/kg for chrysene to 2.1 mg/kg for pyrene). Phenolic compounds were detected in sediments throughout the Site, with the highest concentration being found in the Northwestern Wetland at 83.4 mg/kg. (See Table 6.)

Surface and Subsurface Soil

PCBs were detected in only one surface soil sample at 0.38 mg/kg, collected near the drainage ditch outlet from the Site Proper in the Southern Wetland (see Figure 9). Other constituents detected in surface soil samples were generally found at or lower than background concentrations. Phenolic compounds and PAHs were detected in subsurface soil samples collected near the former railroad bed at maximum concentrations of 7.8 mg/kg and 18 mg/kg (benzo(b)fluoranthene), respectively. PCBs, pesticides, and VOCs were detected in subsurface soils in areas near the drainage area in the Site Proper at maximum concentrations of 4.8 mg/kg, 0.55 mg/kg, and 0.037 mg/kg, respectively. Tables 7, 8, and 9 summarize the results of the subsurface soil sampling. Figure 5 shows the sample locations.

Biota

Biota samples were collected in areas which exhibited the highest levels of soil/sediment contamination (i.e., near the former railroad bed, drainage ditch, within or adjacent to the Site Proper), representing the maximum potential for exposure and bioaccumulation. The results indicate low concentrations (0.039 - 1.19 mg/kg) of PCBs. Pesticide concentrations were nondetectable to very low.

Elevated levels of lead and arsenic were detected in frog and earthworm samples collected from the Southern and Western Wetlands. The results of flora and fauna surveys in these areas indicate that these contaminants do not currently appear to be causing any acute ecological effects.

PCBs, alpha-chlordane, 4,4'-DDD, alpha and gamma-BHC, arsenic, lead, and mercury were all detected in terrestrial biota samples. PCBs, 4,4'-DDD, gamma-BHC, arsenic, lead, and mercury were detected in darter samples.

Tables 10, 11, 12, and 13 summarize the results of the biota tissue samples.

SUMMARY OF SITE RISKS

Based upon the results of the supplemental RI, a baseline risk assessment was conducted to estimate the risks associated with current and future site conditions. The baseline risk assessment estimates the human health and ecological risk which could result from the contamination at the Site, if no remedial action were taken.

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: *Hazard Identification*—identifies the contaminants of concern at the Site based on several factors such as toxicity, frequency of occurrence, and concentration. *Exposure Assessment*—estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed. *Toxicity Assessment*—determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). *Risk Characterization*—summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks.

The baseline risk assessment began with selecting chemicals of concern. The evaluation identified numerous chemicals of concern in the various media (sediment, surface soil, groundwater, surface soil) (see Table 14). For example, chemicals of concern selected for groundwater included four VOCs (1,1-dichloroethane, *cis*-1,2-DCE, benzene, and ethylbenzene) and four inorganics (antimony, arsenic, cadmium, and zinc).

In the exposure assessment, the potential for human exposure to the chemicals of concern, in terms of the type, magnitude, frequency, and duration of exposure, is estimated. This assessment is made for potentially exposed populations at or near the Site considering both the current situation and potential future conditions. Since the wetlands in the Contamination Pathways study area are federal- and New York State-regulated wetlands, it was assumed that development would be unlikely and that these areas would remain wetlands in the future. However, exposure to groundwater during potable use was considered as a potential future scenario. Other potential receptors included recreational users of the wetland and upland areas and utility/maintenance workers that might access the areas north and east of the Site Proper. Adults and children are included in residential and recreational populations. Depending on the potentially exposed population, chemical intakes (doses) were estimated. Various exposure pathways were identified, including ingestion of sediment, dermal contact with sediment, ingestion of surface soil, dermal contact with soil, dermal contact with surface water, ingestion of groundwater, dermal contact with groundwater, and inhalation of volatile chemicals released from groundwater. Tables 15 and 16 show the potential exposure pathways.

Current federal guidelines for acceptable exposures are an individual lifetime excess carcinogenic risk in the range of 10^{-4} to 10^{-6} (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk) and a maximum health Hazard Index (which reflects non-carcinogenic effects for a human receptor) equal to 1.0. (A Hazard Index greater than 1.0 indicates a potential of noncarcinogenic health effects.)

Although there are some exceedences of groundwater standards (*i.e.*, Maximum Contaminant Levels (MCLs)), the carcinogenic risks associated with the current exposure scenario (4×10^{-6}) are within the acceptable cancer risk range. The results of the baseline risk assessment indicate that the ingestion of drinking water in the future-use scenario is also within the acceptable cancer risk range (total cancer risk of 8×10^{-5} for adults and 3×10^{-5} for children).

Concerning the noncarcinogenic risks, the risk characterization showed that there were no current risks to human health from dermal contact or ingestion of groundwater, surface water, sediment, or surface soil. The only scenario resulting in unacceptable human health risks would be for the future use of groundwater in the vicinity of the Southern Wetland.

The results of the baseline risk assessment indicate a Hazard Index greater than 1.0 for resident adult and resident child exposure to the chemicals of concern in groundwater from ingestion, dermal contact, and inhalation of volatilized chemicals under the future-use scenario (a Hazard Index of 3.0 and 6.0 for adults and children, respectively). Ingestion of *cis*-1,2-DCE (at the maximum detected concentration) and antimony are the predominant contributors to the total Hazard Index.

A summary of the carcinogenic and noncarcinogenic risks are provided in Table 17.

Ecological Risk Assessment

A four-step process is utilized for assessing site-related ecological risks for a reasonable maximum exposure scenario: *Problem Formulation*—a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. *Exposure Assessment*—a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations. *Ecological Effects Assessment*—literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors. *Risk Characterization*—measurement or estimation of both current and future adverse effects.

The Contamination Pathways study area, which provides a variety of upland and wetland habitats, is located in a rural area and has a high potential for utilization by wildlife. Habitats which presently exist in the vicinity of the Site include palustrine forested wetlands, scrub-shrub wetlands, emergent marsh, open water, and forested uplands. Surface soils may provide a source of exposure to wildlife through direct contact and ingestion of vegetation. Surface water runoff may transport contamination into the drainage ditch bordering the southern edge of the Site Proper and then into the various streams and wetlands, potentially contaminating surface water and sediment in these areas. If contaminants are discharged into the wetland areas, direct contact and ingestion of water and sediments can occur. Terrestrial wildlife may also be exposed through ingestion of water, sediment, or other organisms.

The risk assessment evaluated the potential risks to several indicator species through exposure to the contaminants of concern. For assessment of direct exposure to surface water, fish were chosen as indicators. For assessment of direct exposure to sediments, benthic organisms, muskrat, and mallards were chosen. For assessment of direct exposure to surface soils, the short-tailed shrew and the American woodcock were selected as indicator species. Several higher-level bird and mammal consumers were utilized in assessing potential food chain exposure to contaminants in the biota. The red-tailed hawk and red fox represent consumers of small mammals (shrews and voles) and the great blue heron and mink represent consumers of aquatic species (green frogs and darters). Ingestion of surface water was also considered for bird and mammal receptors.

Based on exposure calculations for sediment and vegetation ingestion, it appears that semi-aquatic species which have small home ranges (such as the muskrat) and spend most or all of their lives within the areas of concern are potentially at risk from ingestion of 4,4'-DDD, PCBs, aluminum, antimony, arsenic, barium, cadmium, lead, manganese, selenium, and vanadium. Semi-aquatic species with large home ranges (such as mallards), which spend only a portion of their lives in the areas of concern, may be affected by the presence of aluminum, lead, and mercury in sediment and vegetation.

Plant toxicity values suggested that aluminum, chromium, copper, vanadium, and zinc are present in various locations at levels that may be toxic to vegetation in the Western Wetland. Shrews and woodcock exposed to PAHs, 4,4'-DDD, dieldrin, PCBs, aluminum, arsenic, barium, copper, lead, selenium, vanadium, and zinc through ingestion of surface soil and earthworms may be at risk. Potential risk from 4,4'-DDD, PCBs, aluminum, barium, copper, lead, mercury, selenium, and zinc exist for earthworm-consuming birds in the areas of concern.

Arsenic, alpha and gamma-BHC, alpha-chlordane, 4,4'-DDD, lead, mercury, and PCBs were detected in terrestrial biota samples in the Southern and Western Wetlands. Arsenic, 4,4'-DDD, gamma-BHC, lead, mercury, and PCBs were detected in darter samples in these areas. Based on an exposure assessment for the red fox and red-tailed hawk through consumption of small mammals and soil, it appears that there is a potential risk to wildlife consumers of small mammals through exposure to PCBs in the Southern and Western Wetlands. Bird species are at potential risk through indirect consumption of mercury by ingesting contaminated vertebrates and invertebrates. Mammals which consume aquatic organisms in the Western Wetland are at potential risk from the indirect ingestion of PCBs by consuming contaminated vertebrates and invertebrates.

Although phenols are present in surface water, sediments, and soil throughout the Site, the concentrations do not appear to pose an ecological risk.

While floral and faunal surveys in the Southern and Western Wetlands indicate that there are functioning communities in these wetlands, elevated levels of arsenic and lead were detected in frog and earthworm samples, indicating some ecological impact is potentially occurring in these areas. Although a contaminant source area has been identified in the Western Wetland, such a source area could not be located in the Southern Wetland.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry analysis uncertainty can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual will actually come in contact with the chemicals of concern, the period of time over which such exposure will occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the risk assessment provides upper-bound estimates of the risks to populations near the Site, and is highly unlikely to underestimate actual risks related to the Site.

Summary of Human Health and Ecological Risks

It has been concluded that: (1) the levels of lead and PCBs in the Western Wetland sediments pose the greatest ecological threat in that wetland; (2) the levels of lead present in Northwestern Wetland sediments exceed NYSDEC's sediment screening values[4] and, therefore, may pose an ecological risk; (3) the groundwater in the vicinity of the Southern Wetland presents an unacceptable human health risk under the future-use scenario; (4) the levels of contaminants present in sediments in the depositional areas of the Southern Wetland do not pose a significant human health or ecological risk; (5) the levels of contaminants that are present in the sediments in the Western Wetland and the Northwestern Wetland do not pose a significant human health risk; and (6) the levels of contaminants that are present in the surface waters do not pose a significant human health or ecological risk.

Based upon the human health and ecological risk assessments, EPA has determined that actual or threatened releases of hazardous substances from the Site, if not addressed by the selected alternative or one of the other active measures considered, may present a current or potential threat to public health, welfare, or the environment.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs) and risk-based levels established in the risk assessment.

The following remedial action objectives have been established:

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4 Division of Fish and Wildlife, Division of Marine Resources, *Technical Guidance for Screening Contaminated Sediments*, November 1993.

- mitigate the migration of contaminated groundwater;
- restore groundwater quality underlying the Southern Wetland to levels which meet state and federal standards (See Tables 18 and 19);
- prevent future human contact with contaminated groundwater underlying the Southern Wetland; and
- minimize exposure of fish and wildlife to contaminated sediments in the Western and Northwestern Wetlands.

SUMMARY OF REMEDIAL ALTERNATIVES

The Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §9601 *et seq.* (CERCLA) requires that each selected site remedy be protective of human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

This ROD evaluates, in detail, three remedial alternatives for addressing the contaminated sediments and three remedial alternatives for addressing the contaminated groundwater associated with the York Oil site. (Since the levels of contaminants that are present in the surface waters do not pose a significant human health or ecological risk, surface water remedial alternatives were not evaluated.)

The remedy set forth in the ROD for the Site Proper, which is presently being designed, involves, among other things, the excavation and on-Site solidification/stabilization of contaminated soils and sediments, followed by backfilling of the treated soils and sediments and construction of a RCRA cover over the solidified soils and sediments. While EPA considered various other treatment and disposal options for the Contamination Pathways contaminated sediments, these alternatives were eliminated from further consideration since solidification/stabilization can meet the remedial action objectives set forth above at substantially less cost.

The present-worth costs for the alternatives discussed below are calculated using a discount rate of 7 percent and a 30-year time interval. The construction time reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with the responsible parties, or procure contracts for design and construction.

The alternatives are:

Sediment Alternatives

Alternative SED-1: No Action with Long-Term Monitoring

Capital Cost:	$0
Annual Monitoring Cost:	$18,000
Present-Worth Cost:	$220,000
Construction Time:	0 months

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative does not include any physical remedial measures that address the contaminated sediments. This alternative would, however, include annual, long-term monitoring of contaminant levels in the surface water, sediments, and biota.

Because this alternative would result in contaminants remaining in Western and Northwestern Wetland sediments, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the sediments.

Alternative SED-2: Excavation and/or Dredging of Western Wetland Contaminated Sediments, Stabilization/Solidification, and Disposal on the Site Proper; Long-Term Monitoring of Northwestern Wetland Sediments

Capital Cost:	$3,140,000
Annual Monitoring Cost:	$12,000
Present-Worth Cost:	$3,290,000

Construction Time: 9 months

This alternative includes excavating and/or dredging approximately 11,000 cubic yards of lead- and PCB-contaminated sediments across approximately 8 acres in the Western Wetland. The exact volume of sediments that would be removed would be determined during the design stage. Restoration with clean fill and revegetation would follow the removal of the contaminated sediments. All of the sediments that are removed would be dewatered, treated as part of the Site Proper solidification/stabilization remedy, and disposed of at the Site Proper with the solidified and stabilized wastes from the first operable unit remedial action under a cap meeting the requirements of New York State 6 NYCRR Part 360.

Implementation of this alternative would require clearing and grubbing activities, construction of temporary access roads and staging areas, and implementation of soil erosion and sediment controls.

All remedial work in the wetlands would comply with New York State Environmental Conservation Law Article 24 and 6 NYCRR Part 663. Any wetlands impacted by remedial activities would be fully restored. The restored wetlands would require routine inspection for several years to ensure adequate survival of the planted vegetation. Replanting would be performed, if necessary.

Under this alternative, post-remediation monitoring of Western Wetland surface water, sediments, and biota would be conducted to assess the effectiveness of the remedy.

Because this alternative would result in contaminants remaining in Northwestern Wetland sediments, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the sediments.

Alternative SED-3: Excavation and/or Dredging of Western Wetland and Northwestern Wetland Contaminated Sediments, Stabilization/Solidification, and Disposal on the Site Proper

Capital Cost: $3,850,000

Annual Monitoring Cost: $12,000

Present-Worth Cost:	$4,000,000
Construction Time:	10 months

This alternative is identical to Alternative SED-2, except that it would also include excavating and/or dredging approximately 1,100 cubic yards of lead- and PCB-contaminated sediments across approximately 5 acres in the Northwestern Wetland.

Under this alternative, post-remediation monitoring of Western Wetland and Northwestern Wetland surface water, sediments, and biota would be conducted to assess the effectiveness of the remedy.

Groundwater Remedial Alternatives

Alternative GW-1: No Action with Long-Term Monitoring

Capital Cost:	$0
Annual Monitoring Cost:	$12,000
Present-Worth Cost:	$150,000
Construction Time:	0 months

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative does not include any physical remedial measures that address the problem of groundwater contamination at the Site. This alternative would, however, include a long-term groundwater monitoring program. Under this monitoring program, groundwater samples would be collected and analyzed annually.

Because this alternative would result in contaminants remaining on-Site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative GW-2: Natural Attenuation, Institutional Controls, and Long-Term Monitoring

Capital Cost:	$30,000
Annual Monitoring Cost:	$45,600
Present-Worth Cost:	$600,000
Construction Time:	0 months

Under this alternative, the groundwater contamination would be addressed through natural attenuation. As part of a long-term groundwater monitoring program, groundwater samples would be collected and analyzed semiannually in order to verify that the level and extent of groundwater contaminants (e.g., VOCs) are declining. In addition, biodegradation parameters (e.g., oxygen, nitrate, sulfate, methane, ethane, ethene, alkalinity, redox potential, pH, temperature, conductivity, chloride, and total organic carbon) would be used to assess the progress of the degradation process.

This alternative would also include the implementation of institutional controls, such as deed restrictions, contractual agreements, or local law or ordinances, or other governmental action, for the purpose of restricting the installation and use of groundwater wells in the vicinity of the Southern Wetland until clean up standards are met in the groundwater.

Through preliminary groundwater modeling, it has been estimated that the contaminated groundwater in the overburden and bedrock aquifers underlying the Southern Wetland would naturally attenuate to groundwater standards in 10 years, once the source of groundwater contamination is addressed through excavating and treating the contaminated soils on the Site Proper, in combination with the installation of extraction wells at the downgradient boundary of the Site Proper (as called for in the 1988 ROD).

Because this alternative would result in contaminants remaining on-Site, CERCLA requires that the Site be reviewed every five years. If justified by the review, remedial actions may be implemented, in the future, to remove or treat the wastes.

Alternative GW-3: Groundwater Extraction and Treatment

Capital Cost:	$440,000

Annual Operation and Maintenance Cost:	$105,000
Present-Worth Cost:	$1,740,000
Construction Time:	6 months

Under this alternative, extraction wells would be installed in the plume in the Southern Wetland. Contaminated groundwater would be pumped to a treatment plant located on the Site Proper and discharged to surface water. Much of the cost associated with the implementation of this alternative would be shared with the treatment system currently under design for the Site Proper remedy.

Implementation of this alternative would require clearing and grubbing activities, construction of access roads and staging areas, and implementation of soil erosion and sediment controls.

As part of a long-term groundwater monitoring program to evaluate the effectiveness of the groundwater extraction and treatment remedy, groundwater samples would be collected and analyzed semiannually

Any wetlands impacted by remedial activities would be fully restored. The restored wetlands would require routine inspection for several years to ensure adequate survival of the planted vegetation.

This alternative would also include taking steps to secure institutional controls, such as the placement of restrictions on the installation and use of groundwater wells in the vicinity of the Southern Wetland until clean up standards are met in the groundwater.

It has been estimated that the extraction and treatment of the contaminated groundwater in the overburden and bedrock aquifers underlying the Southern Wetland would achieve groundwater standards in 7 years, once the source of groundwater contamination is addressed by the remedy called for in the 1988 ROD.

COMPARATIVE ANALYSIS OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely short-term effectiveness, long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, implementability, cost, compliance with applicable or relevant and appropriate requirements, overall protection of human health and the environment, and state and community acceptance. The evaluation criteria are described below.

- Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- Compliance with ARARs addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- Long-term effectiveness and permanence refer to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

- Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.

- Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

- Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- Cost includes estimated capital and operation and maintenance costs, and net present-worth costs.

- State acceptance indicates whether, based on its review of the Contamination Pathways RI/FS and Proposed Plan, the State concurs with, opposes, or has no comment on the selected remedy at the present time.

- Community acceptance will be assessed in the ROD, and refers to the public's general response to the alternatives described in the Contamination Pathways RI/FS report and Proposed Plan.

A comparative analysis of these alternatives based upon the evaluation criteria noted above, follows.

Overall Protection of Human Health and the Environment

Alternative SED-1 (no action and long-term monitoring) would not actively address the potential ecological risks posed by the contaminated sediments. Although Alternatives SED-2 (remediation of Western Wetland sediments) and SED-3 (remediation of Western Wetland and Northwestern Wetland sediments) would provide lower residual risks to the environment relative to the no-action alternative, they would, however, involve disturbance of approximately 8 and 13 acres, respectively, of wetland habitats. Moreover, additional areas of upland habitats for staging areas, access roads, and other support facilities would be disturbed. While the levels of lead and PCBs in the Western Wetland sediments pose an ecological threat, the levels of PCBs in the Northwestern Wetland sediments are significantly lower. Elevated levels of lead are present in Northwestern Wetland sediments, but it has not been conclusively determined whether these concentrations pose an ecological threat.

Since the majority of the areas of the Western Wetland that require remediation are open water, its restoration should be readily achievable. While Alternative SED-3 would result in a slight increase in contaminant removal relative to Alternative SED-2, the magnitude of the physical impacts associated with remediating the contaminated sediments in the Northwestern Wetland, which is a forested wetland, would be substantial and its restoration would be difficult (it has been estimated that it would take 50-60 years for the forested habitats in the Northwestern Wetland to be restored).

Sample and preliminary modeling results indicate that Alternative GW-1 (no action and long-term monitoring) and Alternative GW-2 (natural attenuation, institutional controls, and long-term monitoring) would meet state and federal groundwater standards through natural attenuation in reasonable time frames (estimated to be 10 years following implementation of the source control remedy at the Site Proper). While no current risk is associated with the groundwater underlying the Southern Wetland and, for the foreseeable future, residential or commercial/industrial development of groundwater within this regulated wetland is unlikely, Alternative GW-2 is more protective of human health than Alternative GW-1, since institutional controls would be implemented to prevent the installation and use of groundwater wells in the event that development occurs in this area. Alternative GW-3 (groundwater extraction and treatment) would actively collect and treat groundwater until concentrations of contaminants are reduced to federal and state groundwater standards (estimated to be seven years following implementation of the source control remedy at the Site Proper). Although Alternative GW-3 would be the most protective of human health and would minimize the migration of contaminated groundwater, there is no current risk associated with the groundwater underlying the Southern Wetland and implementation of this alternative would adversely affect the Southern Wetland through construction and maintenance of access roads, and possibly change the wetland's hydrology.

Compliance with ARARs

There are currently no promulgated standards for contaminant levels in sediments. EPA is, instead, using the PCB sediment screening values developed by NYSDEC as a "To-Be-Considered" cleanup objective. NYSDEC's sediment cleanup objectives for PCBs is specified in its Division of Fish and Wildlife, Division of Marine Resources, *Technical Guidance for Screening Contaminated Sediments*, November 1993.

Since Alternatives SED-2 (remediation of Western Wetland sediments) and SED-3 (remediation of Western Wetland and Northwestern Wetland sediments) would involve the excavation of PCB-contaminated sediments, their disposition would be governed by the requirements of Toxic Substances Control Act (TSCA). Specifically, under TSCA's PCB disposal requirements, soils and sediments contaminated with PCBs in excess of 50 mg/kg may be disposed of in a chemical waste landfill meeting the requirements of 40 CFR 761.75(b) or destroyed in an incinerator, or by an alternate method which achieves an equivalent level of performance to incineration (40 CFR 761.60(a)(4) and (e)) or the requirements may be waived in accordance with 40 CFR 761.75(c)(4). Since Alternatives SED-2 and SED-3 involve the disposal of soils and sediments contaminated with PCBs in excess of 50 mg/kg on the Site Proper, these disposal requirements are applicable. The PCB-contaminated soils and sediments on the Site Proper are also subject to these same requirements. However, on September 13, 1989, EPA issued a waiver of these TSCA requirements because the remedy called for in the 1988 ROD (solidification/stabilization of soils and sediments and redeposition of these soils and sediments within a final cover meeting the requirements of 6 NYCRR Part 360 and RCRA 40 CFR 264.310 in the same area from whence they originated) satisfied the prerequisites for granting a waiver under 40 CFR 761.75(c)(4). Since the contaminated sediments that would be excavated under Alternatives SED-2 and SED-3 originated from the Site Proper and would be disposed of at the Site Proper along with the Site Proper contaminated soils and sediments, and since the PCB concentrations in the contaminated sediments that would be excavated under Alternatives SED-2 and SED-3 are lower than the PCB levels in the soils and sediments which were the subject of the 1989 waiver, their treatment and disposal at the Site Proper with the Site Proper materials would be consistent with the 1989 waiver. Therefore, an additional waiver would not be required.

Alternatives SED-2 and SED-3 would result in significant short- and long-term impacts to existing wetland habitats. Therefore, adverse impacts to the wetlands and aquatic resources would need to be avoided and any unavoidable impacts would be mitigated in conformance with Executive Order 11990.

Although Alternative SED-1 (no action and long-term monitoring) would not impact the wetlands, it would not comply with the sediment cleanup objectives developed by NYSDEC.

Since the groundwater in the Southern Wetland is a future potential source of drinking water, federal and New York State drinking water standards and New York State groundwater quality standards are ARARs (See Tables 18 and 19). Alternatives GW-1 (no action and long-term monitoring) and GW-2 (natural attenuation, institutional controls, and long-term monitoring) do not include any active groundwater remediation; groundwater ARARs would be achieved through natural attenuation. Preliminary groundwater modeling indicates that ARARs will be achieved by natural attenuation within 10 years after the source control/groundwater extraction and treatment remedy selected in the 1988 ROD is implemented. For Alternative GW-3 (groundwater extraction and treatment), ARARs would be achieved through the removal and treatment of contaminants in the groundwater underlying the Southern Wetland in an estimated 7 years following implementation of the source control remedy at the Site Proper. Under Alternative GW-3, the treated groundwater would have to comply with surface water discharge requirements and the disposition of treatment residuals would have to be consistent with RCRA. Any air emissions associated with the treatment system would have to comply with air emission standards.

Long-Term Effectiveness and Permanence

Since the contaminated sediments do not pose a significant human health risk, Alternative SED-1 (no action and long-term monitoring) would provide reliable protection of human health over time. This alternative would not, however, include any measures for addressing the ecological risk posed by the contaminated sediments. While the downstream transport of contaminated sediments might lessen the exposure of ecological receptors at currently impacted locations over time, it would likely result in increased exposure downstream. Therefore, Alternative SED-1 would not be protective of ecological receptors over time.

Although Alternatives SED-2 (remediation of Western Wetland sediments) and SED-3 (remediation of Western Wetland and Northwestern Wetland sediments) would provide lower residual risks to the environment relative to the no-action alternative, the implementation of these activities would result in adverse impacts to the wetlands' habitats and biota. Further, it would take a considerable time before a diverse and fully functioning plant community would be reestablished. Alternative SED-2 would address the areas which present the highest level of potential ecological risk, while resulting in less wetland disturbance than Alternative SED-3. Removal of the additional contaminated sediments under Alternative SED-3 would provide the greatest protection from potential risk, but with an increased temporary loss of wetland value.

Since there is no treatment involved, Alternative SED-1 would not generate treatment residues. Although Alternatives SED-2 and SED-3 involve the treatment of contaminated sediments, the solidification/stabilization process would not generate treatment residues.

Once the source control remedy at the Site Proper is implemented, it is anticipated that all three groundwater alternatives—Alternative GW-1 (no action and long-term monitoring), Alternative GW-2 (natural attenuation, institutional controls, and long-term monitoring), and Alternative GW-3 (groundwater extraction and treatment)— would achieve groundwater ARARs within a reasonable time frame. Without a continuous source of groundwater contamination, it is anticipated that all three alternatives would maintain reliable protection of human health and the environment over time, once the source control remedy's cleanup goals have been met.

Alternative GW-3 would generate treatment residues which would have to be appropriately handled; Alternatives GW-1 and GW-2 would not.

Reduction in Toxicity, Mobility, or Volume Through Treatment

Alternative SED-1(no action and long-term monitoring) would not actively reduce the toxicity, mobility, or volume of contaminants through treatment. This alternative would rely on the downstream migration of contaminated sediments to reduce the levels of contaminants. Alternatives SED-2 (remediation of Western Wetland sediments) and SED-3 (remediation of Western Wetland and Northwestern Wetland sediments) would reduce the toxicity of the contaminated sediments and prevent further migration of and potential exposure to them through excavation and treatment.

Alternatives GW-1 (no action and long-term monitoring) and GW-2 (natural attenuation, institutional controls, and long-term monitoring) would not use active treatment to reduce toxicity, mobility, or volume of the groundwater contaminants. Alternative GW-3 (groundwater extraction and treatment) would provide a reduction of toxicity, mobility, and volume of the contaminated groundwater underlying the Southern Wetland through the extraction and treatment of contaminated groundwater.

Short-Term Effectiveness

Alternative SED-1 (no action and long-term monitoring) does not include any physical construction measures in any areas of contamination. Therefore, the implementation of this alternative would not present any short-term, adverse ecological or human health risks. While Alternatives SED-2 (remediation of Western Wetland sediments) and SED-3 (remediation of Western Wetland and Northwestern Wetland sediments) would present some risk to on-Site workers through dermal contact and inhalation, these exposures could be minimized by utilizing proper protective equipment. Excavation would also likely result in some releases of contaminated sediments, which might increase ecological exposures in the short term. Disturbance of the land during construction could affect surface water flow at the Site. In addition, there would be a potential for increased storm water runoff and erosion during construction activities that must be properly managed.

Although Alternatives SED-2 and SED-3 would provide lower residual risks to the environment relative to the no-action alternative, they would disturb wetland habitats. In addition, under these alternatives, additional areas of upland habitats for staging areas, access roads, and other support facilities would be disturbed.

Under Alternatives SED-2, the potential impacts of excavating approximately 8 acres of contaminated sediments from the predominantly open water Western Wetland would not be significant and the ability to restore the Western Wetland habitats would be readily achievable. However, excavating approximately 5 acres of contaminated sediments from the Northwestern Wetland (under Alternative SED-3) would damage the productive and diverse ecological community that currently exists in this area, resulting in a temporary loss of habitats. In addition, it is expected that it would be considerably more difficult to appropriately restore the forested habitats in the Northwestern Wetland.

Alternatives GW-1 (no action and long-term monitoring) and GW-2 (natural attenuation, institutional controls, and long-term monitoring) do not include any active remediation, therefore, they would not present an additional risk to the community or workers resulting from activities at the Site. Alternatives GW-1 and GW-2 would present some risk to on-Site workers through dermal contact and inhalation from groundwater sampling activities, which could be minimized by utilizing proper protective equipment. Alternative GW-3 (groundwater extraction and treatment), which would require the installation of extraction wells and piping, would present some risk to on-Site workers through dermal contact and inhalation from construction and groundwater sampling activities, which could be minimized with proper protective equipment.

Based upon preliminary groundwater modeling, it has been estimated that the contaminated groundwater in the overburden and bedrock aquifers underlying the Southern Wetland would naturally attenuate to groundwater standards in 10 years, once the source of groundwater contamination is addressed through excavating and treating the contaminated soils on the Site Proper, in combination with the installation of extraction wells at the downgradient boundary of the Site Proper (which will prevent further migration of contaminated groundwater from the Site Proper). By comparison, extraction of the contaminated groundwater in the overburden and bedrock aquifers, under Alternative GW-3, would achieve groundwater standards in an estimated 7 years, following the implementation of the source control remedy at the Site Proper.

The precise time required for the groundwater to be remediated under all of the alternatives would have to be determined based on the results of groundwater monitoring and more substantial groundwater modeling.

Implementability

Excavating contaminated sediments and transporting them to the Site Proper for treatment, although implementable, would be more difficult to implement than the no-action alternative. Alternatives SED-2 (remediation of Western Wetland sediments) and SED-3 (remediation of Western Wetland and Northwestern Wetland sediments) can be accomplished using technologies known to be reliable. The equipment, services, and materials for this work would be readily available. These actions would also be administratively feasible.

Alternative GW-1 (no action and long-term monitoring) would be the easiest alternative to implement, since it would require no activities other than long-term monitoring. With the implementation of institutional controls, Alternative GW-2 (natural attenuation, institutional controls, and long-term monitoring) would be slightly more difficult to implement than Alternative GW-1. Alternative GW-3 (groundwater extraction and treatment) would be the most difficult to implement in that it would require the construction of a groundwater extraction system and pipelines. The services and materials that would be required for the implementation of all of the groundwater remedial alternatives are readily available.

All treatment equipment that would be used in Alternative GW-3 is proven and commercially available. Transportation and disposal of treatment residues could be easily implemented using commercially-available equipment. Under this alternative, sampling for treatment effectiveness and groundwater monitoring would be necessary, but could be easily implemented.

Cost

The estimated capital, annual (operation, maintenance, and monitoring), and present-worth costs for each of the alternatives are presented below.

Alternative	Capital	Annual	Present Worth
SED-1	$0	$18,000	$220,000
SED-2	$3,140,000	$12,000	$3,290,000
SED-3	$3,850,000	$12,000	$4,000,000
GW-1	$0	$12,000	$150,000
GW-2	$30,000	$45,600	$600,000
GW-3	$440,000	$105,000	$1,740,000

Under the sediment no-action alternative, no remedial activities would be conducted; thus, no capital costs would be expected to be incurred. Annual monitoring of contaminant levels in sediments would be conducted to ensure that concentrations are not increasing. The cost of the monitoring is expected to be approximately $18,000 per year; the present-worth cost of this alternative is estimated to be approximately $220,000, significantly below the $3,290,000 and $4,000,000 present-worth cost estimates for the excavation alternatives, respectively.

Under the groundwater no-action alternative, annual monitoring of contaminant levels in groundwater would be conducted. The cost of the monitoring is expected to be approximately $12,000 per year; the present-worth cost of this alternative is estimated to be approximately $150,000. Under the natural attenuation alternative, semiannual monitoring of contaminant levels in groundwater would be conducted. The cost of the monitoring is expected to be approximately $45,600 per year; the present-worth cost of this alternative is estimated to be approximately $600,000, significantly below the $1,740,000 present-worth cost estimate for the extraction and treatment alternative.

State Acceptance

NYSDEC concurs with the selected remedy.

Community Acceptance

Comments received during the public comment period indicate that the public generally supports the selected remedy; however, concerns were expressed related to utilizing NYSDEC sediment guidance values to establish sediment clean up objectives. Comments received during the public comment period are summarized and addressed in the Responsiveness Summary, which is attached as Appendix V to this document.

DESCRIPTION OF THE SELECTED REMEDY

Based upon an evaluation of the various alternatives, EPA and NYSDEC select Alternative SED-2, excavation and/or dredging of lead- and PCB-contaminated sediments from the Western Wetland, solidification/stabilization, and disposal above the water table (with an adequate safety factor) and under a cap meeting the requirements of New York State 6 NYCRR Part 360 on the Site Proper, as the sediment alternative, with Alternative SED-3, excavation and/or dredging of lead- and PCB-contaminated sediments from the Western Wetland and the Northwestern Wetland, solidification/stabilization, and disposal above the water table (with an adequate safety factor) and under a cap meeting the requirements of New York State 6 NYCRR Part 360 on the Site Proper, as a contingent sediment alternative.

In the Western Wetland, the most significant potential ecological risk is associated with the elevated lead and PCB concentrations in the sediments located immediately to the west and northwest of the Site Proper Western Drainage Area (approximately defined by the polygon in Figure 7) and in the drainage channel leading to North Lawrence Road. These sediments, which contain approximately 96% of the PCBs in the Western Wetland, will be completely removed. Excavation and/or dredging of sediments in the "remaining areas" of the Western Wetland will be contingent upon the results of design-phase sediment sampling to more accurately define the extent of contamination and the existence of any "channelized" contaminants, and design-phase studies to determine whether lead and/or PCBs in these sediments pose an ecological threat. Those sediments which exceed 1 mg/kg PCBs would be removed; those sediments which are otherwise determined to pose a significant ecological threat would also be removed.

While the levels of lead and PCBs in portions of the Western Wetland sediments clearly pose an ecological threat, the levels of these contaminants in the Northwestern Wetland sediments are lower and it has not yet been determined whether these contaminants pose an ecological threat in the Northwestern Wetland. In addition, the impacts associated with excavating 5 or more acres of contaminated sediments from the Northwestern Wetland would damage the wetlands and associated ecological community that currently exist in this area, resulting in a loss of habitats for an undeterminable period of time. While the wetlands would be restored, it is expected that the habitat loss would be relatively long term due to the time required to recreate the forested habitats of the Northwestern Wetland.

In order to appropriately balance the minimization of remedial impacts with the reduction of ecological risk, removal of contaminated sediments in the Northwestern Wetland will be contingent upon the results of design-phase studies to determine whether these sediments pose an ecological threat.

The studies noted above would be designed to assess the ecological threat posed by lead and PCBs in the Northwestern Wetland and in the "remaining areas" of the Western Wetland and, if appropriate, would delineate the sediments requiring remediation. These studies would include, but would not necessarily be limited to, the following:

Measurement of lead toxicity would be based on laboratory sediment toxicity tests using sediments collected in the field. It is anticipated that two test organisms would be run side-by-side for each sample location following standard EPA or ASTM sediment toxicity testing methods. The tests would be for survival and growth. Analysis of the sediment would include full Target Compound List/Target Analyte List, pesticides/PCB, total organic carbon, pH, grain size, and oil and grease. Sediments from a local reference wetland unimpacted by the Site would be collected with Site sediments to assist in interpreting any potential confounding regional sediment or water quality factors.

Measurement of lead and PCB bioaccumulation would be based on tissue residue analysis using biota collected in the field. The tissue residue concentrations would be used as the assumed food source for modeling risk to both aquatic foraging avian and mammalian receptors to address food chain threats.

Based on the modeling of the lead and PCB tissue residue concentrations, the prediction of a significant reduction in survival or growth, or a significant impact to higher trophic level receptors would indicate the need to remediate the sediments.

EPA and NYSDEC will review the results of the ecological studies. Based upon the results of these studies, EPA, in consultation with NYSDEC, will determine whether there is a need to remove any sediments in the Northwestern Wetland and/or in the "remaining areas" of the Western Wetland. If it is determined that lead-contaminated sediments need to be remediated, based on the results of the modeling and the sediment analyses, sediment cleanup values would be calculated. If it is determined that PCB-contaminated sediments need to be remediated, those sediments which exceed 1 mg/kg PCBs would be removed.

All areas disturbed during the remediation of sediments will be restored and all remedial work in wetlands will comply with New York State Environmental Conservation Law Article 24 and 6 NYCRR Part 663.

Short-term post-remediation monitoring of Western Wetland sediments, surface water, and biota will be conducted to evaluate the effectiveness of the remedy. If Alternative SED-3, the contingent alternative, is implemented, short-term post-remediation monitoring of Northwestern Wetland sediments, surface water, and biota would be conducted to evaluate the effectiveness of the remedy in this area. If Alternative SED-3, the contingent alternative, is not implemented, since contaminants would be left in place in the Northwest Wetland, long-term monitoring in this area would be performed. This monitoring would include sediment sampling to determine if the residual contaminant concentrations are decreasing and studies to assess the risk to receptors.

The selected alternative to address the groundwater contamination is Alternative GW-2 (natural attenuation, institutional controls, and monitoring).

While groundwater extraction and treatment would actively address the contaminated groundwater underlying the Southern Wetland, no current risk is associated with this groundwater, and, for the foreseeable future, residential or commercial/industrial development of groundwater within this regulated wetland is unlikely. Further, the presence of TCE breakdown products in the groundwater indicates that degradation is occurring. Based upon preliminary groundwater modeling, it has been estimated that the contaminated groundwater in the overburden and bedrock aquifers underlying the Southern Wetland will naturally attenuate to groundwater standards in 10 years, once the source of groundwater contamination is addressed through excavating and treating the contaminated soils on the Site Proper, in combination with the installation of extraction wells at the downgradient boundary of the Site Proper (which will prevent further migration of contaminated groundwater from the Site Proper), as set forth in the 1988 ROD. By comparison, extraction of the contaminated groundwater in the overburden and bedrock aquifers would achieve groundwater standards in an estimated 7 years following the implementation of the source control remedy at the Site Proper. The precise time required for the groundwater to be remediated under both scenarios will have to be determined based on the results of groundwater monitoring and additional groundwater modeling.

EPA anticipates that natural attenuation will result in the remediation of the groundwater underlying the Southern Wetland in a reasonable time frame and at a significantly lower cost than groundwater extraction and treatment. Furthermore, the implementation of institutional controls to prevent the installation and use of groundwater wells within the Southern Wetland will reduce the risk to human health which will occur in the unlikely event that the wetland is developed.

As part of a long-term groundwater monitoring program, groundwater samples will be collected and analyzed semiannually in order to verify that the level and extent of contaminants are declining from baseline conditions and that conditions are protective of human health and the environment. In addition, biodegradation parameters will be used to assess the progress of the degradation process. Statistical analysis of the groundwater sampling results will be employed to discern trends.

The specific details of the monitoring programs will be developed during the design phase. The results of the monitoring and site conditions will be assessed at least once every five years to determine whether additional remedial actions are necessary, whether the monitoring should continue, and/or whether the parameters and/or frequency of the monitoring should be adjusted.

EPA and NYSDEC believe that the selected sediment and groundwater remedy for the Contamination Pathways will provide the best balance of tradeoffs among alternatives with respect to the evaluating criteria, be protective of human health and the environment, comply with ARARs, and be cost-effective.

STATUTORY DETERMINATIONS

As was previously noted, CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1), mandates that a remedial action must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site. CERCLA §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

For the reasons discussed below, EPA has determined that the selected remedy meets the requirements of CERCLA §121, 42 U.S.C. §9621.

Protection of Human Health and the Environment

The selected remedy protects human health and the environment by reducing levels of contaminants in the groundwater through natural attenuation and the implementation of institutional controls. The selected remedy also protects human health and the environment by reducing the levels of contaminants in the sediments by excavation and solidification/stabilization. The selected remedy will provide overall protection by reducing the toxicity, mobility, and volume of contamination and by meeting federal and state MCLs.

Compliance with ARARs

Since the selected remedy will involve the excavation of PCB-contaminated sediments, their disposition will be governed by the requirements of TSCA. Specifically, under TSCA's PCB disposal requirements, soils and sediments contaminated with PCBs in excess of 50 mg/kg may be disposed of in a chemical waste landfill meeting the requirements of 40 CFR 761.75(b) or destroyed in an incinerator, or by an alternate method which achieves an equivalent level of performance to incineration (40 CFR 761.60(a)(4) and (e)) or the requirements may be waived in accordance with 40 CFR 761.75(c)(4). Since the selected remedy involves the disposal of sediments contaminated with PCBs in excess of 50 mg/kg on the Site Proper, these disposal requirements are applicable. The PCB-contaminated soils and sediments on the Site Proper are also subject to these same requirements. However, since the contaminated sediments that will be excavated originated from the Site Proper and will be disposed of at the Site Proper along with the Site Proper contaminated soils and sediments, and since the PCB concentrations in the contaminated sediments that will be excavated are lower than the PCB levels in the Site Proper soils and sediments, their treatment and disposal at the Site Proper with the Site Proper materials is consistent with EPA's 1989 TSCA waiver. Therefore, an additional waiver will not be required.

The selected remedy will be effective in reducing groundwater contaminant concentrations below MCLs (chemical-specific ARARs) through natural attenuation.

A summary of action-specific, chemical-specific, and location-specific ARARs which will be complied with during implementation is presented below. A listing of the individual chemical-specific ARARs is presented in Tables 11 and 12.

Action-Specific ARARs:

- Clean Water Act, Discharge to Publicly-Owned Treatment Works (40 CFR 403)
- Clean Water Act, NPDES Permitting Requirements for Discharge of Treatment System Effluent (40 CFR 122-125)
- DOT Rules for Hazardous Materials Transport (49 CFR 107, 171.1-171.500)
- Effluent Guidelines for Organic Chemicals, Plastics and Resins (40 CFR 414)
- Farmland Protection Policy Act (7 CFR 658).
- National Emission Standards for Hazardous Air Pollutants (40 CFR 61)
- New York State Air Emission Requirements (6 NYCRR 200-212)

- New York State Pollution Discharge Elimination System Requirements (6 NYCRR 750-757)

- New York State RCRA Closure and Post-Closure Standards (6 NYCRR 372)

- New York State RCRA Standards for the Design and Operation of Hazardous Waste Treatment Facilities Minimum Technology Requirements (6 NYCRR 370-372)

- New York State RCRA Generator and Transporter Requirements for Manifesting Waste for Off-Site Disposal (6 NYCRR 364 and 372)

- New York State Solid Waste Management Requirements and Siting Restrictions (6 NYCRR 360-361)

- Occupational Safety Health Standards for Hazardous Responses and General Construction Activities (29 CFR 1904, 1910, 1926)

- RCRA Generator Requirements for Manifesting Waste for Off-Site Disposal (40 CFR 263)

- RCRA Ground Water Monitoring and Protection Standards (40 CFR 264, Subpart F)

- RCRA Land Disposal Restrictions (40 CFR 268)

- RCRA Subtitle D Nonhazardous Waste Management Standards (40 CFR 257)

- RCRA Subtitle C, Hazardous Waste Treatment Facility Design and Operating Standards for Treatment and Disposal Systems (40 CFR 264 and 265)

- RCRA Subtitle C, Closure and Post-Closure Standards (40 CFR 264, Subpart G)

- RCRA Transporter Requirements for Off-Site Disposal (40 CFR 257)

- Regulation Affecting the Disposal of PCB-Contaminated Materials (40 CFR 761)

- Research Development and Demonstration Permits (40 CFR 270.65, 50 FR 28728)

- Toxic Substances Control Act, 15 U.S.C. Sections 2601 to 2692 (Regulations found at 40 CFR 700 to 799)

Chemical-Specific ARARs:

- Clean Air Act, National Ambient Air Quality Standards (40 CFR 50)

- Clean Air Act, National Emission Standards for Hazardous Air Pollutants (40 CFR 61)

- Clean Water Act, Water Quality Criteria (Section 304) (May 1, 1987 - Gold Book)

- New York State Ambient Air Quality Standards (6 NYCRR 256 and 257)

- New York State Classifications of Standards of Quality of Quality and Purity (6 NYCRR 701)

- New York Safe Drinking Water Act, Maximum Contaminant Levels (10 NYCRR 5)

- New York Groundwater Quality Standards (6 NYCRR 703)

- New York State Raw Water Quality Standards (10 NYCRR 170.4)

- New York State RCRA Groundwater Protection Standards (6 NYCRR 373-2.6(e))

- New York State Regulations for the Identification of Hazardous Waste (6 NYCRR 371)

- New York State Surface Water Quality Standards (6 NYCRR 703)

- RCRA Groundwater Protection Standards and Maximum Concentrations Limits (40 CFR 264, Subpart F)

- RCRA Regulations for the Identification of Hazardous Waste (40 CFR 261)

- Safe Drinking Water Act Maximum Contaminant Levels, Maximum Contaminant Levels Goals (40 CFR 141)

Location-Specific ARARs:

- Army Corps of Engineers Regulations for Construction and Discharge of Dredged or Fill materials in Navigable Waterways (33 CFR 320-330)
- Clean Water Act Section 404 (40 CFR 230)
- Endangered and Threatened Species of Fish and Wildlife Requirements (6 NYCRR 182)
- Endangered Species Act (16 USC 1531)
- Executive Order #11988 on Flood Plain Management
- Executive Order #11990 on Protection of Wetlands
- Farmland Protection Policy Act
- Fish and Wildlife Coordination Act (16 USC 661 *et seq.*)
- Freshwater Wetlands Act Law (ECL Article 24, 71 in Title 23)
- National Historic Preservation Act (16 USC 470) Section 106, *et. seq.* (36 CFR 800)
- New York State Flood Hazard Area Construction Standards
- New York State Flood Plain Management Act and Regulations (ECL Article 36 and 6 NYCRR 500)
- New York State Freshwater Wetlands Permit Requirements and Classification (6 NYCRR 663 and 664)
- New York State Water Pollution Control Regulations, Use and Protection of Waters (6 NYCRR 608)
- RCRA Location Requirements for 100-Year Flood Plains (40 CFR 264.18 (b))

- USEPA Statement of Policy on Flood Plains and Wetlands Assessment for CERCLA Actions

- Wetlands Construction and Management Procedures (40 CFR 6, Appendix A)

Other Criteria, Advisories, or Guidance To Be Considered:

- Cancer Assessment Group (National Academy of Science) Guidance

- Federal Guidelines for Specification of Disposal Site for Dredged or Fill Material

- Fish and Wildlife Coordination Act Advisories

- Groundwater Classification Guidelines

- Groundwater Protection Strategy

- New York State Air Guidelines for the Control of Toxic Ambient Air Contaminants (Air Guide 1)

- New York State Ambient Water Quality Standards and Guidance Values (TOG 1.1.1)

- New York State Analytical Detectability for Toxic Pollutants (85 W-40 TOG)

- New York State Proposed Safe Drinking Water Standards Maximum Contaminant Levels for VOCs (10 NYCRR 5)

- New York State Regional Authorization for Temporary Discharges (TOG 1.6.1)

- New York State Toxicity Testing for the SPDES Permit Program (TOG 1.3.2)

- New York State Underground Injection/Recirculation at Groundwater Remediation Sites (Technical Operating Guidance Series (TOGS) 7.1.2)

- Policy for the Development of Water-Quality-Based Permit Limitations for Toxic Pollutants (49 FR 9016)

- Proposed Federal Air Emission Standards for Volatile Organic Control Equipment (52 FR 3748)

- Proposed Maximum Contaminant Level Goals (50 FR 46936-47022, November 13, 1985)

- Proposed Maximum Contaminant Levels (50 FR 46936-47022, November 13, 1985)

- Proposed Requirements for Hybrid Closures (52 FR 8711)

- Safe Drinking Water Act National Primary Drinking Water Regulations, Maximum Contaminant Level Goals

- Selection of Remedial Actions at Inactive Hazardous Waste Sites (Technical and Administrative Guidance (TAGM 4030)

- Technical Guidance for Screening Contaminated Sediments (November 1993, NYSDEC, Division of Fish and Wildlife, Division of Marine Resources).

- Toxic Substances Control Act Health Data

- Toxicological Profiles, Agency for Toxic Substances and Disease Registry, U.S. Public Health Service

- U.S. Environmental Protection Agency Drinking Water Health Advisories

- U.S. Environmental Protection Agency Health Effects Assessment Summary Table

- Waste Load Allocation Procedures

Cost-Effectiveness

The selected remedy provides for overall effectiveness in proportion to its cost and in mitigating the principal risks posed by contaminated sediments and groundwater. The estimated cost for the selected remedy has a capital cost of $3,170,000, annual operation and maintenance of $57,600, and a present-worth cost of $3,890,000.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable by the excavation and solidification/stabilization of contaminated sediments.

Preference for Treatment as a Principal Element

The selected remedy's excavation and solidification/stabilization of contaminated sediments satisfies the statutory preference for remedies employing treatment that permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan called for excavating and/or dredging sediments exceeding NYSDEC's sediment guidance values for lead and PCBs (31 mg/kg and 1 mg/kg, respectively)[5] in the Western Wetland, and in the Northwestern Wetland should design-phase studies determine that there is an ecological threat in the Northwestern Wetland.

In response to comments that were expressed by the PRPs related to utilizing sediment guidance values to establish cleanup objectives, the remedy in the ROD has been modified as follows[6]:

In the Western Wetland, the sediments located immediately to the west and northwest of the Site Proper Western Drainage Area and in the drainage channel leading to North Lawrence Road will be completely excavated and/or dredged. Excavation and/or dredging of sediments in the "remaining areas" of the Western Wetland will be contingent upon

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5 NYSDEC's sediment cleanup objectives for lead and PCBs that were called for in the Proposed Plan are specified in its Division of Fish and Wildlife, Division of Marine Resources, *Technical Guidance for Screening Contaminated Sediments*, November 1993. (NYSDEC's lead sediment cleanup objective is adopted from the value presented in the Ontario Ministry of Environment and Energy *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario*, August 1993.)

6 While EPA agrees that using a 31 mg/kg lead sediment screening value as a cleanup objective for the York Oil site is inappropriate, EPA believes that the 1 mg/kg cleanup objective for PCBs is justified. At New York State Superfund sites, EPA has consistently used 1 mg/kg PCBs as a cleanup objective for sediments.

the results of design-phase sediment sampling to more accurately define the extent of contamination and the existence of any "channelized" contaminants, and design-phase studies to determine whether lead and/or PCBs in these sediments pose an ecological threat.

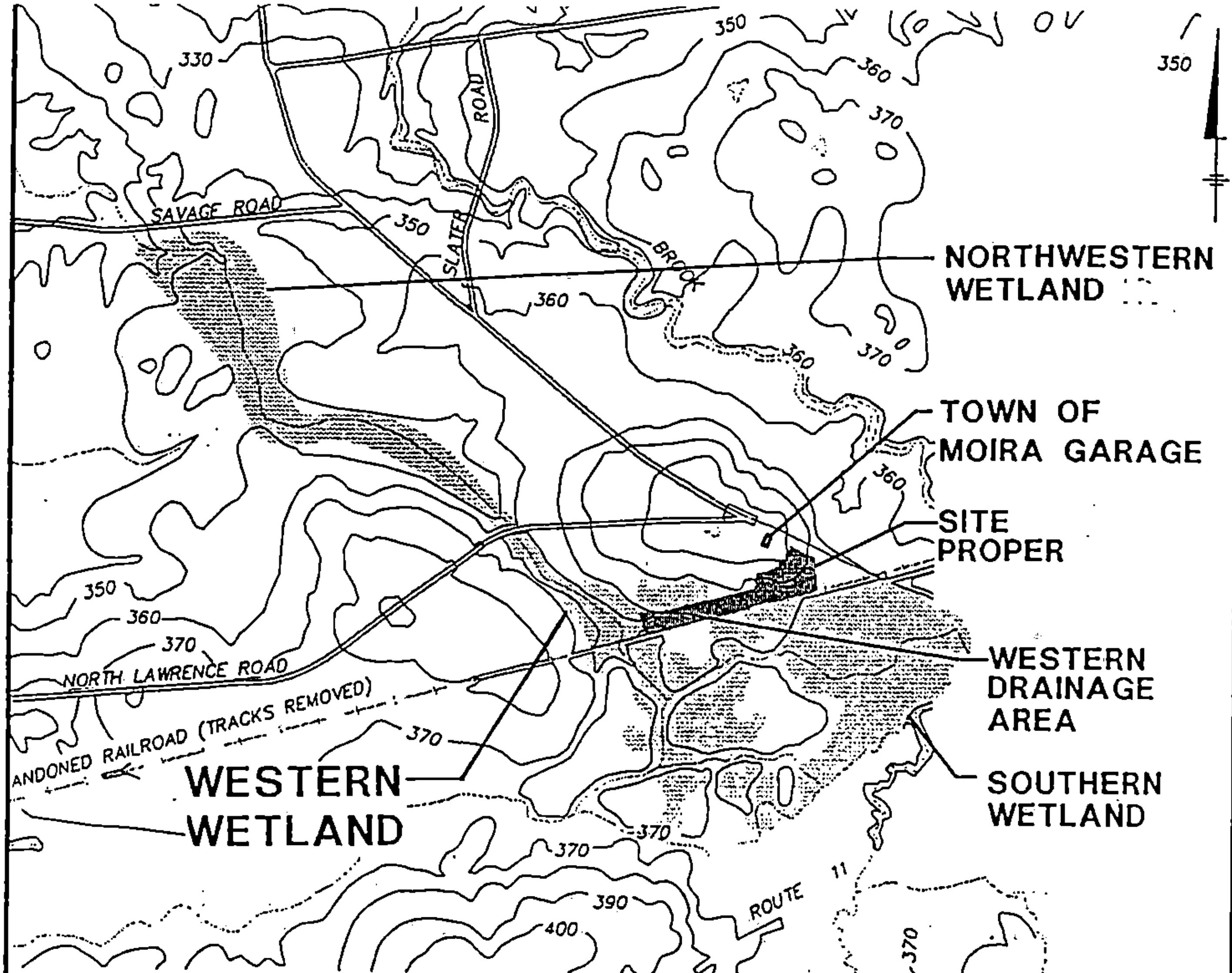
Excavation and/or dredging of contaminated sediments in the Northwestern Wetland will be contingent upon the results of studies which will be conducted during the design phase to determine whether these sediments pose an ecological threat.

In addition, the Proposed Plan recommended long-term sediment, surface water, and biota monitoring in the Southern Wetland and the wetlands to the northwest of the Northwest Wetland. However, since the levels of contaminants present in these areas do not pose a significant human health or ecological risk, this long-term monitoring will not be conducted.

APPENDIX I

FIGURES

FIGURES



LEGEND:

WETLAND AREAS AND AQUATIC SITES WITHIN CONTAMINATION PATHWAYS STUDY AREA (2):

- 10' CONTOURS
- WATER
- RAILROADS
- ROADS

20,000' 0 20,000'

GRAPHIC SCALE

NOTES:

1. BASE MAP CONSTRUCTED FROM NORTH LAWRENCE, NEW YORK (1964, PHOTOINSPECTED 1980) AND BRUSHTON, NEW YORK (1964) U.S.G.S. 7.5 SERIES QUADRANGLES.
2. WETLAND AREAS AND AQUATIC SITES AS IDENTIFIED IN EBASCO OCTOBER 1991 WORK PLAN, WITH THE EXCEPTION OF SOUTHERN AND WESTERN WETLANDS, AND REFERENCE AQUATIC SITE.

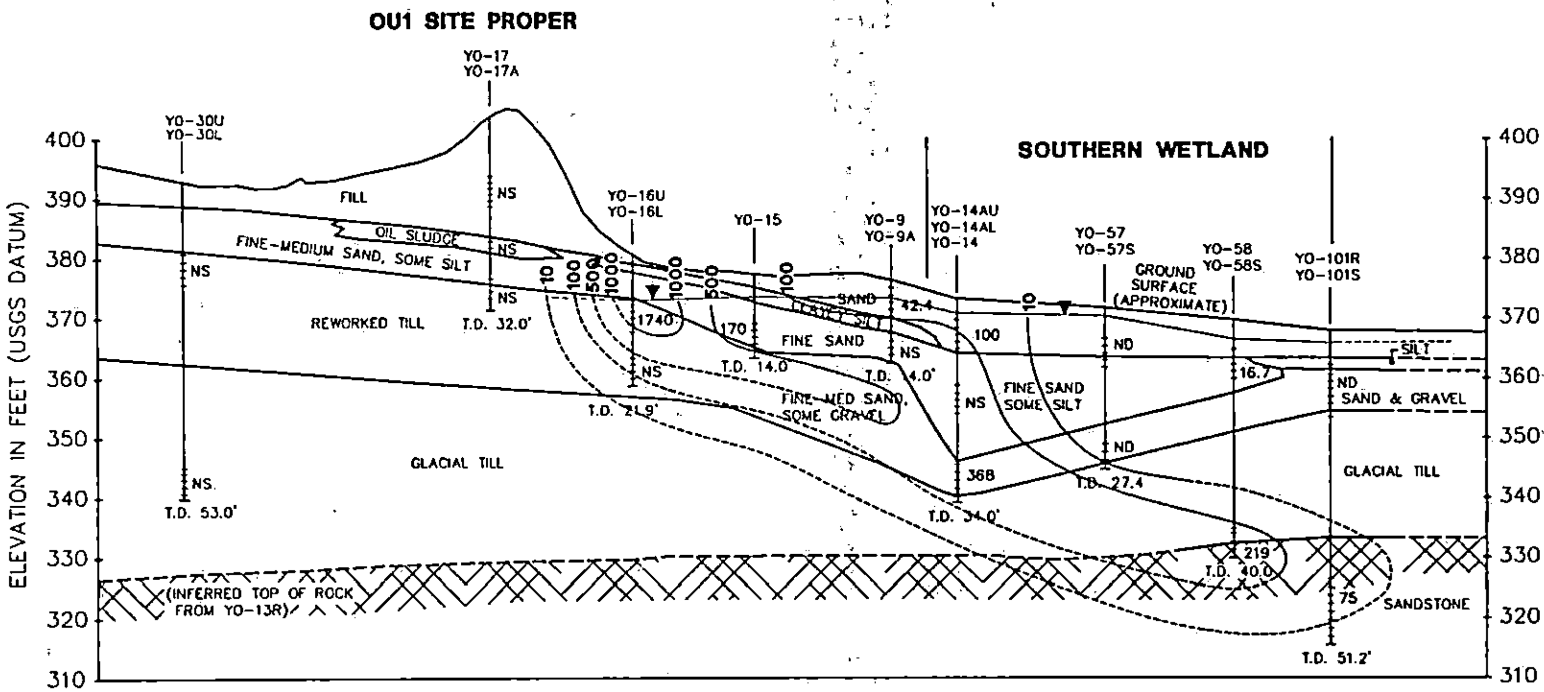
L: OFF = REF*
P: STD-PCP/BW-AP
5/5/98 SYR-54-JER NES DCC
68804055/68804806.DWG

YORK OIL SUPERFUND SITE
CONTAMINATION PATHWAYS

SITE PLAN

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 1



LEGEND

- YO- — WELL I.D.
- GROUND SURFACE
- WATER TABLE ELEVATION JANUARY 10-11, 1996
- SCREEN INTERVAL
- 10 — TOTAL VOCs ISOCONCENTRATION LINE (ppb)
- 368 — TOTAL VOCs (VOLATILE ORGANIC COMPOUNDS) IN GROUND WATER (ppb) AS PER FIGURES 4-7 AND 4-8 BBL RI, APRIL 1996 (ND = NONE DETECTED, NS = NOT SAMPLED DURING CURRENT INVESTIGATION)
- T.D. 14.0' — TOTAL DEPTH

NOTE: CROSS-SECTION ADAPTED FROM SECTION A-A' PRESENTED IN "REMEDIAL INVESTIGATION REPORT, YORK OIL SITE" (PREPARED BY ERDMAN, ANTHONY, ASSOCIATES FOR THE NYSDEC, AUGUST, 1985).

100' 0 100'
HORIZONTAL GRAPHIC SCALE

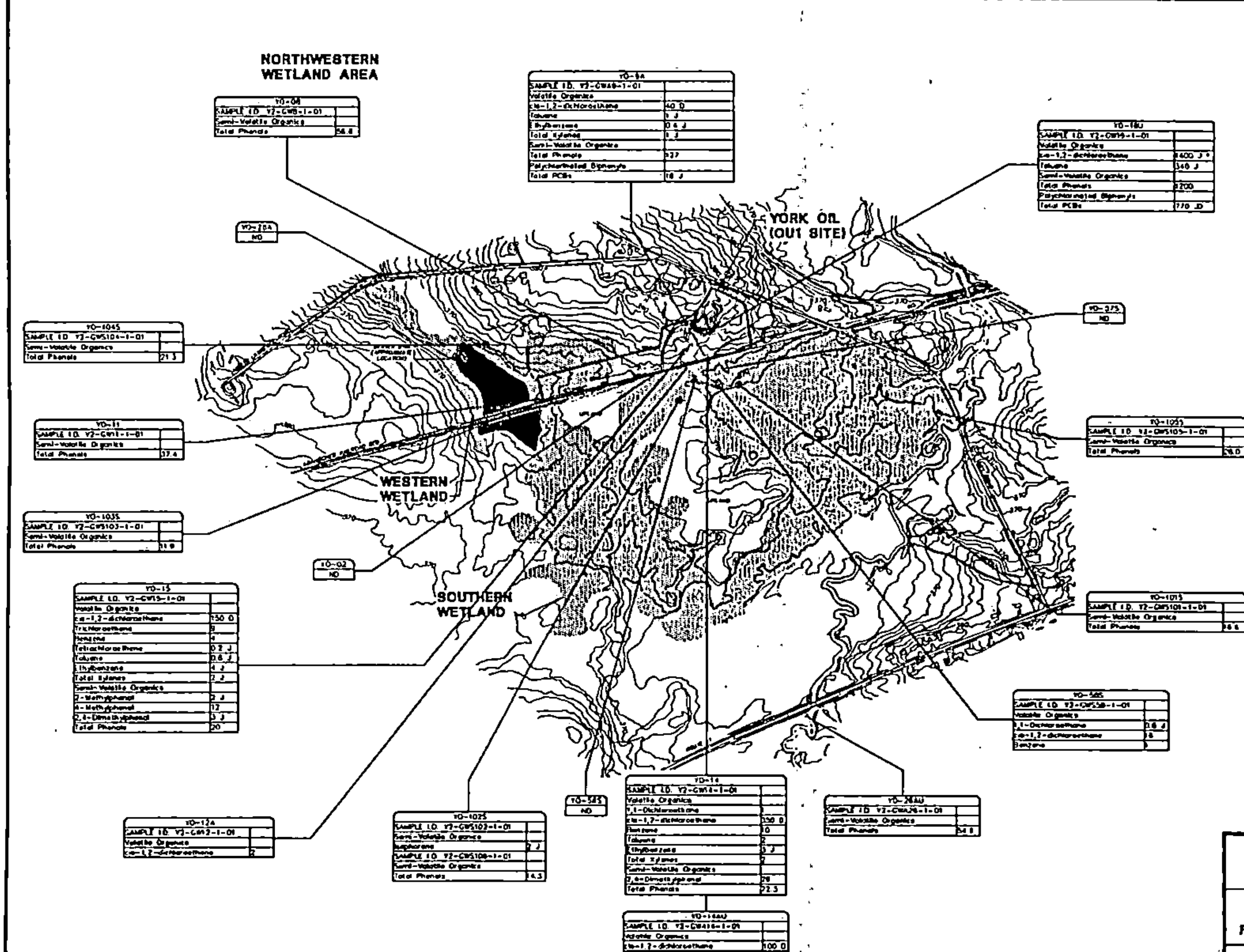
20' 0 20'
VERTICAL GRAPHIC SCALE

YORK OIL SUPERFUND SITE
CONTAMINATION PATHWAYS
REMEDIAL INVESTIGATION

GEOLOGIC CROSS-SECTION WITH TOTAL VOC ISOCONCENTRATION LINES

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 2



LEGEND:

SOUTHERN AND WESTERN WETLAND

370 CONTOURS

WATER

ROADS

MONITORING WELL LOCATION

800' 0 800'

SCALE: 1" = 800'

NOTES:

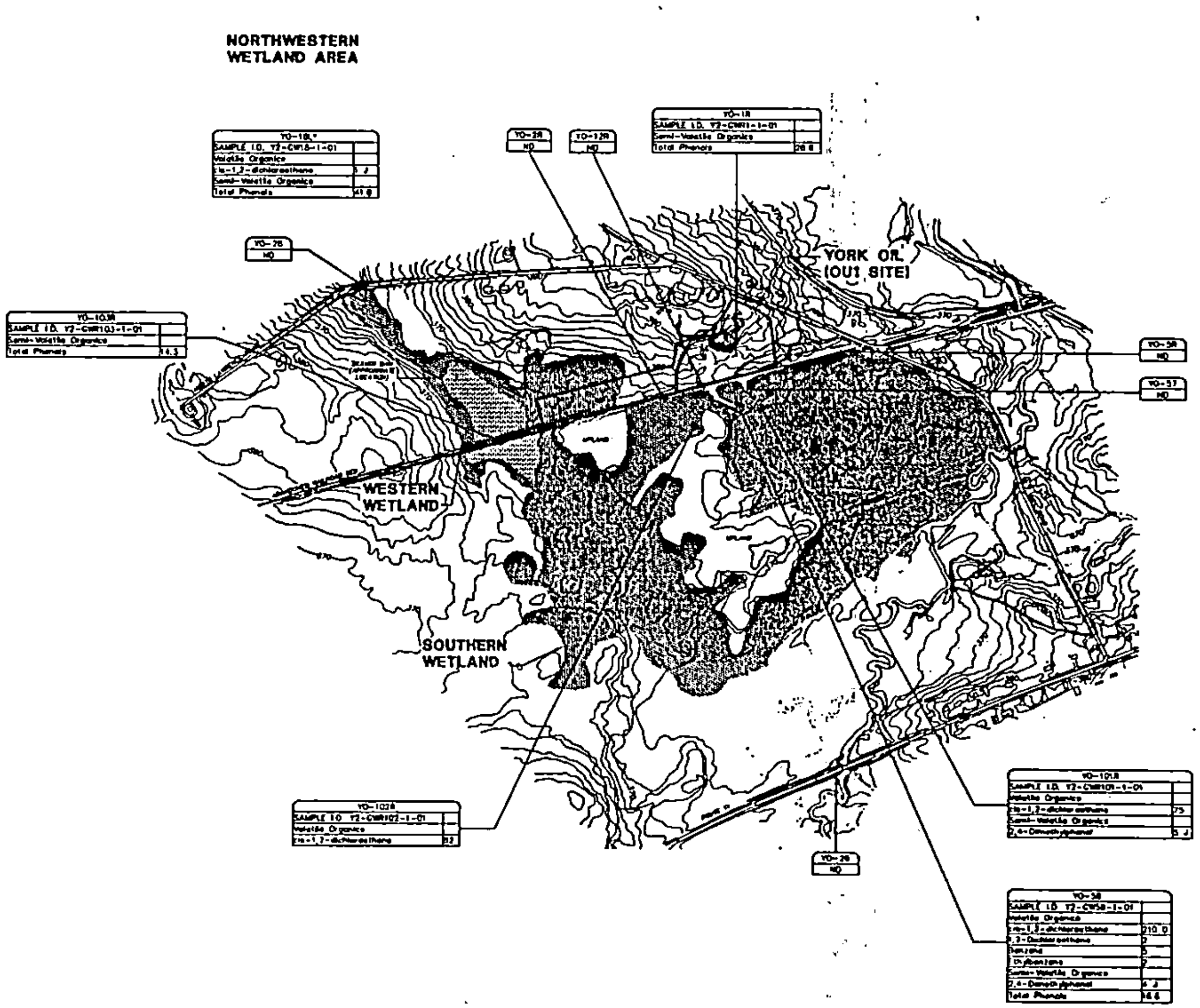
1. MAP BASED ON PHOTOGRAPHY FLOWN ON MAY 12, 1992. CONTOUR INTERVAL = 2 FEET. COORDINATES BASED ON NEW YORK STATE PLANE COORDINATE SYSTEM EAST ZONE (NORTH AMERICAN DATUM OF 1983). ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. SAMPLES COLLECTED BY BLASLAND, BOUCK & LEE, INC. (AUGUST 1993).
3. ALL SHALLOW MONITORING WELL LOCATIONS WHICH WERE SAMPLED ARE SHOWN.
4. J = CONCENTRATION IS APPROXIMATE.
5. * = DATA PRESENTED IS TOTAL 1,2 DICHLOROETHENE.
6. D = REPORTED CONCENTRATION IS THE RESULT OF A DILUTION.
7. ND = NO TARGET COMPOUNDS OR ANALYTES DETECTED.

YORK OIL SUPERFUND SITE
CONTAMINATION PATHWAYS
REMEDIAL INVESTIGATION

SUMMARY OF ORGANIC
COMPOUND DATA FOR
FOR OVERBURDEN GROUND WATER (ug/L)

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 3



LEGEND:

SOUTHERN AND WESTERN WETLAND

—370— CONTOURS

.... WATER

═══ ROADS

MONITORING WELL LOCATION

800' 0 800'

SCALE: 1" = 800'

NOTES:

1. MAP BASED ON PHOTOGRAPHY FLOWN ON MAY 12, 1992. CONTOUR INTERVAL = 2 FEET. COORDINATES BASED ON NEW YORK STATE PLANE COORDINATE SYSTEM EAST ZONE (NORTH AMERICAN DATUM OF 1983). ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. SAMPLES COLLECTED BY BLASLAND, BOUCK & LEE, INC. (AUGUST 1993).
3. ALL DEEP MONITORING WELL LOCATIONS WHICH WERE SAMPLED ARE SHOWN.
4. J = CONCENTRATION IS APPROXIMATE.
5. * = BEDROCK MONITORING WELL YO-18L IS LOCATED APPROXIMATELY ONE MILE NORTHWEST OF OU1 SITE.
6. D = REPORTED CONCENTRATION IS THE RESULT OF A DILUTION.
7. ND = NO TARGET COMPOUNDS OR ANALYTES DETECTED.

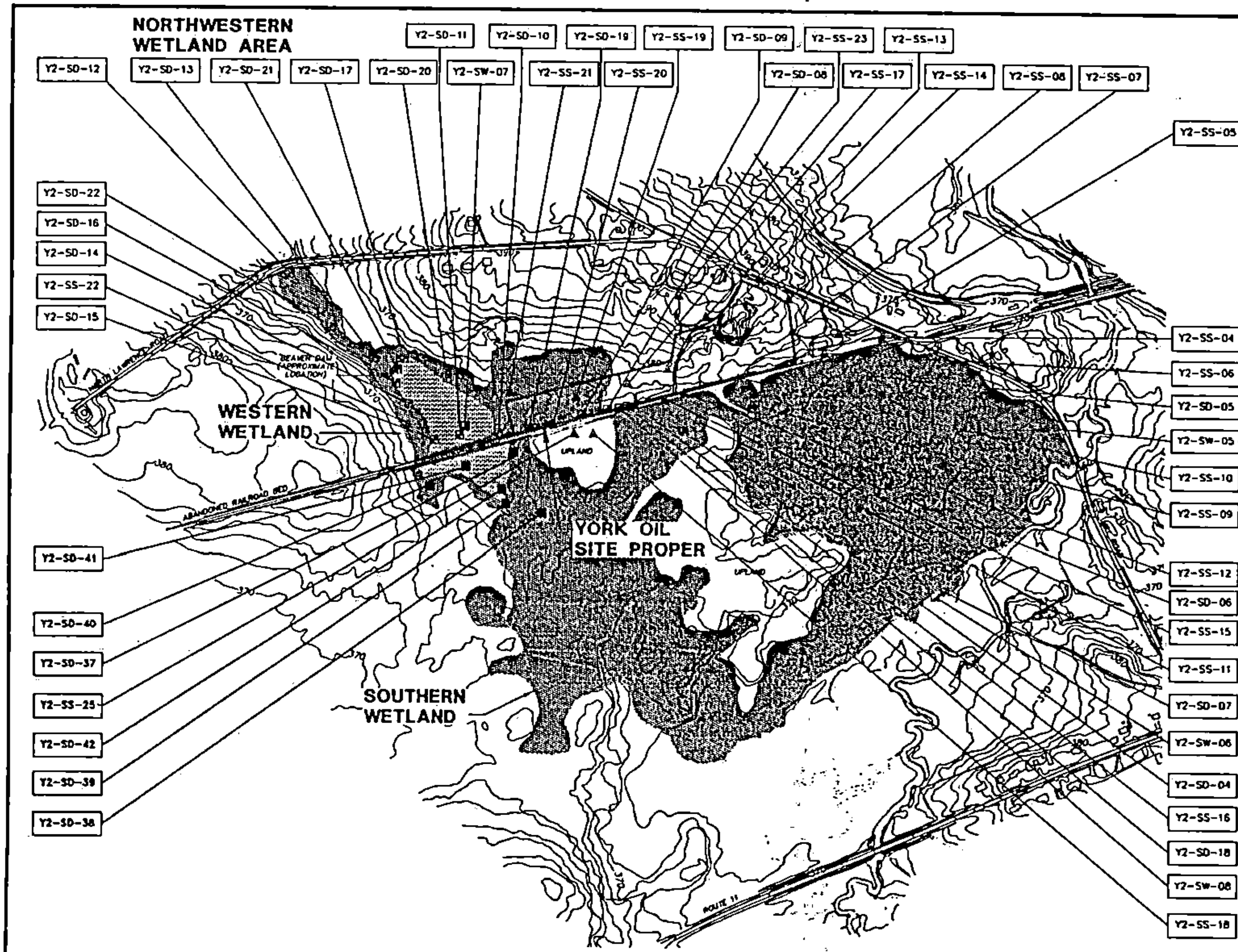
YORK OIL SUPERFUND SITE

CONTAMINATION PATHWAYS
REMEDIAL INVESTIGATION

SUMMARY OF ORGANIC COMPOUND DATA FOR BEDROCK GOUND WATER (ug/L)

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 4



LEGEND:

- SOUTHERN AND WESTERN WETLAND
- 370 — CONTOURS
- WATER
- ROADS
- SEDIMENT SAMPLES
- SURFACE SOIL SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- SUPPLEMENTAL SEDIMENT SAMPLE LOCATION
- SUPPLEMENTAL SURFACE SOIL SAMPLE LOCATION
- X APPROXIMATE LOCATION OF OBSERVED DISCARDED RAILROAD TIES

NOTES:

1. MAP BASED ON PHOTOGRAPHY FLOWN ON MAY 12, 1992. CONTOUR INTERVAL = 2 FEET. COORDINATES BASED ON NEW YORK STATE PLANE COORDINATE SYSTEM EAST ZONE (NORTH AMERICAN DATUM OF 1983). ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. FOR REGIONAL SAMPLING LOCATIONS SEE FIGURE 4.
3. SAMPLE DATES:
   SURFACE WATER – APRIL 1993, AUGUST 1993
   SURFACE SOIL – MAY 1993, AUGUST 1994
   SEDIMENT – APRIL 1993, OCTOBER 1993

600' 0 600'

GRAPHIC SCALE

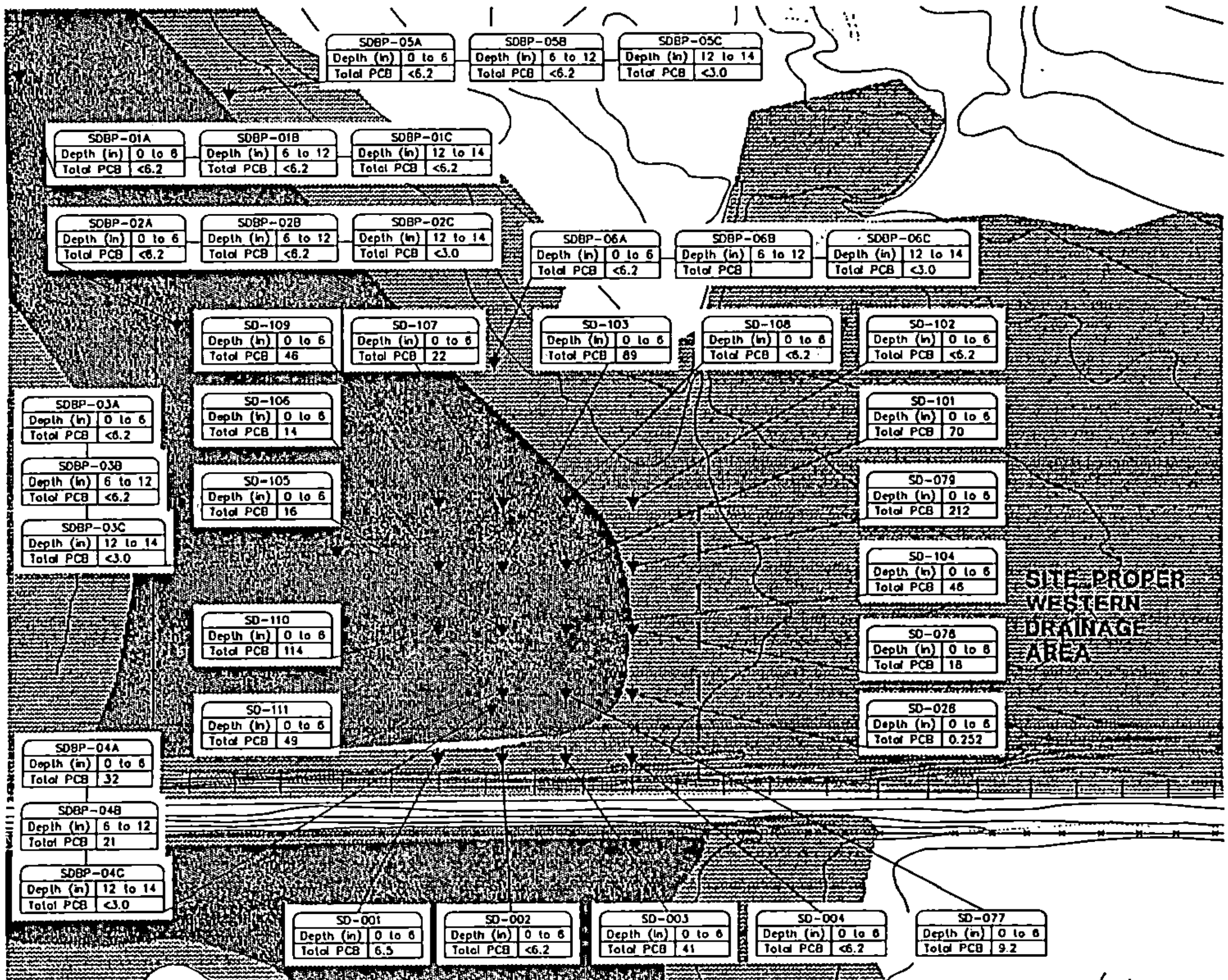
YORK OIL SUPERFUND SITE

CONTAMINATION PATHWAYS REMEDIAL INVESTIGATION

SURFACE WATER, SEDIMENT AND SURFACE SOIL SAMPLE LOCATION MAP

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 5



LEGEND

- EXISTING FENCE
- ABANDONED RAIL ROAD TRACK
- OU-1 BOUNDARY
- SEDIMENT SAMPLE LOCATION

SD-001		SAMPLE ID
Depth (in)	0 to 6	
Total PCB	6.5	TOTAL PCB CONCENTRATION

NOTES:

1. MAP BASED ON PHOTOGRAPHY FLOWN ON MAY 12, 1992. CONTOUR INTERVAL = 2 FEET. COORDINATES BASE ON NEW YORK STATE PLANE COORDINATE SYSTEM EAST ZONE (NORTH AMERICAN DATUM OF 1983). ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. SAMPLE LOCATIONS FROM PARSONS ENGINEERING SCIENCE, INC. DRAWING ENTITLED "SAMPLE LOCATION MAP (WEST)", DATED 10/4/96.
3. SAMPLE LOCATIONS ARE APPROXIMATE.
4. PCB DATA OBTAINED FROM OU1 PDI REPORT PREPARED BY PARSONS ENGINEERING SCIENCE, INC. DATED APRIL 1997. PCB DATA IS THE PCB TEST KIT DRY WEIGHT RESULT OR, WHERE AVAILABLE, THE LABORATORY CONFIRMATION RESULT.

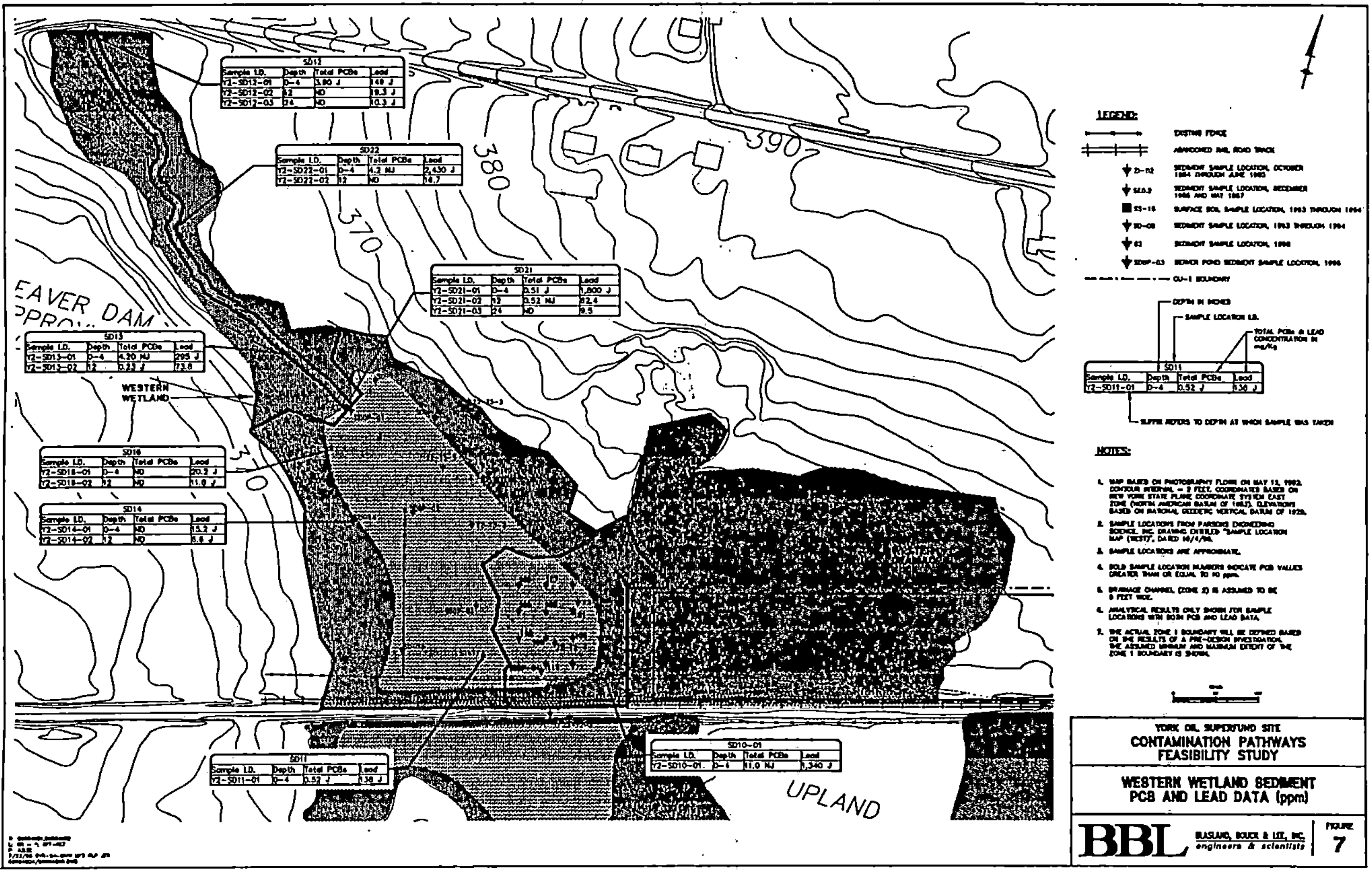
0 80' 160'
GRAPHIC SCALE

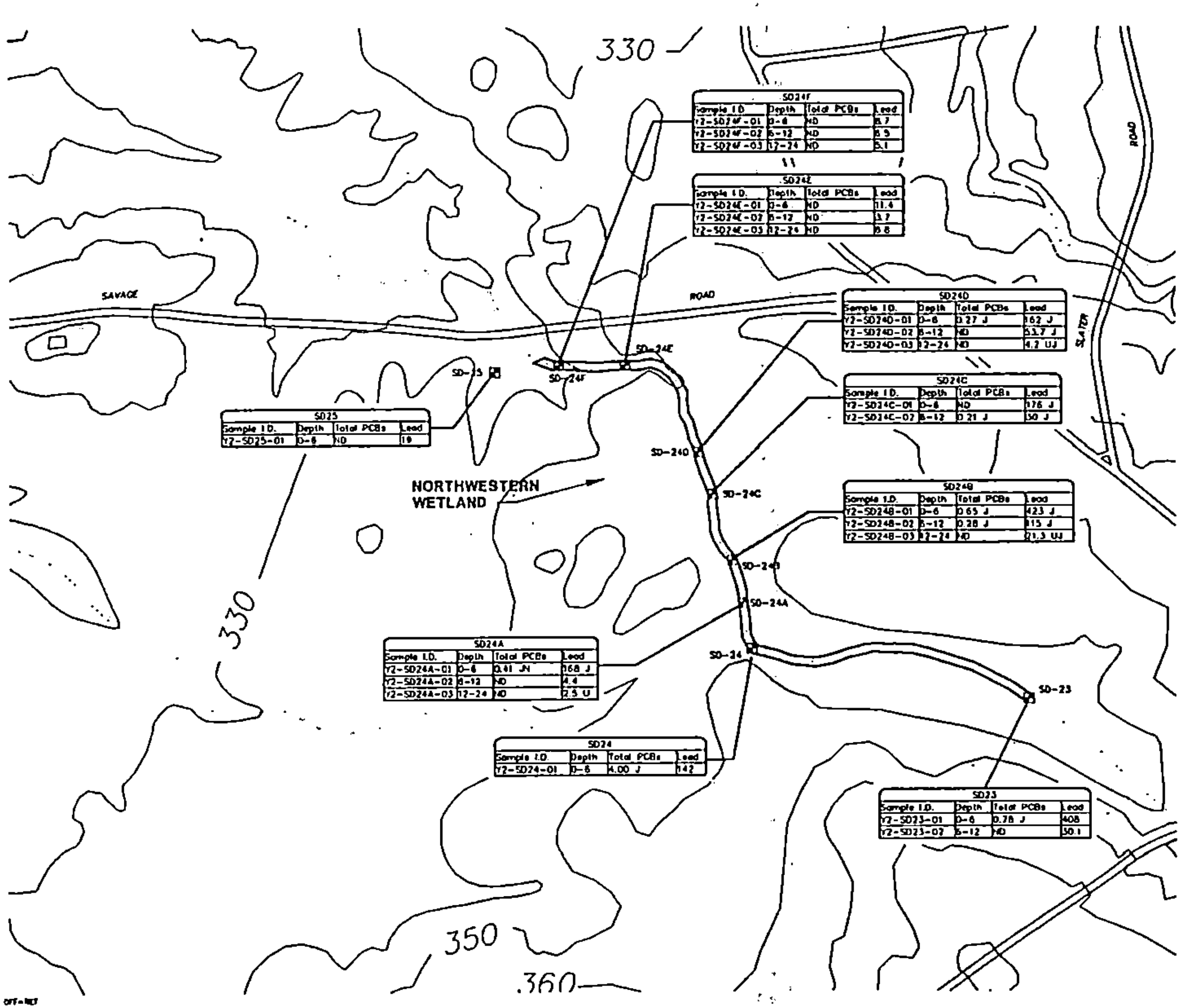
YORK OIL SUPERFUND SITE
CONTAMINATION PATHWAYS
REMEDIAL INVESTIGATION

SITE PROPER WESTERN DRAINAGE AREA AND WESTERN WETLAND PCB DATA

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 6


SD12
Sample I.D. | Depth | Total PCBs | Lead
Y2-SD12-01 | 0-4 | 3.80 J | 149 J
Y2-SD12-02 | 12 | ND | 19.3 J
Y2-SD12-03 | 24 | ND | 10.3 J
SD22
Sample I.D. | Depth | Total PCBs | Lead
Y2-SD22-01 | 0-4 | 4.2 NJ | 2,430 J
Y2-SD22-02 | 12 | ND | 16.7
SD21
Sample I.D. | Depth | Total PCBs | Lead
Y2-SD21-01 | 0-4 | 0.51 J | 1,800 J
Y2-SD21-02 | 12 | 0.52 NJ | 82.4
Y2-SD21-03 | 24 | ND | 9.5
SD13
Sample I.D. | Depth | Total PCBs | Lead
Y2-SD13-01 | 0-4 | 4.20 NJ | 295 J
Y2-SD13-02 | 12 | 0.23 J | 73.8
SD18
Sample I.D. | Depth | Total PCBs | Lead
Y2-SD18-01 | 0-4 | ND | 20.2 J
Y2-SD18-02 | 12 | ND | 11.6 J
SD14
Sample I.D. | Depth | Total PCBs | Lead
Y2-SD14-01 | 0-4 | ND | 15.2 J
Y2-SD14-02 | 12 | ND | 8.6 J
SD11
Sample I.D. | Depth | Total PCBs | Lead
Y2-SD11-01 | 0-4 | 0.52 J | 138 J
SD10-01
Sample I.D. | Depth | Total PCBs | Lead
Y2-SD10-01 | 0-4 | 11.0 NJ | 1,340 J
WESTERN WETLAND
BEAVER DAM
UPLAND
390
380
370
LEGEND:
SD11
Sample I.D. | Depth | Total PCBs | Lead
Y2-SD11-01 | 0-4 | 0.52 J | 138 J
NOTES:
YORK OIL SUPERFUND SITE
CONTAMINATION PATHWAYS FEASIBILITY STUDY
WESTERN WETLAND SEDIMENT PCB AND LEAD DATA (ppm)
BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists
FIGURE 7



LEGEND:

WETLAND AREAS AND AQUATIC SITES WITHIN CONTAMINATION PATHWAYS STUDY AREA (2):

- PRIMARY AREAS
- SECONDARY AREAS
- 10' CONTOURS
- WATER
- ROADS
- SD-25 SEDIMENT SAMPLE LOCATION

DEPTH IN INCHES
SAMPLE LOCATION I.D.
TOTAL PCBs & LEAD CONCENTRATION IN mg/kg

SD24			
Sample I.D.	Depth	Total PCBs	Lead
Y2-SD24-01	0-6	4.00 J	142

SUFFIX REFERS TO DEPTH AT WHICH SAMPLE WAS TAKEN

NOTES:

1. BASE MAP CONSTRUCTED FROM NORTH LAWRENCE, NEW YORK (1964, PHOTOINSPECTED 1980) AND BRUSHTON, NEW YORK (1964) U.S.G.S. 7.5 SERIES QUADRANGLES.
2. WETLAND AREAS AND AQUATIC SITES AS IDENTIFIED IN EBASCO OCTOBER 1991 WORK PLAN, WITH THE EXCEPTION OF SOUTHERN AND WESTERN WETLANDS, AND REFERENCE AQUATIC SITE.
3. DRAINAGE CHANNEL (ZONE 3) IS ASSUMED TO BE 5 FEET WIDE.
4. ANALYTICAL RESULTS ONLY SHOWN FOR SAMPLE LOCATIONS WITH BOTH PCB AND LEAD DATA.

600' 0 600'

SCALE: 1" = 600'

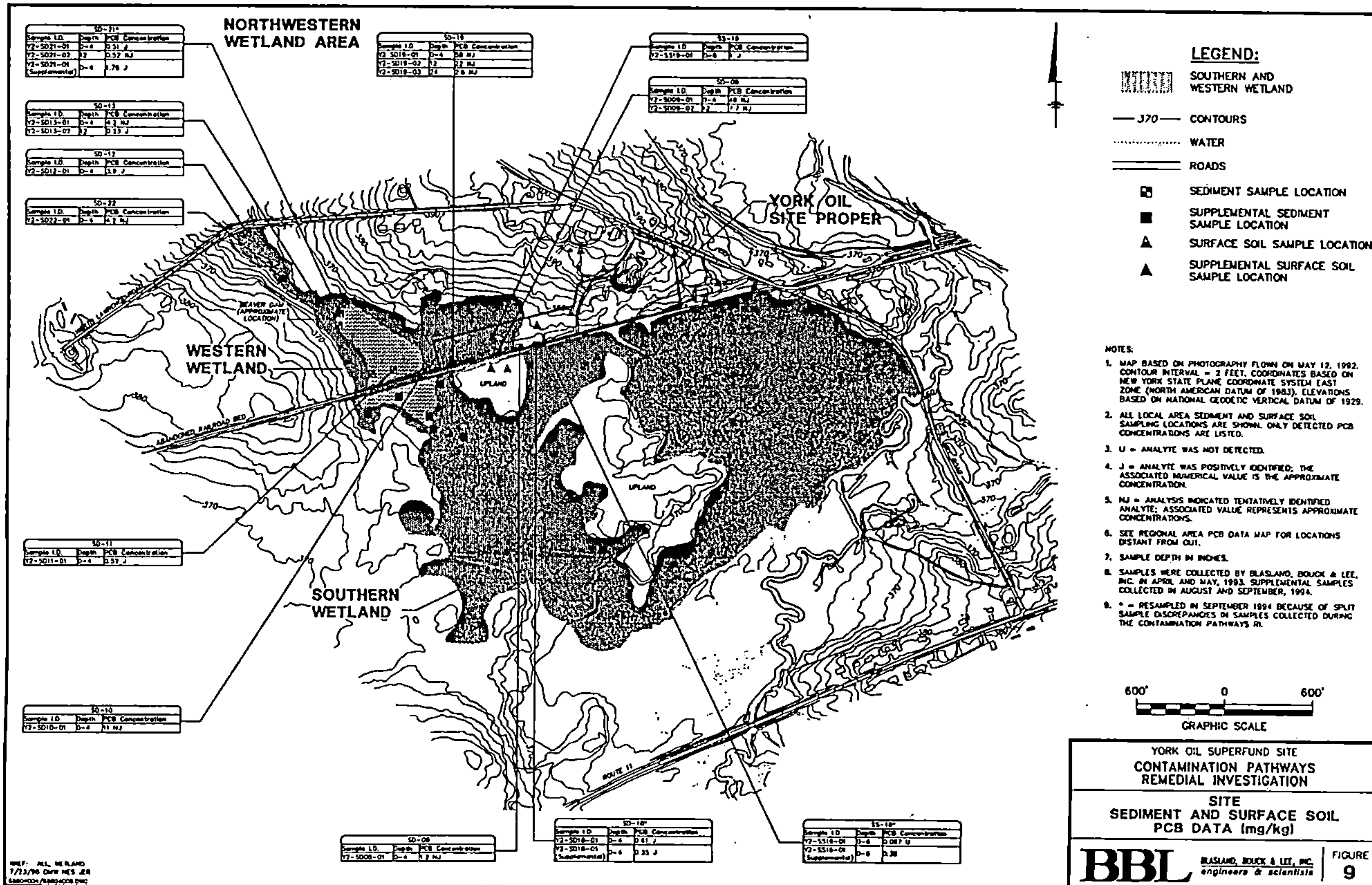
YORK OIL SUPERFUND SITE

CONTAMINATION PATHWAYS FEASIBILITY STUDY

NORTHWESTERN WETLAND SEDIMENT PCB AND LEAD DATA (ppm)

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 8



NORTHWESTERN WETLAND AREA
SD-21*
Sample I.D. | Depth | PCB Concentration
Y2-SD21-01 | 0-4 | 0.31 J
Y2-SD21-02 | 12 | 0.57 NJ
Y2-SD21-01 (Supplemental) | 0-4 | 1.76 J
SD-13
Sample I.D. | Depth | PCB Concentration
Y2-SD13-01 | 0-4 | 4.2 NJ
Y2-SD13-02 | 12 | 0.23 J
SD-12
Sample I.D. | Depth | PCB Concentration
Y2-SD12-01 | 0-4 | 3.9 J
SD-22
Sample I.D. | Depth | PCB Concentration
Y2-SD22-01 | 0-4 | 4.2 NJ
SD-19
Sample I.D. | Depth | PCB Concentration
Y2-SD19-01 | 0-4 | 58 NJ
Y2-SD19-02 | 12 | 22 NJ
Y2-SD19-03 | 24 | 2.6 NJ
SS-19
Sample I.D. | Depth | PCB Concentration
Y2-SS19-01 | 0-6 | 3 J
SD-09
Sample I.D. | Depth | PCB Concentration
Y2-SD09-01 | 0-4 | 48 NJ
Y2-SD09-02 | 12 | 7.7 NJ
SD-11
Sample I.D. | Depth | PCB Concentration
Y2-SD11-01 | 0-4 | 0.32 J
SD-10
Sample I.D. | Depth | PCB Concentration
Y2-SD10-01 | 0-4 | 11 NJ
SD-08
Sample I.D. | Depth | PCB Concentration
Y2-SD08-01 | 0-4 | 1.2 NJ
SD-18*
Sample I.D. | Depth | PCB Concentration
Y2-SD18-01 | 0-4 | 0.61 J
Y2-SD18-01 (Supplemental) | 0-6 | 0.35 J
SS-18*
Sample I.D. | Depth | PCB Concentration
Y2-SS18-01 | 0-6 | 0.087 U
Y2-SS18-01 (Supplemental) | 0-6 | 0.38
YORK OIL SITE PROPER
WESTERN WETLAND
SOUTHERN WETLAND
BEAVER DAM (APPROXIMATE LOCATION)
ABANDONED RAILROAD BED
UPLAND
UPLAND
ROUTE 11
370
LEGEND:
SOUTHERN AND WESTERN WETLAND
370 CONTOURS
WATER
ROADS
SEDIMENT SAMPLE LOCATION
SUPPLEMENTAL SEDIMENT SAMPLE LOCATION
SURFACE SOIL SAMPLE LOCATION
SUPPLEMENTAL SURFACE SOIL SAMPLE LOCATION
NOTES:
1. MAP BASED ON PHOTOGRAPHY FLOWN ON MAY 12, 1992. CONTOUR INTERVAL = 2 FEET. COORDINATES BASED ON NEW YORK STATE PLANE COORDINATE SYSTEM EAST ZONE (NORTH AMERICAN DATUM OF 1983). ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. ALL LOCAL AREA SEDIMENT AND SURFACE SOIL SAMPLING LOCATIONS ARE SHOWN. ONLY DETECTED PCB CONCENTRATIONS ARE LISTED.
3. U = ANALYTE WAS NOT DETECTED.
4. J = ANALYTE WAS POSITIVELY IDENTIFIED; THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION.
5. NJ = ANALYSIS INDICATED TENTATIVELY IDENTIFIED ANALYTE; ASSOCIATED VALUE REPRESENTS APPROXIMATE CONCENTRATIONS.
6. SEE REGIONAL AREA PCB DATA MAP FOR LOCATIONS DISTANT FROM OU1.
7. SAMPLE DEPTH IN INCHES.
8. SAMPLES WERE COLLECTED BY BLASLAND, BOUCK & LEE, INC. IN APRIL AND MAY, 1993. SUPPLEMENTAL SAMPLES COLLECTED IN AUGUST AND SEPTEMBER, 1994.
9. * = RESAMPLED IN SEPTEMBER 1994 BECAUSE OF SPLIT SAMPLE DISCREPANCIES IN SAMPLES COLLECTED DURING THE CONTAMINATION PATHWAYS RI.
600' 0 600'
GRAPHIC SCALE
YORK OIL SUPERFUND SITE
CONTAMINATION PATHWAYS REMEDIAL INVESTIGATION
SITE SEDIMENT AND SURFACE SOIL PCB DATA (mg/kg)
BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists
FIGURE 9

APPENDIX II

TABLES

TABLES

Table 1

York Oil Superfund Site Contamination Pathways

Summary of Surface Water Inorganics Data (ug/L)

Field Sample No.	Y2-SW01-01	Y2-SW02-01	Y2-SW03-01	Y2-SW04-01	Y2-SW05-01	Y2-SWD1*	Y2-SW06-01
Form 1 ID	17292	17217	16903	16890	17241	17209	17250
Laboratory ID	1729.2	1721.7	1690.3	1689.0	1724.1	1720.9	1725.0
Aluminum	201 U	314 U	321 U	268 U	200 U	200 U	200 U
Barium	22.2 J	23.2 J	18.1 J	17.9 J	17.2 J	16.3 J	14.8 J
Calcium	13,700	15,000	11,900	12,000	17,300	16,600	9,300
Copper	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Iron	375	509	494	456	448	436	505
Lead	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Magnesium	4,310	4,510	3,690	3,750	5,670	5,440	2,940
Manganese	32.4 J	39.3 J	33.0 J	33.8 J	19.6 J	19.4 J	14.7 J
Mercury	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Potassium	1,440	1,510	1,250	1,240	707	648	816
Sodium	2,910	3,070	2,370	2,320	6,900	6,450	2,710
Zinc	20 U	20 U	20 U	20 U	20 U	20 U	20 U

Field Sample No.	Y2-SW07-01	Y2-SW08-01	Y2-SWDI-1+	Y2-SW01A-02	Y2-SW02-02	Y2-SW03-02	Y2-SWD2*
Form 1 ID	17152	17284	17144	32178	32119	32208	32186
Laboratory ID	1715.2	1728.4	1714.4	3217.8	3211.9	3220.8	3218.6
Aluminum	259 U	400 U	35.5 J	200 U	200 U	200 U	200 U
Barium	16.3 J	154 J	1.0 U	25.0	35.0	33.1	35.1
Calcium	14,700	111,000	5,000 U	20,100	24,000	25,900	24,900
Copper	5.0 J	8.0 U	4.0 U	5.1 J	25 U	3.0 J	6.7 J
Iron	690	854	28.7 J	252	424	339 J	2,450 J
Lead	1.0 U	1.0 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Magnesium	4,810	26,500	5,000 U	6,140	7,390	7,980	7,660
Manganese	173 J	183 J	1.0 U	33.4 J	56.1 J	36.2 J	41.1 J
Mercury	0.20 U	0.20 U	0.20 U	0.10 UJ	0.10 UJ	0.22 J	0.10 UJ
Potassium	1,060	5,720	88.0 U	1,090 J	1,400 J	1,250 J	1,360 J
Sodium	27,200	973,000	5,000 U	3,020	4,010	4,010	3,980
Zinc	24.8 U	346	20 U	20.1	15.1	21.3 J	14.0 J

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Table 1
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Surface Water Inorganics Data (ug/L)

Field Sample No.	Y2-SW04-02
Form 1 ID	32194
Laboratory ID	3219.4
Aluminum	200 U
Barium	31.6
Calcium	24,900
Copper	2.4 J
Iron	428
Lead	1.0 U
Magnesium	7,670
Manganese	75.3 J
Mercury	0.10 UJ
Potassium	1,400 J
Sodium	3,850
Zinc	15.2

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in April, 1993 (-01 field sample no. suffix) and August 1993 (-02 field sample suffix).
2. Only detected analytes are listed.
3. U = analyte was not detected.
4. J = concentration of analyte is approximate.
5. Concentrations are in ug/L.
6. + = rinse blank.
7. * = Field duplicates as follows:

   Y2-SWD1 is a field duplicate for Y2-SW05-01
   Y2-SWD2 is a field duplicate for Y2-SW03-02
8. Detectable concentrations of analytes are highlighted.

TABLE 2

York Oil Superfund Site Contamination Pathways

Chemicals of Concern in Surface Water
Lawrence Brook - Wagnum Road Site

	Chemical	Frequency of Detection	Maximum Detected Concentration (ug/L)	Maximum Detected Background Concentration (ug/L)	Detected In OU1 Samples? (Y/N/NA)
	Volatile Organic Compounds				
	Potential volatile organic compound chemicals of concern were not detected in any of the samples.				
	Semivolatile Organic Compounds				
	Total Phenols	1/2	21	ND	Y
	Pesticides/PCBs				
	Potential pesticides/PCB chemicals of concern were not detected in any of the samples.				
	Inorganics				
*	Barium	2/2	33.1	25	NA
	Calcium	2/2	25900	20100	NA
	Copper	1/2	3	5.1	Y
	Iron	2/2	494	375	NA
	Magnesium	2/2	7980	6140	NA
*	Manganeses	2/2	36.2	33.4	NA
*	Mercury	1/2	0.22	ND	Y
	Potassium	2/2	1250	1440	NA
	Sodium	2/2	4010	3020	NA
*	Zinc	1/2	21.3	20.1	Y

Notes:

* Potential OU1 site-related chemicals of concern.

1. Potential chemicals of concern are those chemicals (excluding essential nutrients such as calcium, iron, magnesium, potassium and sodium) previously identified in OU1 or not previously tested for in samples from OU1, where the maximum detected concentration exceeds the maximum detected background concentration.
2. Wagnum Road Site analysis includes the results of samples SW03-01 & SW03-02.
3. Background analysis includes the results of samples SW01-01 & SW01-02.
4. Total phenols is not included as a potential OU1-related chemical of concern as total phenols is an indicator parameter which is not appropriate for use in quantifying risks (USEPA, 1989).
5. ND = Not detected.
6. Y = Yes.
   N = No.
   NA = Not Analyzed.

TABLE 2 (con't)

York Oil Superfund Site Contamination Pathways

Chemicals of Concern in Surface Water
Lawrence Brook - Wetland Boundary Site

	Chemical	Frequency of Detection	Maximum Detected Concentration (ug/L)	Maximum Detected Background Concentration (ug/L)	Detected In OU1 Samples? (Y/N/NA)
	Volatile Organic Compounds				
	Potential volatile organic compound chemicals of concern were not detected in any of the samples.				
	Semivolatile Organic Compounds				
	Potential semivolatile organic compound chemicals of concern were not detected in any of the samples.				
	Pesticides/PCBs				
	Potential pesticides/PCB chemicals of concern were not detected in any of the samples.				
	Inorganics				
*	Barium	2/2	31.6	25	NA
	Calcium	2/2	24900	20100	NA
	Copper	1/2	2.4	5.1	Y
	Iron	2/2	456	375	NA
	Magnesium	2/2	7670	6140	NA
*	Manganese	2/2	75.3	33.4	NA
	Potassium	2/2	1400	1440	NA
	Sodium	2/2	3850	3020	NA
	Zinc	1/2	15.2	20.1	Y

Notes:

* Potential OU1 site-related chemicals of concern.

1. Potential chemicals of concern are those chemicals (excluding essential nutrients such as calcium, iron, magnesium, potassium and sodium) previously identified in OU1 or not previously tested for in samples from OU1, where the maximum detected concentration exceeds the maximum detected background concentration.
2. Wetland Boundary Site analysis includes the results of samples SW04-01 & SW04-02.
3. Background analysis includes the results of samples SW01-01 & SW01-02.
4. ND = Not detected.
5. Y = Yes.
   N = No.
   NA = Not Analyzed.

TABLE 2 (con't)

York Oil Superfund Site Contamination Pathways

Chemicals of Concern in Surface Water
Primary Wetland Areas - Western Wetland Site

Chemical	Frequency of Detection	Maximum Detected Concentration (ug/L)	Maximum Detected Background Concentration (ug/L)	Detected In OU1 Samples? (Y/N/NA)
Volatile Organic Compounds				
Potential volatile organic compound chemicals of concern were not detected in any of the samples.				
Semivolatile Organic Compounds				
Potential semivolatile organic compound chemicals of concern were not detected in any of the samples.				
Pesticides/PCBs				
Potential pesticides/PCB chemicals of concern were not detected in any of the samples.				
Inorganics				
Barium	1/1	16.3	25	NA
Calcium	1/1	14700	20100	NA
copper	1/1	5	5.1	Y
Iron	1/1	690	375	NA
Magnesium	1/1	4810	6140	NA
* Manganese	1/1	173	33.4	NA
Potassium	1/1	1060	1440	NA
Sodium	1/1	27200	3020	NA

Notes:

* Potential OU1 site-related chemicals of concern.

1. Potential chemicals of concern are those chemicals (excluding essential nutrients such as calcium, iron, magnesium, potassium and sodium) previously identified in OU1 or not previously tested for in samples from OU1, where the maximum detected concentration exceeds the maximum detected background concentration.
2. Western Wetland Site analysis includes the results of sample SW07-01.
3. Background analysis includes the results of samples SW01-01 & SW01-02.
4. Y = Yes.
   N = No.
   NA = Not Analyzed.

TABLE 2 (con't)

York Oil Superfund Site Contamination Pathways

Chemicals of Concern in Surface Water
Primary Wetland Area - Southern Wetland Site

Chemical	Frequency of Detection	Maximum Detected Concentration (ug/L)	Maximum Detected Background Concentration (ug/L)	Detected In OU1 Samples? (Y/N/NA)
Volatile Organic Compounds				
Potential volatile organic compound chemicals of concern were not detected in any of the samples.				
Semivolatile Organic Compounds				
Potential semivolatile organic compound chemicals of concern were not detected in any of the samples.				
Pesticides/PCBs				
Potential pesticides/PCB chemicals of concern were not detected in any of the samples.				
Inorganics				
Barium	2/2	17.2	25	NA
Calcium	2/2	17300	20100	NA
Iron	2/2	505	375	NA
Magnesium	2/2	5670	6140	NA
Manganese	2/2	19.6	33.4	NA
Potassium	2/2	816	1440	NA
Sodium	2/2	6900	3020	NA

Notes:

* Potential OU1 site-related chemicals of concern.

1. Potential chemicals of concern are those chemicals (excluding essential nutrients such as calcium, iron, magnesium, potassium and sodium) previously identified in OU1 or not previously tested for in samples from OU1, where the maximum detected concentration exceeds the maximum detected background concentration.
2. Southern Wetland Site analysis includes the results of samples SW05-01 & SW06-01.
3. Background analysis includes the results of samples SW01-01 & SW01-02.
4. Y = Yes.
   N = No.
   NA = Not Analyzed.

TABLE 3

York Oil Superfund Site Contamination Pathways

Summary of Sediment Inorganics Data(mg/kg)

Field Sample Number	Y2-SD01-1		Y2-SD01-02		Y2-SD02-01		Y2-SD03-01		Y2-SD04-01		Y2-SD04-02		Y2-SD05-01		Y2-SDD2+	
Form I ID	19015		19023		19007		18973		17969		17977		18345		18353	
Lab ID	1901.5		1902.3		1900.7		1897.3		1796.9		1797.7		1834.5		1835.3	
Aluminum	2360	J	3310	J	6800	J	3430	J	1300		355		10400	J	12600	J
Arsenic	2.3	J	1.8	UJ	3.4	UJ	1.9	UJ	0.47	J	0.23	UJ	2	UJ	2	UJ
Barium	228	J	211	J	272	J	83.9	J	40	U	40	U	73.2	J	81.9	J
Beryllium	1.1	UJ	0.86	UJ	1.7	UJ	0.94	UJ	0.36	U	0.23	U	0.40	UJ	0.38	UJ
Cadmium	1.9	UJ	2.4	UJ	5.1	UJ	1.7	UJ	0.36	U	0.23	U	1	UJ	1	UJ
Calcium	35400	J	36400	J	42900	J	2620	J	786	J	205	J	1570	J	1720	J
Chromium	6.5	J	7.1	J	9.9	J	5.9	J	1.9	J	1.2	U	12.9	J	15.2	J
Cobalt	3.3	UJ	2.6	UJ	5.2	UJ	2.8	UJ	1.1	U	0.70	U	3.8	J	3.1	J
Copper	16.3	J	35.4	J	38.9	J	21.0	J	1.5	U	0.94	U	5.6	UJ	5.8	UJ
Iron	6260	J	3770	J	9240.0	J	1370	J	656		370		7570	J	7950	J
Lead	25.9	J	1.5	J	22.4	J	37.1	J	6.2	U	0.89	U	15.0	J	29.3	J
Magnesium	1930	J	2080	J	2450	J	225.0	J	1000	U	1000.0	U	1120	J	1390	J
Manganese	168	J	121	J	240.0	J	24.6	J	3.9	U	3	U	49.7	J	47.4	J
Mercury	0.57	UJ	0.43	UJ	0.90	UJ	0.47	UJ	0.62	J	0.12	U	0.51	J	0.32	J
Nickel	4.4	UJ	8.9	J	15.9	J	4.7	J	2.1	J	1.5	J	7.6	J	8.6	J
Potassium	105	J	87.7	J	233	J	339.0	J	1000	U	1000	U	649	J	804	J
Selenium	1.0	UJ	3.10	J	1.7	UJ	0.95	UJ	0.33	U	0.23	U	1	UJ	0.38	UJ
Silver	3.3	UJ	2.6	UJ	5.2	UJ	2.8	UJ	1.1	U	0.70	U	1.2	UJ	1.1	UJ
Sodium	1000	UJ	1000	UJ	1000	UJ	1000	UJ	1000	U	1000	U	1000	UJ	1000	UJ
Vanadium	10.0	UJ	17.4	UJ	21.9	UJ	10	UJ	10	U	10	U	15.2	J	17.5	J
Zinc	50.2	UJ*	33.1	UJ*	50.4	UJ*	30.7	J*	4	U	4	U	28.4	UJ	31.9	UJ

TABLE 3 (Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Inorganics Data (mg/kg)

Field Sample Number	Y2-SD06-01		Y2-SD07-01		Y2-SD08-01		Y2-SD09-01		Y2-SD09-02		Y2-SD10-01		Y2-SD11-01		Y2-SD11-02	
Form I ID	18337		18485		18078		18086		18094		18108		18116		18124	
Lab ID	1833.7		1848.5		1807.8		1808.6		1809.4		1810.8		1811.6		1812.4	
Aluminum	14700	J	13400	J	11500	J	1830		5160		3910	J	4660	J	4150	J
Arsenic	2	UJ	2.9	UJ	3.5	J	1.7	J	2.40	J	7.40	J	5	J	2	J
Barium	168	J	197	J	222	J	1340.0		297		933	J	138	J	58.8	J
Beryllium	0.61	UJ	0.53	UJ	0.9	UJ	0.30	U	1.00	U	1.10	UJ	1.40	UJ	0.5	UJ
Cadmium	1.2	UJ	0.5	UJ	0.9	UJ	1.7		0.30	U	1.10	UJ	1	UJ	1.3	J
Calcium	11100	J	4880	J	44100	J	2510	J	3550	J	16200	J	12400	J	6620	J
Chromium	27.1	J	20.0	J	27.9	J	10.0	J	13.9		9.4	J	8.6	J	10.8	J
Cobalt	5.1	J	7.7	J	9.5	J	1.2	J	3.3	J	3.40	UJ	4.2	UJ	1.5	UJ
Copper	12.2	UJ	8.1	J	18.9	UJ	49.2	UJ	7.8	U	21.30	UJ	22.8	UJ	33.7	UJ
Iron	10100	J	19100	J	25200.0	J	4180		9440		14200	J	4230	J	1800	J
Lead	11.4	J	25.4	J	94.0	J	3580.0		367		1340	J	138.0	J	5.8	J
Magnesium	2830	J	3020	J	24800	J	364.0		2850		1250.0	J	1270	J	805	J
Manganese	162	J	373	J	266.0	J	38.8		84.4		627	J	236	J	63.7	J
Mercury	1.60	J	0.27	UJ	0.38	UJ	1.40	J	0.15	U	1.70	J	0.78	UJ	2.50	J
Nickel	10.6	J	11.7	J	21.2	J	5.3	J	8.9		9.8	J	7.6	J	5.6	J
Potassium	1000	UJ	729	J	1560	J	1000.0	U	646		1000	UJ	123	UJ	1000	UJ
Selenium	0.6	UJ	0.53	UJ	1.0	UJ	1.00	UJ	0.29	UJ	1.60	UJ	1	UJ	1	UJ
Silver	1.8	UJ	1.6	UJ	2.6	UJ	0.9	U	0.9	U	3.40	UJ	4.2	UJ	1.5	UJ
Sodium	1000	UJ	1000	UJ	1000	UJ	1300	J	777	J	4280	J	3230	J	1190	J
Vanadium	19.7	J	27.4	J	41.8	J	10	U	15		10	UJ	11.2	UJ	10.0	UJ
Zinc	98.5	J	87	J	53.1	UJ	211		36.8		112	UJ	82.8	UJ	29	UJ

TABLE 3 (Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Inorganics Data (mg/kg)

Field Sample Number	Y2-SD12-01		Y2-SD12-02		Y2-SD12-03		Y2-SD13-01		Y2-SD13-02		Y2-SD14-01		Y2-SD14-02		Y2-SD15-01	
Form I ID	18582		18590		18604		18515		18523		18310		18329		18035	
Lab ID	1858.2		1859.0		1860.4		1851.5		1852.3		1831.0		1832.9		1803.5	
Aluminum	4390	J	6780	J	6030	J	4960	J	3400		6120	J	9790	J	2640	J
Arsenic	4.8	UJ	3.4	UJ	2.0	UJ	3.4	J	3.70	J	2.10	UJ	2	UJ	5	J
Barium	164	J	97	J	73	J	330.0	J	145		92	J	118	J	66.8	J
Beryllium	1	UJ	0.87	UJ	0.8	UJ	0.54	UJ	0.35	U	0.89	UJ	0.53	J	1.2	UJ
Cadmium	2.4	UJ	1.4	UJ	1.9	UJ	1.6	UJ	1.50	U	0.89	UJ	1	UJ	1.2	UJ
Calcium	8740	J	10200	J	10000	J	12300	J	8050		17100	J	11600	J	20600	J
Chromium	9.9	J	13.1	J	11.5	J	11.4	J	6.7	J	14.7	J	17.0	J	5.8	UJ
Cobalt	3.1	UJ	2.6	UJ	3.3	J	4.3	J	2.5	J	2.70	UJ	1.9	J	3.5	UJ
Copper	17.9	J	21.3	J	21.1	J	15.5	J	9.2		21.90	UJ	23.5	J	8.7	UJ
Iron	5310	J	6380	J	5960.0	J	15200	J	4660		4000	J	3500	J	3580	J
Lead	149	J	19.3	J	10.3	J	295.0	J	73.8		15.2	J	6.6	J	25.8	J
Magnesium	1610	J	1930	J	1470	J	1720.0	J	1070		2210.0	J	1920	J	2140	J
Manganese	142	J	148	J	155.0	J	574	J	335		137	J	64.4	J	383	J
Mercury	0.51	UJ	0.45	UJ	0.39	UJ	0.39	J	0.19		1.30	J	1.10	J	1.10	J
Nickel	6.1	J	7.7	J	5.7	J	9.9	J	5.3	J	9.2	J	6.3	J	4.7	UJ
Potassium	486	J	383	J	308	J	1000.0	UJ	1000	U	1000	UJ	1000	UJ	1000	UJ
Selenium	1.0	UJ	0.85	UJ	1.0	J	0.55	UJ	0.97	J	1.10	J	1	J	1.2	UJ
Silver	3.1	UJ	2.6	UJ	2.4	UJ	1.6	UJ	1.0	U	2.70	UJ	1.2	UJ	3.5	UJ
Sodium	1000	UJ	1000	UJ	1000	UJ	1000	UJ	1000	U	1000	UJ	1000	UJ	1000	UJ
Vanadium	11.1	UJ	14.6	UJ	10.0	UJ	20	J	13		8	J	6.5	J	10.0	UJ
Zinc	110	J	76.4	J	64.2	J	101	J	70.7		86.5	J	26.6	UJ	56.3	UJ

TABLE 3 (Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Inorganics Data (mg/kg)

Field Sample Number	Y2-SD15-02		Y2-SD16-01		Y2-SD16-02		Y2-SD17-01		Y2-SD17-02		Y2-SD18-01		Y2-SD19-01		Y2-SD19-02	
Form I ID	18043		18230		18264		18299		18302		17985		17993		18051	
Lab ID	1804.3		1823.0		1826.4		1829.9		1830.2		1798.5		1799.3		1805.1	
Aluminum	2430	J	4710	J	5900	J	4210	J	4680		1450		1450	J	1630	J
Arsenic	1.8	J	4.0	J	3.4	J	2.0	UJ	2.00	UJ	0.49	J	6	J	3	J
Barium	39	J	77	J	73	J	68.3	J	52		63		1160	J	424	J
Beryllium	0.49	UJ	0.67	UJ	0.6	UJ	0.42	UJ	0.38	U	0.28	U	0.63	UJ	0.39	UJ
Cadmium	0.49	UJ	0.7	UJ	0.6	UJ	1.0	UJ	1.00	U	0.28	U	1	J	0.39	UJ
Calcium	9830	J	13300	J	9620	J	15100	J	9960		1350	J	5390	J	2660	J
Chromium	5.3	J	11.6	J	11.6	J	7.2	J	7.6	J	2.5	J	7.3	J	4.9	J
Cobalt	1.5	UJ	10	UJ	1.6	UJ	1.6	J	2.0	J	0.84	U	1.9	UJ	1.2	UJ
Copper	5	UJ	11.2	UJ	11.2	UJ	5.3	UJ	10.4	U	4.80	J	28.9	J	9.3	UJ
Iron	2540	J	7040	J	6490.0	J	4040	J	4020		4280		20900	J	3220	J
Lead	6.2	J	20.2	J	11.8	J	9.6	J	7.2		94.3		2270.0	J	387	J
Magnesium	1250	J	1780	J	1450	J	1680.0	J	1370		431.0		615	J	365	J
Manganese	207	J	384	J	314.0	J	282	J	101		31.9		131	J	28	J
Mercury	R		0.36	UJ	0.51	J	0.36	J	0.20	U	0.13	U	0.34	UJ	R	
Nickel	3.6	J	9	J	6.5	J	3.7	J	3.9	J	3.2	J	9.4	J	4.3	J
Potassium	1000	UJ	1000	UJ	1000	UJ	1000.0	UJ	1000	U	1000	U	1000	UJ	1000	UJ
Selenium	0.5	UJ	1.00	UJ	0.9	J	0.44	UJ	0.38	U	0.29	UJ	1	UJ	1	UJ
Silver	1.5	UJ	2	UJ	1.6	UJ	1.3	UJ	1.1	U	0.84	U	1.9	UJ	1.2	UJ
Sodium	1000	UJ	1000	UJ	1000	UJ	1000	UJ	1000	U	1000	U	2250	J	1000	UJ
Vanadium	10.0	UJ	14.7	UJ	15.4	UJ	7	J	9		10	U	10.0	UJ	10.0	UJ
Zinc	20	UJ	42.8	UJ	48.5	UJ	25.4	UJ	27.5	U	17.1	U	219	J	27.4	UJ

TABLE 3 (Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Inorganics Data (mg/kg)

Field Sample Number	Y2-SD19-03		Y2-SD20-01		Y2-SD20-02		Y2-SD21-01		Y2-SD21-02		Y2-SD2 O3		Y2-SD22-01		Y2-SD22-02	
Form I ID	18060		18930		18949		18000		18272		18280		18493		18507	
Lab ID	1806.0		1893.0		1894.9		1800.0		1827.2		1828.0		1849.3		1850.7	
Aluminum	1960		4750	J	6840	J	1510	J	6480	J	4780		3490	J	4260	
Arsenic	0.99	J	2.2	J	0.9	UJ	1.8	J	6.20	J	2.00	UJ	3	UJ	1	J
Barium	55		106	J	105	J	52.6	J	70	J	49		319	J	81.6	
Beryllium	0.23	U	0.73	UJ	0.42	UJ	0.74	UJ	0.43	UJ	0.39	U	0.44	UJ	0.31	U
Cadmium	0.23	U	1.8	UJ	1.0	UJ	0.7	UJ	0.43	UJ	1.00	U	2	UJ	1	U
Calcium	7890	J	28600	J	14200	J	5070	J	6690	J	4480		9800	J	11300	
Chromium	4.4	J	9.5	J	12.9	J	6.0	J	14.1	J	9.3	J	9.1	J	9.2	J
Cobalt	1.5	J	2.2	UJ	1.5	J	2.2	UJ	4.0	J	3.20	J	2.8	J	3.1	J
Copper	5	U	22.1	J	26.0	J	6.1	J	5.7	UJ	6.50	U	15.8	J	11.9	
Iron	4510		4650	J	3740.0	J	1700	J	24000	J	4400		6720	J	5440	
Lead	26.1		21.4	J	7.8	J	1800.0	J	62.4	J	9.5		2430.0	J	16.7	
Magnesium	4210		3050	J	2370	J	595.0	J	1260	J	2040.0		1320	J	1640	
Manganese	58		221	J	44.8	J	142	J	277	J	88.2		581	J	403	
Mercury	0.10	U	0.40	UJ	0.21	UJ	0.47	J	0.22	UJ	0.20	U	0.23	UJ	0.18	
Nickel	3.7	J	7.8	J	6.6	J	4.6	J	4.5	J	4.4	J	4.9	J	6.2	J
Potassium	1000	U	366	J	351	J	1000.0	UJ	1000	UJ	1000	U	1000	UJ	1000	U
Selenium	0.2	UJ	1.80	J	0.9	J	0.73	UJ	0.57	J	0.36	U	1	J	0.47	J
Silver	0.68	U	2.2	UJ	1.3	UJ	2.2	UJ	1.9	J	1.20	U	1.3	UJ	0.93	U
Sodium	1000	U	1000	UJ	1000	UJ	1000	UJ	1000	U	1000	U	1000	UJ	1000	U
Vanadium	10.0	U	10.0	UJ	10.0	UJ	10	UJ	42	J	9		11.5	J	18.5	
Zinc	10.3	U	58.6	J*	12.6	J*	28.6	UJ	36.9	UJ	36.7	U	90.3	J	75.1	

TABLE 3 (Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Inorganics Data (mg/kg)

Field Sample Number	Y2-SD23-01		Y2-SD23-02		Y2-SD24-01		Y2-SD25-01		Y2-SD26-01		Y2-SD26-02		Y2-SD27-01		Y2-SDD4+	
Form I ID	18710		18728		18680		18019		18868		18876		18957		18965	
Lab ID	1871.0		1872.8		1868.0		1801.9		1886.8		1887.6		1895.7		1896.5	
Aluminum	3780	J	4250	J	1950	J	2790	J	7240	J	8330		1680	J	1830	J
Arsenic	5.9	UJ	2.0	UJ	11.9	UJ	2.5	J	3.30	UJ	3.40		3	UJ	4	UJ
Barium	325	J	234	J	449	J	59.9	J	118	J	118		103	J	123	J
Beryllium	1.1	UJ	0.98	UJ	1.9	UJ	0.63	UJ	0.45	UJ	0.28	U	1.40	UJ	1.6	UJ
Cadmium	5.4	UJ	3.7	UJ	2.0	UJ	0.6	UJ	1.10	UJ	1.00	U	1	UJ	1.6	UJ
Calcium	35000	J	48600	J	27900	J	5140	J	6760	J	6930		27900	J	34800	J
Chromium	11.3	J	10.6	J	9.7	UJ	5.7	J	11.7	J	13.2		11.5	UJ	8.0	UJ
Cobalt	7.7	J	3.5	J	9.6	J	1.9	UJ	4.2	J	5.60		4.2	UJ	4.8	UJ
Copper	55.4	J	48.6	J	23.9	J	4.1	J	11.3	J	12.70		21.8	J	23.9	J
Iron	11700	J	8750	J	29500.0	J	11300	J	10200	J	12600		7800	J	8120	J
Lead	408	J	30.1	J	142.0	J	19.0	J	18.7	J	15.2	J	11.5	J	15.2	J
Magnesium	4040	J	4910	J	2490	J	958.0	J	1920	J	2110.0		2820	J	3600	J
Manganese	1760	J	775	J	6950.0	J	574	J	643	J	493		289	J	340	J
Mercury	0.51	UJ	0.52	UJ	1.00	UJ	0.35	UJ	0.23	UJ	0.15	UJ	0.72	UJ	0.75	UJ
Nickel	14.3	J	14.3	J	7.8	UJ	3.5	J	5.8	J	7.1		14.4	J	8.4	J
Potassium	816	J	470	J	423	J	1000.0	UJ	511	J	581		201	J	153	J
Selenium	1.7	J	0.94	UJ	1.9	UJ	0.65	UJ	0.44	UJ	0.28	UJ	2	J	1.7	J
Silver	3.2	UJ	2.9	UJ	5.8	UJ	1.9	UJ	1.3	UJ	0.85	U	4.2	UJ	4.8	UJ
Sodium	1190	J	1300	J	1290	UJ	1000	UJ	1000	UJ	265		1000	UJ	1000	UJ
Vanadium	21.0	J	18.7	J	14.8	UJ	12	UJ	16	J	18		13.7	UJ	13.2	UJ
Zinc	233	J	139	J	211	J	53.5	UJ	83.6	J	84.1	J	279	J*	R	

TABLE 3 (Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Inorganics Data (mg/kg)

Field Sample Number	Y2-SD28-01		Y2-SD29-01		Y2-SD30-01		Y2-SD31-01		Y2-SD32-01		Y2-SD33-01		Y2-SD34-01		Y2-SD35-01	
Form I ID	18477		18027		18736		18531		18850		18841		18744		18752	
Lab ID	1847.7		1802.7		1873.6		1853.1		1885.0		1884.1		1874.4		1875.2	
Aluminum	11000	J	3130		9850		4860		6800		3050		7600	J	8090	
Arsenic	2	UJ	1.1	J	0.3	U	0.4	J	2.00	UJ	2.00	U	2	UJ	2	UJ
Barium	144	J	37		123		64.1		76		37		91.5	J	112	
Beryllium	0.5	UJ	0.29	U	0.3	U	0.26	U	0.33	U	0.28	U	0.37	UJ	0.37	J
Cadmium	0.5	UJ	0.3	U	1.0	U	1.0	U	1.00	U	1.00	U	1	UJ	1	U
Calcium	5890	J	1380	J	6850		4260		8090		5530		3530	J	5420	
Chromium	17.5	J	6.4	J	17.4		9.3	J	12.8	J	5.7	J	14.5	J	15.2	
Cobalt	7.3	J	1.8	J	7.2		4.5		4.9	J	2.70	J	5.8	J	6.5	
Copper	10.4	J	2.9	J	11.1		5.5		7.5		4.10	J	8.5	J	8.9	
Iron	17000	J	5120		14700.0		7630		10700		6540		12200	J	13300	
Lead	16.9	J	7.1		9.8	J	4.9		11.2	J	4.3	J	6.8	J	4.7	J
Magnesium	2900	J	836		4030		2130.0		5000		2930.0		2630	J	3520	
Manganese	810	J	170		341.0		197		270		207		414	J	355	
Mercury	0.31	J	0.25	J	0.17	UJ	0.13	U	0.16	UJ	0.15	UJ	0.20	UJ	0.17	UJ
Nickel	11.4	J	4.4	J	12.2		6.6		8.8		4.1	J	9.5	J	9.9	
Potassium	958	J	1000	J	1140		543.0		953		425		775	J	973	J
Selenium	0.5	UJ	0.30	UJ	0.3	UJ	0.26	U	0.34	UJ	0.28	UJ	0	UJ	0.35	UJ
Silver	1.5	UJ	0.86	U	1.0	U	0.8	U	1.0	U	0.85	U	1.3	J	1	U
Sodium	1000	UJ	1000	U	1000	U	1000	U	1000	U	1000	U	1000	U	1000	U
Vanadium	21.6	J	10.0	U	20.7		11		16		8		18.5	J	18.0	
Zinc	83.7	J	26	U	74.9	J	41.1		49.3	J	54.5	J	54.5	J	69	J

TABLE 3 (Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Inorganics Data (mg/kg)

Field Sample Number	Y2-SD36-01		Y2-SDD3+		Y2-SDDI-02		Y2-SDDI-03		Y2-SDDI-04		Y2-SDDI-05		Y2-SDDI-06		Y2-SDDI-07	
Form I ID	18540		18574		17942**		17950**		18132**		18363**		18612**		18760**	
Lab ID	1854.0		1857.4		1794.2		1795.0		1813.2		1836.3		1861.2		1876.0	
Aluminum	6180	J	13300	J	200	U	200	U	200	U	200	U	200	U	200	U
Arsenic	9.9	J	16.8	J	1.0	U	1.0	U	1.00	U	1.00	U	1	U	10	U
Barium	172	J	336	J	1	U	1.0	U	200	U	1	U	1	U	1	U
Beryllium	0.52	UJ	1	UJ	1.0	U	1.00	U	1.00	U	1.00	U	1.00	U	1	U
Cadmium	1.6	UJ	2.4	UJ	1.0	U	2.1		1.00	U	1.00	U	1	U	1	U
Calcium	9950	J	19600	J	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U
Chromium	11.1	J	22.2	J	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Cobalt	16.6	J	29.9	J	3.0	U	3.0	U	3.0	U	3.00	U	3.0	U	3.0	U
Copper	51.6	J	104	J	4.0	U	4.0	U	22.7		5.10	J	4	U	4	U
Iron	29100	J	51800	J	61.3		86.2		59.9		165		250		43.1	J
Lead	158	J	268	J	1.9	J	1.3	J	2.5		1	J	1.0	U	1	U
Magnesium	1080	J	2280	J	43.3	J	44.6	J	45.2	J	57.2	J	48	J	44.4	J
Manganese	4450	J	7840	J	14.8		7.2		5.6		4.1	J	3.8	J	3.3	J
Mercury	0.26	UJ	0.34	UJ	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Nickel	13.4	J	24.6	J	4.0	U	4.0	U	40.0	U	4.0	U	4	U	4	U
Potassium	1000	UJ	1230	J	88	U	96.8	J	136	J	129	J	88	U	88	U
Selenium	1.1	J	0.91	J	1.0	U	1.00	U	1.30	J	1.00	U	1	UJ	1	UJ
Silver	2.1	J	5.1	J	3.0	U	3.0	U	3.0	U	3.00	U	3	U	3	U
Sodium	1000	UJ	1000	UJ	5000	U	5000	U	5000	U	5000	U	5000	U	5000	U
Vanadium	19.7	J	38.9	J	1.0	U	1	U	1	U	1	U	1.0	U	1.0	U
Zinc	213	J	393	J	23.9	U	26.5	U	25	U	30.3	U	22.3	U	21.8	U

TABLE 3 (Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Inorganics Data (mg/kg)

Field Sample Number	Y2-SDDI-08		Y2-SDDI-09		Y2-SDDI-13		Y2-SDDI-14		Y2-SDDI-15	
Form I ID	18884**		19031**		SDDI13**		SDDI14**		SDDI15**	
Lab ID	1888.4		1903.1		38068-015		38097-016		38111-006	
Aluminum	200	U	14.2	J	NR		NR		NR	
Arsenic	10	U	2.0	U	NR		NR		NR	
Barium	200	U	1	U	NR		NR		NR	
Beryllium	1	U	1	U	NR		NR		NR	
Cadmium	1	U	1.0	U	NR		NR		NR	
Calcium	5000	U	112	J	NR		NR		NR	
Chromium	5.0	U	5.0	U	NR		NR		NR	
Cobalt	3	U	3	U	NR		NR		NR	
Copper	4	U	4	U	NR		NR		NR	
Iron	208		44.9		NR		NR		NR	
Lead	1	U	1	U	NR		NR		NR	
Magnesium	94.1	J	21	U	NR		NR		NR	
Manganese	4.8	J	1.7	J	NR		NR		NR	
Mercury	0.20	U	0.20	UJ	NR		NR		NR	
Nickel	4	U	4	U	NR		NR		NR	
Potassium	100	J	88	U	NR		NR		NR	
Selenium	1.0	U	1.00	U	NR		NR		NR	
Silver	3	U	3	U	NR		NR		NR	
Sodium	5000	U	179	J	NR		NR		NR	
Vanadium	1.0	U	1.0	U	NR		NR		NR	
Zinc	29	U	20	U	20	U*	1.8	U*	1.8	U*

TABLE 3 (Cont'd)

York Oil superfund Site Contamination Pathways

Summary of Sediment Inorganics Data (mg/kg)

Notes:

1. Samples collected by Blasland, Bouck, and Lee in April and October 1993
2. Only detected analytes are listed.
3. Detectable concentrations of analytes are highlighted.
4. U = analyte was undetected.
5. J = concentration of analyte is approximate.
6. R = data was rejected.
7. N = identification of analyte is tentative.
8. Concentrations reported in mg/kg except as otherwise noted.
9. ** = Rinse blank (concentration reported in ug/L).
10. * = Resample for zinc in October 1993 to address previous discrepancies.
11. + = Field duplicates as follows :

    Y2-SDD2 is a field duplicate for Y2-SD05-01
    Y2- SDD3 is a field duplicate for Y2-SD36-01
    Y2-SDD4 is a field duplicate for Y2-SD27-01

Table 4

York Oil Superfund Site Contamination Pathways

Summary of Supplemental Sediment Inorganics Data (mg/kg)

Field Sample No.	Y2-SD24A-01	Y2-SD24A-02	Y2-SD24A-03	Y2-SD24B-01
Form 1 I.D.	SD24A1	SD24A2	SD24A3	SD24B1
Lab I.D.	41402-023	41402-024	41402-025	41402-026
Aluminum	6,080 J	1,840	1,310	2,450 J
Antimony	16.2 J	2.2 UJ	2.5 UJ	17.6 UJ
Arsenic	14.6 UJ	0.35 U	0.53 U	6.7 UJ
Barium	275 J	19.8	12.6	425 J
Beryllium	0.27 J	0.05 J	0.06 U	0.40 UJ
Cadmium	1.3 UJ	0.27 U	0.3 U	2.3 J
Calcium	14,600 J	918	965	29,300 J
Chromium	11.7 J	3.1	2.7	6.4 J
Cobalt	5.6 J	0.62 J	0.86 J	3.8 UJ
Copper	3.7 J	0.44 UJ	0.49 UJ	5.8 J
Cyanide	0.53 J	0.07 U	0.07 U	0.35 UJ
Iron	13,700 J	2,640	2,080	11,300 J
Lead	168 J	4.4	2.5 U	423 J
Magnesium	1,660 J	695	549	3,220 J
Manganese	3,250 J	45.9	47.6	3,080 J
Mercury	0.26 UJ	0.02 U	0.03 U	0.30 UJ
Nickel	10.3 UJ	2.1 J	1.6 J	16.8 J
Potassium	796 J	144 J	145 J	663 UJ
Selenium	2.6 UJ	0.52 UJ	0.58 UJ	4.2 UJ
Silver	2.7 J	0.45 U	0.51 U	3.6 UJ
Sodium	260 J	34.6 U	32.6 U	977 J
Vanadium	15.9 J	5.4	3.5 J	13.6 J
Zinc	98.6 J	8.8 U	8.4 U	142 J

Table 4
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Supplemental Sediment Inorganics Data (mg/kg)

Field Sample No.	Y2-SD24B-02	Y2-SD24B-03	Y2-SD24C-01	Y2-SD24C-02
Form 1 I.D.	SD24B2	SD24B3	SD24C1	SD24C2
Lab I.D.	41402-027	41402-028	41402-029	41402-030
Aluminum	2,880 J	4,440 J	2,910 J	2,730 J
Antimony	14.4 UJ	17.7 UJ	16.6 UJ	12.5 UJ
Arsenic	5.3 J	2.8 UJ	3.9 J	2.0 J
Barium	167 J	141 J	203 J	109 J
Beryllium	0.33 UJ	0.40 UJ	0.38 UJ	0.29 UJ
Cadmium	1.8 UJ	3.1 J	2.8 J	1.5 UJ
Calcium	31,100 J	36,700 J	28,200 J	24,600 J
Chromium	3.3 J	10.9 J	4.2 J	2.4 J
Cobalt	3.1 UJ	3.8 UJ	3.5 UJ	2.7 UJ
Copper	8.3 J	33.2 J	15.3 J	10.7 J
Cyanide	0.34 UJ	0.44 UJ	0.38 UJ	0.37 UJ
Iron	4,810 J	2,850 J	3,920 J	2,070 J
Lead	115 J	21.3 UJ	176 J	30.0 J
Magnesium	3,190 J	3,770 J	3,100 J	2,600 J
Manganese	841 J	549 J	1,440 J	620 J
Mercury	0.26 UJ	0.31 J	0.20 J	0.18 J
Nickel	10.0 J	12.5 J	8.9 J	9.2 J
Potassium	542 UJ	665 UJ	624 UJ	472 UJ
Selenium	3.4 UJ	4.2 UJ	3.9 UJ	3.0 UJ
Silver	3.0 UJ	3.6 UJ	3.4 UJ	2.6 UJ
Sodium	858 J	836 J	815 J	681 J
Vanadium	8.1 J	13.5 J	11.1 J	9.6 J
Zinc	80.8 J	78.5 UJ	107 J	83.6 J

Table 4
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Supplemental Sediment Inorganics Data (mg/kg)

Field Sample No.	Y2-SD24D-01	Y2-SD24D-02	Y2-SD24D-03	Y2-SD24E-01
Form I I.D.	SD24D1	SD24D2	SD24D3	SD24E1
Lab I.D.	41402-031	41402-032	41402-033	42389-024
Aluminum	4,270 J	2,820 J	1,740 J	4,510
Antimony	15.1 UJ	14.2 UJ	3.3 UJ	3.2 UJ
Arsenic	11.4 J	8.2 UJ	1.3 UJ	2.3
Barium	296 J	158 J	40.2 J	29.0
Beryllium	0.35 UJ	0.33 UJ	0.08 UJ	0.16 J
Cadmium	2.3 J	1.7 UJ	0.41 UJ	0.39 U
Calcium	20,600 J	19,700 J	4,150 J	2,470
Chromium	5.0 J	4.3 J	5.0 J	6.8 J
Cobalt	3.2 UJ	3.0 UJ	1.4 J	2.4 J
Copper	10.3 J	6.1 J	5.1 J	0.63 UJ
Cyanide	0.46 UJ	0.40 UJ	0.11 UJ	0.08 U
Iron	17,800 J	8,890 J	3,150 J	12,100
Lead	162 J	53.7 J	4.2 UJ	11.4
Magnesium	1,820 J	1,830 J	900 J	575
Manganese	1,920 J	1,170 J	148 J	207
Mercury	0.35 J	0.18 J	0.04 UJ	0.03 U
Nickel	10.4 J	7.5 UJ	4.7 J	2.1 U
Potassium	569 UJ	535 UJ	125 UJ	260 J
Selenium	3.6 UJ	3.4 UJ	0.79 UJ	0.75 UJ
Silver	3.1 UJ	2.9 UJ	0.69 UJ	0.65 U
Sodium	547 J	297 UJ	56.8 UJ	26.8 U
Vanadium	22.3 J	15.3 J	7.7 J	20.6
Zinc	146 J	105 J	21.7 J	20.4 U

Table 4
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Supplemental Sediment Inorganics Data (mg/kg)

Field Sample No.	Y2-SD24E-02	Y2-SD24E-03	Y2-SD24F-01	Y2-SD24F-02
Form 1 I.D.	SD24E2	SD24E3	SD24F1	SD24F2
Lab I.D.	42389-025	42389-026	41389-021	41389-022
Aluminum	2,140	3,880	1,300	5,100
Antimony	2.5 UJ	2.8 UJ	2.2 UJ	2.9 UJ
Arsenic	1.3 U	1.9 U	3.0	4.3
Barium	13.4	20.4	560	117
Beryllium	0.14 J	0.16 J	0.17 J	0.29 J
Cadmium	0.31 U	0.35 U	0.27 U	0.35 U
Calcium	840	1,600	1,730	2,150
Chromium	4.8 J	5.7 J	3.1	8.5 J
Cobalt	1.2 J	2.5 J	6.5	6.4
Copper	0.50 UJ	0.56 UJ	0.44 UJ	0.57 UJ
Cyanide	0.07 U	0.06 U	0.12 J	0.06 U
Iron	6,800	10,500	31,400	32,400
Lead	3.7	6.8	8.7	6.5
Magnesium	516	438	312	1,930
Manganese	181	172	3,840	780
Mercury	0.02 U	0.03 J	0.02 U	0.03 U
Nickel	2.5 U	2.0 U	1.2 J	8.0 U
Potassium	155 J	106 U	84.1 U	772
Selenium	0.60 UJ	0.67 UJ	0.16 UJ	0.68 UJ
Silver	0.52 U	0.58 U	0.46 U	0.59 U
Sodium	19.3 U	27.3 U	36.0 U	58.4 U
Vanadium	10.0	16.5	27.4	32.0
Zinc	6.0 U	13.4 U	52.9 J	54.5 J

Table 4
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Supplemental Sediment Inorganics Data (mg/kg)

Field Sample No.	Y2-SDD11+	Y2-SD24F-03	Y2-SD37-01	Y2-SD37-02
Form 1 I.D.	ZSDD11	SD24F3	SD3701	SD3702
Lab I.D.	41389-027	41389-023	41375-043	41375-044
Aluminum	5,380	7,140	3,060	5,460
Antimony	2.0 UJ	2.4 UJ	3.6 UJ	2.6 UJ
Arsenic	4.4	2.2	1.1 J	2.3
Barium	100	94.4	29.2	30.3
Beryllium	0.31	0.33	0.12 J	0.27 J
Cadmium	0.24 U	0.30 U	0.44 U	0.32 U
Calcium	2,190	6,330	1,030 U	838 U
Chromium	8.9 J	11.3 J	5.7	10.2
Cobalt	5.9	6.0	1.5 J	4.5
Copper	5.0 UJ	3.6 J	0.71 UJ	0.52 UJ
Cyanide	0.05 U	0.06 U	0.08 U	0.06 U
Iron	38,300	15,200	8,310	15,600
Lead	6.5	5.1	11.9	8.7
Magnesium	1,920	5,260	464	952
Manganese	589	269	115 J	282 J
Mercury	0.02 U	0.02 U	0.04 U	0.04 J
Nickel	6.1 U	10.5	4.5 J	7.1
Potassium	721	1,260	159 J	210 J
Selenium	0.16 UJ	0.57 UJ	0.85 U	0.62 U
Silver	0.41 U	0.50 U	0.74 U	0.54 U
Sodium	1,000 U	89.2	23.1 U	20.2 U
Vanadium	45.0	20.6	19.3 J	23.0 J
Zinc	66.9 J	31.0	19.1 U	15.5 U

Table 4
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Supplemental Sediment Inorganics Data (mg/kg)

Field Sample No.	Y2-SD37-03	Y2-SD38-01	Y2-SD38-02	Y2-SD38-03
Form 1 I.D.	SD3703	SD3801	SD3802	SD3803
Lab I.D.	41375-045	41375-031	41375-032	41375-033
Aluminum	4,760	1,860	3,930	4,590
Antimony	1.6 UJ	3.4 UJ	2.7 UJ	2.5 UJ
Arsenic	2.5	0.54 UJ	1.4 J	1.7 J
Barium	30.6	19.3	17.0	35.3
Beryllium	0.29 J	0.08 J	0.18 J	0.24 J
Cadmium	0.20 U	0.41 U	0.30 U	0.30 U
Calcium	1,220	563 U	469 U	1,080 U
Chromium	100	2.7	4.8	6.2
Cobalt	3.5	0.72 U	2.1 J	3.4
Copper	1.0 J	0.67 UJ	0.48 UJ	3.2 J
Cyanide	0.09 U	0.08 U	0.07 U	0.07 U
Iron	12,700	3,190	8,480	8,800
Lead	5.5	16.1	6.6	4.3
Magnesium	1,380	318	621	1,360
Manganese	165 J	15.8 J	57.7 J	253 J
Mercury	0.02 U	0.04 U	0.02 U	0.02 U
Nickel	6.9 J	3.2 J	4.1 J	8.1
Potassium	320 J	155 J	113 J	365 J
Selenium	0.38 U	0.80 U	0.57 U	0.58 U
Silver	0.33 U	0.70 U	0.50 U	0.51 U
Sodium	28.6 U	18.9 U	18.8 U	42.1 U
Vanadium	17.5 J	7.2 J	15.9 J	11.2 J
Zinc	12.6 J	9.4 U	8.9 U	13.0 U

Table 4
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Supplemental Sediment Inorganics Data (mg/kg)

Field Sample No.	Y2-SD39-01	Y2-SDD10	Y2-SD39-02	Y2-SD39-03
Form 1 I.D.	SD3901	ZSDD10	SD3902	SD3903
Lab I.D.	41375-037	41375-040	41375-038	41375-039
Aluminum	5,300	4,890	4,030	3,560
Antimony	2.8 UJ	3.0 UJ	1.6 UJ	1.6 UJ
Arsenic	1.3 J	0.88 J	0.71 J	0.69 J
Barium	34.0	31.1	21.0	18.5
Beryllium	0.28 J	0.19 J	0.17 J	0.15 J
Cadmium	0.34 U	0.33 U	0.20 U	0.19 U
Calcium	1,960	1,860	1,240	1,300
Chromium	8.8	8.4	7.5	6.4
Cobalt	6.7	5.7	2.6 J	2.4 J
Copper	0.55 UJ	0.53 UJ	0.33 UJ	0.31 UJ
Cyanide	0.08 J	0.16 J	0.08 U	0.06 U
Iron	11,300	10,200	7,250	7,180
Lead	12.4	11.1	4.3	3.7
Magnesium	987	958	975	956
Manganese	829 J	727 J	217 J	175 J
Mercury	0.03 U	0.03 U	0.02 U	0.02 U
Nickel	3.2 J	19.8 J	2.7 J	3.6 J
Potassium	265 J	244 J	213 J	256 J
Selenium	0.66 U	0.64 U	0.39 U	0.37 U
Silver	0.57 U	0.55 U	0.34 U	0.33 U
Sodium	21.3 U	25.5 U	18.7 U	16.2 U
Vanadium	21.4 J	20.2 J	13.0 J	11.8 J
Zinc	42.4 J	39.1 J	31.5 J	27.1 J

Table 4
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Supplemental Sediment Inorganics Data (mg/kg)

Field Sample No.	Y2-SD40-01	Y2-SD40-02	Y2-SD41-01	Y2-SD41-02
Form 1 I.D.	SD4001	SD4002	SD4101	SD4102
Lab I.D.	41375-041	41375-042	41389-028	41389-029
Aluminum	4,600	1,410	14,100 J	3,080
Antimony	3.7 UJ	3.0 UJ	8.0 UJ	2.9 J
Arsenic	2.0 J	0.48 J	5.4 UJ	1.6 U
Barium	40.7	11.6 U	156 J	32.0
Beryllium	0.18 J	0.09 J	0.81 J	0.13 J
Cadmium	0.46 U	0.37 U	2.0 J	0.31 U
Calcium	3,140	1,020 U	11,800 J	1,680
Chromium	6.7	2.8	10.7 J	4.8 J
Cobalt	2.9	0.87 J	1.7 UJ	1.0 J
Copper	0.74 UJ	0.59 UJ	10.2 J	0.50 UJ
Cyanide	0.10 U	0.08 U	0.24 UJ	0.06 U
Iron	8,900	3,060	4,540 J	2,690
Lead	11.0	1.6	30.7 J	4.2
Magnesium	717	427	1,670 J	795
Manganese	556 J	50.1 J	129 J	20.2
Mercury	0.04 U	0.03 U	0.71 J	0.09 J
Nickel	2.9 J	2.2 J	6.5 UJ	2.5 U
Potassium	189 J	212 J	341 J	185 J
Selenium	0.88 U	0.71 U	1.9 UJ	0.60 UJ
Silver	0.77 U	0.62 U	27.9 J	0.52 U
Sodium	22.9 U	17.2 U	120 UJ	31.5 U
Vanadium	14.2 J	5.2	13.7 J	3.8
Zinc	50.8 J	10.7 U	29.1 UJ	13.3 U

Table 4
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Supplemental Sediment Inorganics Data (mg/kg)

Field Sample No.	Y2-SD42-01	Y2-SD42-02	Y2-SD42-03	Y2-SDDI-16*	Y2-SDDI-17
Form 1 I.D.	SD4201	SD4202	SD4203	SDDI16	SDDI17
Lab I.D.	41375-034	41375-035	41375-036	41375-049	41389-033
Aluminum	5,970 J	2,840	1,550	65.4	15.1 U
Antimony	2.8 UJ	1.4 UJ	1.7 UJ	17.8 J	13.1 I
Arsenic	1.6 J	0.82 J	0.73 J	2.1 UJ	2.1 U
Barium	43.1 J	17.7	13.9	1.4 U	0.90 U
Beryllium	0.41 J	0.17 J	0.10 J	0.30 U	0.30 U
Cadmium	0.60 UJ	0.17 U	0.21 U	1.6 U	1.6 U
Calcium	3,060 J	1,510	1,060	577	158
Chromium	7.7 J	4.3	3.2	2.4 U	2.4 U
Cobalt	2.5 J	1.2 J	1.1 J	2.8 U	2.8 U
Copper	0.56 UJ	0.28 UJ	0.33 UJ	2.6 UJ	2.6 UJ
Cyanide	0.15 J	0.07 U	0.07 U	0.75 U	0.75 U
Iron	6,240 J	4,610	3,310	33.7 U	40.2 U
Lead	11.8 J	4.1	2.9	0.90 U	0.90 UJ
Magnesium	642 J	531	478	27.8 J	24.2 U
Manganese	688 J	257 J	242 J	1.2 U	0.60 U
Mercury	0.14 UJ	0.03 U	0.02 U	0.10 U	0.10 U
Nickel	3.4 J	1.1 J	2.1 J	6.9 U	6.9 U
Potassium	132 J	126 J	63.4 U	493 U	493 U
Selenium	0.67 UJ	0.34 U	0.40 U	3.1 J	3.1 U
Silver	0.59 UJ	0.29 U	0.35 U	2.7 U	2.7 U
Sodium	24.9 UJ	20.1 U	14.8 U	1,100	201 U
Vanadium	10.5 J	7.2 J	4.6	3.5 U	3.5 U
Zinc	21.5 J	10.9 J	6.9 U	5.9 U	10.3 U

Table 4
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Supplemental Sediment Inorganics Data (mg/kg)

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in August and September 1994.
2. Only detected analytes are listed. Concentrations above detection limits are shaded.
3. U = Analyte was not detected.
4. J = Concentration is approximate.
5. Concentrations reported in mg/kg unless otherwise noted.
6. * = Rinse blank (concentration reported in µg/l).
7. + = Field duplicates as follows:

   Y2-SDD11 is a field duplicate for Y2-SD24F-02
   Y2-SDD10 is a field duplicate for Y2-SD39-01

Table 5

York Oil Superfund Site Contamination Pathways

Summary of Sediment Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD01-01	Y2-SD01-02	Y2-SD02-01	Y2-SD03-01	Y2-SD04-01	Y2-SD04-02	Y2-SD05-01
Form 1 ID	19015	19023	19007	18973	17969	1797.7	18345
Laboratory ID	1901.5	1902.3	1900.7	1897.3	1796.9	1797.7	1834.5
Acetone	0.056 UJ	0.048 UJ	0.091 UJ	0.050 UJ	0.020 UJ	0.012 U	0.021 UJ
2-Butanone	0.056 UJ	0.048 UJ	0.091 UJ	0.050 UJ	0.015 JN	0.012 U	0.021 UJ
Toluene	0.056 UJ	0.048 UJ	0.091 UJ	0.050 UJ	0.020 UJ	0.004 J	0.021 UJ

Field Sample No.	Y2-SDD2+	Y2-SD06-01	Y2-SD07-01	Y2-SD08-01	Y2-SD09-01	Y2-SD09-02
Form 1 ID	18353	18337	18485	18078	18086DL	18094
Laboratory ID	1835.3	1833.7	1848.5	1807.8	1808.6	1809.4
Acetone	0.021 UJ	0.031 UJ	0.029 UJ	0.043 UJ	0.082 UJ	0.13 J
2-Butanone	0.021 UJ	0.031 UJ	0.029 UJ	0.043 UJ	0.082 UJ	0.033 J
Toluene	0.021 UJ	0.031 UJ	0.029 UJ	0.043 UJ	0.082 UJ	0.015 UJ

OU1 SAMPLE OU1 SAMPLE OU1 SAMPLE

Field Sample No.	Y2-SD10-01	Y2-SD11-01	Y2-SD11-02
Form 1 ID	18108	18116	18124
Laboratory ID	1810.8	1811.6	1812.4
Acetone	0.51 UJ	0.077 UJ	0.33 UJ
2-Butanone	0.12 J	0.056 JN	0.026 UJ
Toluene	0.059 UJ	0.077 UJ	0.026 UJ

Table 5
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD12-01	Y2-SD12-02	Y2-SD12-03	Y2-SD13-01	Y2-SD13-02	Y2-SD14-01	Y2-SD14-02
Form 1 ID	18582	18590	18604	18515	18523	18310	18329
Laboratory ID	1858.2	1859.0	1860.4	1851.5	1852.3	1831.0	1832.9
Acetone	0.053 UJ	0.048 UJ	0.042 UJ	0.030 UJ	0.019 U	0.15 UJ	0.021 UJ
2-Butanone	0.053 UJ	0.048 UJ	0.042 UJ	0.030 UJ	0.019 U	0.043 JN	0.017 JN
Toluene	0.053 UJ	0.048 UJ	0.042 UJ	0.030 UJ	0.019 U	0.048 UJ	0.038 J

Field Sample No.	Y2-SD15-01	Y2-SD15-02	Y2-SD16-01	Y2-SD16-02
Form 1 ID	18035	18043	18230	18264RE
Laboratory ID	1803.5	1804.3	1823.0	1826.4
Acetone	0.51 UJ	0.20 UJ	0.047 UJ	0.030 UJ
2-Butanone	0.12 J	0.028 UJ	0.037 UJ	0.030 UJ
Toluene	13.00 JD	1.30 JD	0.016 J	0.030 UJ

Field Sample No.	Y2-SD17-01	Y2-SD17-02	Y2-SD18-01	Y2-SD19-01	Y2-SD19-02
Form 1 ID	18299	18302	17985	17993RE	18051
Laboratory ID	1829.9	1830.2	1798.5	1799.3	1805.1
Acetone	0.023 UJ	0.094 UJ	0.015 U	0.25 J	0.19 J
2-Butanone	0.023 UJ	0.018 JN	0.015 U	0.074 JN	0.10 UJ
Toluene	0.020 J	0.020 UJ	0.015 U	0.24 J	0.21 J
			OU1 SAMPLE	OU1 SAMPLE	OU1 SAMPLE

Table 5
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD19-03	Y2-SD20-01	Y2-SD20-02	Y2-SD21-01	Y2-SD21-02	Y2-SD21-03
Form 1 ID	18060	18930	18949	18000	18272	18280
Laboratory ID	1806.0	1893.0	1894.9	1800.0	1827.2	1828.0
Acetone	0.012 U	0.12 J	0.022 UJ	0.046 J	0.085 UJ	0.020 UJ
2-Butanone	0.012 U	0.048 JN	0.022 UJ	0.038 UJ	0.023 UJ	0.020 UJ
Toluene	0.012 UJ	0.017 J	0.022 UJ	0.038 UJ	0.023 UJ	0.020 UJ

OU1 SAMPLE

Field Sample No.	Y2-SD22-01	Y2-SD22-02	Y2-SD23-01	Y2-SD23-02	Y2-SD24-01	Y2-SD25-01	Y2-SD26-01
Form 1 ID	18493	18507	18710	18728	18680	18019	18868
Laboratory ID	1849.3	1850.7	1871.0	1872.8	1868.0	1801.9	1886.8
Acetone	0.024 UJ	0.017 U	0.056 UJ	0.053 UJ	0.10 UJ	0.036 UJ	0.023 UJ
2-Butanone	0.024 UJ	0.017 U	0.056 UJ	0.053 UJ	0.10 UJ	0.017 JN	0.023 UJ
Toluene	0.024 UJ	0.017 U	0.056 UJ	0.053 UJ	0.10 UJ	0.036 UJ	0.023 UJ

Field Sample No.	Y2-SD26-02	Y2-SD27-01	Y2-SDD4+	Y2-SD28-01	Y2-SD29-01	Y2-SD30-01	Y2-SD31-01
Form 1 ID	18876	18957	18965	18477	18027	18736	18531
Laboratory ID	1887.6	1895.7	1896.5	1847.7	1802.7	1873.6	1853.1
Acetone	0.046 J	0.077 UJ	0.083 UJ	0.027 UJ	0.015 U	0.018 U	0.014 U
2-Butanone	0.015 U	0.077 UJ	0.083 UJ	0.027 UJ	0.015 U	0.018 U	0.014 U
Toluene	0.015 U	0.077 UJ	0.083 UJ	0.027 UJ	0.015 U	0.018 U	0.014 U

Table 5
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD32-01	Y2-SD33-01	Y2-SD34-01	Y2-SD35-01	Y2-SD36-01	Y2-SDD3+	Y2-SDDI-02*
Form 1 ID	18850	18841	18744	18752	18540	18574	17942
Laboratory ID	1885.0	1884.1	1874.4	1875.2	1854.0	1857.4	1794.2
Acetone	0.004 J	0.015 U	0.020 UJ	0.019 U	0.027 UJ	0.034 UJ	10 U
2-Butanone	0.018 U	0.015 U	0.020 UJ	0.019 U	0.027 UJ	0.034 UJ	10 U
Toluene	0.018 U	0.015 U	0.020 UJ	0.019 U	0.027 UJ	0.034 UJ	10 U

Field Sample No.	Y2-SDDI-03*	Y2-SDDI-04*	Y2-SDDI-05*	Y2-SDDI-06*	Y2-SDDI-07*	Y2-SDDI-08*	Y2-SDDI-09*
Form 1 ID	17950	18132	18361	18612	18760	18884	19031
Laboratory ID	1795.0	1813.2	1836.1	18612	1876.0	1888.4	1903.1
Acetone	10 U	10 U	9 J	10 U	10 U	10 U	10 U
2-Butanone	10 U	10 U	10 U	10 U	10 U	4 J	10 U
Toluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. during April and May 1993.
2. Concentrations reported in mg/kg, unless otherwise noted.
3. U = analyte was undetected.
4. J = concentration of analyte is estimated.
5. N = identification of analyte is tentative.
6. R = data is rejected.
7. * = rinse blank (concentration reported in µg/l).
8. Detectable concentrations of analytes are highlighted.
9. + = Field duplicates as follows:
   Y2-SDD2 is a field duplicate for Y2-SD05-01
   Y2-SDD3 is a field duplicate for Y2-SD36-01
   Y2-SDD4 is a field duplicate for Y2-SD27-01
10. D = reported concentration is the result of a dilution.
11. RE = sample was reanalyzed.

Table 6

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD01-01	Y2-SD01-02	Y2-SD02-01
Form 1 ID	SD0101	SD0102	SD0201
Laboratory ID	38097-2	38097-3	38097-4
Total Phenols (mg/kg)	34.7 J	25.1 J	32.5 J
Phenol	2.00 UJ	1.40 UJ	2.50 UJ
2-Methylphenol	2.00 UJ	1.40 UJ	2.50 UJ
4-Methylphenol	2.00 UJ	1.40 UJ	2.50 UJ
Nitrobenzene	2.00 UJ	1.40 UJ	2.50 UJ
2-4-Dimethylphenol	2.00 UJ	1.40 UJ	2.50 UJ
Naphthalene	2.00 UJ	1.40 UJ	2.50 UJ
2-Methylnapthalene	2.00 UJ	1.40 UJ	2.50 UJ
Acenaphthylene	2.00 UJ	1.40 UJ	2.50 UJ
Acenaphthene	2.00 UJ	1.40 UJ	2.50 UJ
Dibenzofuran	2.00 UJ	1.40 UJ	2.50 UJ
Diethylphthalate	2.00 UJ	1.40 UJ	2.50 UJ
Fluorene	2.00 UJ	1.40 UJ	2.50 UJ
Phenanthrene	2.00 UJ	1.40 UJ	2.50 UJ
Anthracene	2.00 UJ	1.40 UJ	2.50 UJ
Carbazole	2.00 UJ	1.40 UJ	2.50 UJ
Di-n-butylphthalate	2.00 UJ	1.40 UJ	2.50 UJ
Fluoranthene	2.00 UJ	1.40 UJ	2.50 UJ
Pyrene	2.00 UJ	1.40 UJ	2.50 UJ
Butylbenzylphthalate	2.00 UJ	1.40 UJ	2.50 UJ
Benzo(a)anthracene	2.00 UJ	1.40 UJ	2.50 UJ
Chrysene	2.00 UJ	1.40 UJ	2.50 UJ
bis(2-ethylhexyl)phthalate	2.00 UJ	1.40 UJ	2.80 UJ
Di-n-octylphthalate	1.40 J	1.40 UJ	2.80 J
Benzo(b)fluoranthene	2.00 UJ	1.40 UJ	2.50 UJ
Benzo(a)pyrene	2.00 UJ	1.40 UJ	2.50 UJ
Indeno(1,2,3-cd)pyrene	2.00 UJ	1.40 UJ	2.50 UJ
Dibenz(a,h)anthracene	2.00 UJ	1.40 UJ	2.50 UJ
Benzo(g,h,i)perylene	2.00 UJ	1.40 UJ	2.50 UJ

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD03-01	Y2-SD04-1	Y2-SD04-02	Y2-SD05-01
Form 1 ID	SD0301	17969	17977	18345RE
Laboratory ID	38097-1	1796.9	1797.7	1834.5
Total Phenols (mg/kg)	42.3 J	7.0 J	0.62 U	2.8 J
Phenol	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
2-Methylphenol	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
4-Methylphenol	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Nitrobenzene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
2-4-Dimethylphenol	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Naphthalene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
2-Methylnapthalene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Acenaphthylene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Acenaphthene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Dibenzofuran	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Diethylphthalate	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Fluorene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Phenanthrene	1.30 UJ	0.67 UJ	0.42 U	0.082 J
Anthracene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Carbazole	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Di-n-butylphthalate	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Fluoranthene	1.30 UJ	0.67 UJ	0.42 U	0.091 J
Pyrene	1.30 UJ	0.67 UJ	0.42 U	0.097 J
Butylbenzylphthalate	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Benzo(a)anthracene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Chrysene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
bis(2-ethylhexyl)phthalate	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Di-n-octylphthalate	0.720 J	0.67 UJ	0.42 U	0.69 UJ
Benzo(b)fluoranthene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Benzo(a)pyrene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Indeno(1,2,3-cd)pyrene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Dibenz(a,h)anthracene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ
Benzo(g,h,i)perylene	1.30 UJ	0.67 UJ	0.42 U	0.69 UJ

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SDD2+	Y2-SD06-01	Y2-SD07-01	Y2-SD08-01
Form 1 ID	18353	18337	18485	18078
Laboratory ID	1835.3	1833.7	1848.5	1807.8
Total Phenols (mg/kg)	5.1 J	7.0 J	6.5 J	8.5 J
Phenol	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
2-Methylphenol	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
4-Methylphenol	0.69 UJ	1.00 UJ	0.15 J	1.40 UJ
Nitrobenzene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
2-4-Dimethylphenol	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Naphthalene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
2-Methylnapthalene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Acenaphthylene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Acenaphthene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Dibenzofuran	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Diethylphthalate	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Fluorene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Phenanthrene	0.067 J	1.00 UJ	0.95 UJ	1.40 UJ
Anthracene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Carbazole	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Di-n-butylphthalate	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Fluoranthene	0.065 J	1.00 UJ	0.95 UJ	0.410 J
Pyrene	0.11 J	1.00 UJ	0.95 UJ	0.330 J
Butylbenzylphthalate	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Benzo(a)anthracene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Chrysene	0.69 UJ	1.00 UJ	0.95 UJ	0.31 J
bis(2-ethylhexyl)phthalate	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Di-n-octylphthalate	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Benzo(b)fluoranthene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Benzo(a)pyrene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Indeno(1,2,3-cd)pyrene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Dibenz(a,h)anthracene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ
Benzo(g,h,i)perylene	0.69 UJ	1.00 UJ	0.95 UJ	1.40 UJ

OU1 SAMPLE

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD09-01	Y2-SDD8+	Y2-SD09-02	Y2-SD10-01	Y2-SD11-01	Y2-SD11-02
Form 1 ID	SD0901	SDD8	SD0902	18108	18116	18124
Laboratory ID	36068-6	38068-11	36068-7	1810.8	1811.6	1812.4
Total Phenols (mg/kg)	16.4 J	NR	15.8 J	28.1 J	21.1 J	9.2 J
Phenol	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
2-Methylphenol	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
4-Methylphenol	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Nitrobenzene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
2-4-Dimethylphenol	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Naphthalene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
2-Methylnapthalene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Acenaphthylene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Acenaphthene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Dibenzofuran	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Diethylphthalate	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Fluorene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Phenanthrene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Anthracene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Carbazole	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Di-n-butylphthalate	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Fluoranthene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	0.17 J	0.88 UJ
Pyrene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Butylbenzylphthalate	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Benzo(a)anthracene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Chrysene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
bis(2-ethylhexyl)phthalate	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Di-n-octylphthalate	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Benzo(b)fluoranthene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Benzo(a)pyrene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Indeno(1,2,3-cd)pyrene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Dibenz(a,h)anthracene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ
Benzo(g,h,i)perylene	620.0 UJ	640.0 UJ	12.0 UJ	20.0 UJ	2.60 UJ	0.88 UJ

OU1 SAMPLE OU1 SAMPLE OU1 SAMPLE

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD12-01	Y2-SD12-02	Y2-SD12-03	Y2-SD13-02	Y2-SD13-01	Y2-SD14-01
Form 1 ID	18582DL	18590	18604	18523	SD1301	18310RE
Laboratory ID	1858.2DL	1859.0	1860.4	1852.3	38068-3	1831.0
Total Phenols (mg/kg)	21.7 J	21.6 J	21.5 J	10.8 J	12.9 J	7.2 J
Phenol	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
2-Methylphenol	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
4-Methylphenol	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	0.87 J
Nitrobenzene	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
2-4-Dimethylphenol	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Naphthalene	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
2-Methylnapthalene	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Acenaphthylene	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Acenaphthene	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Dibenzofuran	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Diethylphthalate	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Fluorene	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Phenanthrene	3.50 UJ	0.70 J	0.29 J	0.63 UJ	3.70 UJ	1.60 UJ
Anthracene	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Carbazole	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Di-n-butylphthalate	3.50 UJ	0.20 J	0.16 J	0.63 UJ	3.70 UJ	1.60 UJ
Fluoranthene	3.50 UJ	1.10 J	0.29 J	0.63 UJ	3.70 UJ	1.60 UJ
Pyrene	3.50 UJ	2.10 J	0.41 J	0.063 J	3.70 UJ	1.60 UJ
Butylbenzylphthalate	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Benzo(a)anthracene	3.50 UJ	0.70 J	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Chrysene	3.50 UJ	1.00 J	0.33 J	0.63 UJ	3.70 UJ	1.60 UJ
bis(2-ethylhexyl)phthalate	3.50 UJ	0.43 J	0.18 J	0.42 J	3.70 UJ	1.60 UJ
Di-n-octylphthalate	0.48 J	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Benzo(b)fluoranthene	3.50 UJ	1.50 J	0.55 J	0.63 UJ	3.70 UJ	1.60 UJ
Benzo(a)pyrene	3.50 UJ	1.60 UJ	0.34 J	0.63 UJ	3.70 UJ	1.60 UJ
Indeno(1,2,3-cd)pyrene	3.50 UJ	0.89 J	0.38 J	0.63 UJ	3.70 UJ	1.60 UJ
Dibenz(a,h)anthracene	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ
Benzo(g,h,i)perylene	3.50 UJ	1.60 UJ	1.40 UJ	0.63 UJ	3.70 UJ	1.60 UJ

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD14-02	Y2-SD15-01	Y2-SD15-02	Y2-SD16-01	Y2-SD16-02	Y2-SD17-01
Form 1 ID	18329	18035RE	18043	18230	18264	18299
Laboratory ID	1832.9	1803.5	1804.3	1823.0	1826.4	1829.9
Total Phenols (mg/kg)	3.2 J	28.8 J	8.9 J	8.5 J	3.6 J	4.5 J
Phenol	0.71 UJ	1.10 J	0.16 J	1.20 UJ	1.00 UJ	0.52 UJ
2-Methylphenol	0.71 UJ	0.18 J	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
4-Methylphenol	0.71 UJ	30.00 JD	3.50 J	1.20 UJ	0.070 J	0.071 J
Nitrobenzene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
2-4-Dimethylphenol	0.71 UJ	5.00 J	1.90 J	1.20 UJ	1.00 UJ	0.52 UJ
Naphthalene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
2-Methylnapthalene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Acenaphthylene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Acenaphthene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Dibenzofuran	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Diethylphthalate	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Fluorene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Phenanthrene	0.71 UJ	0.12 J	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Anthracene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Carbazole	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Di-n-butylphthalate	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Fluoranthene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Pyrene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Butylbenzylphthalate	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Benzo(a)anthracene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Chrysene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
bis(2-ethylhexyl)phthalate	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Di-n-octylphthalate	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Benzo(b)fluoranthene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Benzo(a)pyrene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Indeno(1,2,3-cd)pyrene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Dibenz(a,h)anthracene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ
Benzo(g,h,i)perylene	0.71 UJ	2.10 UJ	0.92 UJ	1.20 UJ	1.00 UJ	0.52 UJ

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD17-02	Y2-SD18-01	Y2-SD19-01
Form 1 ID	18302	17985RE	SD1901
Laboratory ID	1830.2	1798.5	38068-8
Total Phenols (mg/kg)	5.6 J	6.0 J	42.7 J
Phenol	0.65 U	0.50 U	450.0 UJ
2-Methylphenol	0.65 U	0.50 U	450.0 UJ
4-Methylphenol	0.65 U	0.50 U	450.0 UJ
Nitrobenzene	0.65 U	0.50 U	450.0 UJ
2-4-Dimethylphenol	0.65 U	0.073 J	450.0 UJ
Naphthalene	0.65 U	0.50 U	450.0 UJ
2-Methylnapthalene	0.65 U	0.50 U	450.0 UJ
Acenaphthylene	0.65 U	0.50 UJ	450.0 UJ
Acenaphthene	0.65 U	0.50 UJ	450.0 UJ
Dibenzofuran	0.65 U	0.50 UJ	450.0 UJ
Diethylphthalate	0.65 U	0.50 UJ	450.0 UJ
Fluorene	0.65 U	0.50 UJ	450.0 UJ
Phenanthrene	0.65 U	0.057 J	450.0 UJ
Anthracene	0.65 U	0.50 UJ	450.0 UJ
Carbazole	0.65 U	0.50 UJ	450.0 UJ
Di-n-butylphthalate	0.65 U	0.50 UJ	450.0 UJ
Fluoranthene	0.65 U	0.50 UJ	450.0 UJ
Pyrene	0.65 U	0.047 J	450.0 UJ
Butylbenzylphthalate	0.65 U	0.50 UJ	450.0 UJ
Benzo(a)anthracene	0.65 U	0.50 UJ	450.0 UJ
Chrysene	0.65 U	0.078 J	450.0 UJ
bis(2-ethylhexyl)phthalate	0.65 U	0.50 U	450.0 UJ
Di-n-octylphthalate	0.65 U	0.50 U	450.0 UJ
Benzo(b)fluoranthene	0.65 U	0.044 J	450.0 UJ
Benzo(a)pyrene	0.65 U	0.50 U	450.0 UJ
Indeno(1,2,3-cd)pyrene	0.65 U	0.50 U	450.0 UJ
Dibenz(a,h)anthracene	0.65 U	0.50 U	450.0 UJ
Benzo(g,h,i)perylene	0.65 U	0.50 U	450.0 UJ
		OU1 SAMPLE	OU1 SAMPLE

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD19-02	Y2-SD19-03	Y2-SD20-01	Y2-SD20-02	Y2-SD21-01	Y2-SD21-02
Form 1 ID	SD1902	SD1903	SD2001	SD2002	18000RE	18272
Laboratory ID	38068-9	38068-10	38068-4	38068-5	1800.0	1827.2
Total Phenols (mg/kg)	13.6 J	4.4 J	16.5 J	4.9 J	10.7 J	5.2 J
Phenol	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
2-Methylphenol	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
4-Methylphenol	120.0 UJ	120.0 UJ	4.00 J	0.60 UJ	1.30 UJ	0.29 J
Nitrobenzene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
2-4-Dimethylphenol	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Naphthalene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
2-Methylnapthalene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Acenaphthylene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Acenaphthene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Dibenzofuran	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Diethylphthalate	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Fluorene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Phenanthrene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Anthracene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Carbazole	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Di-n-butylphthalate	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Fluoranthene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Pyrene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Butylbenzylphthalate	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Benzo(a)anthracene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Chrysene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
bis(2-ethylhexyl)phthalate	120.0 UJ	9.60 J	2.10 UJ	0.60 UJ	1.30 UJ	3.10 UJ
Di-n-octylphthalate	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Benzo(b)fluoranthene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Benzo(a)pyrene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Indeno(1,2,3-cd)pyrene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Dibenz(a,h)anthracene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ
Benzo(g,h,i)perylene	120.0 UJ	120.0 UJ	2.10 UJ	0.60 UJ	1.30 UJ	0.76 UJ

OU1 SAMPLE OU1 SAMPLE

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD21-03	Y2-SD22-01	Y2-SD22-02	Y2-SD23-01
Form 1 ID	18280	18493	18507	SD2301
Laboratory ID	1828.0	1849.3	1850.7	38097-8
Total Phenols (mg/kg)	3.0 J	16.5 J	4.0 J	36.9 J
Phenol	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
2-Methylphenol	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ
4-Methylphenol	0.090 J	0.81 UJ	0.56 U	2.20 UJ
Nitrobenzene	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
2-4-Dimethylphenol	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Naphthalene	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
2-Methylnapthalene	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Acenaphthylene	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Acenaphthene	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Dibenzofuran	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Diethylphthalate	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Fluorene	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Phenanthrene	0.67 UJ	0.12 J	0.56 U	2.20 UJ
Anthracene	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Carbazole	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Di-n-butylphthalate	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Fluoranthene	0.67 UJ	0.38 J	0.56 U	2.20 UJ
Pyrene	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ
Butylbenzylphthalate	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ
Benzo(a)anthracene	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ
Chrysene	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ
bis(2-ethylhexyl)phthalate	0.67 UJ	0.81 UJ	0.56 U	2.20 UJ
Di-n-octylphthalate	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ
Benzo(b)fluoranthene	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ
Benzo(a)pyrene	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ
Indeno(1,2,3-cd)pyrene	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ
Dibenz(a,h)anthracene	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ
Benzo(g,h,i)perylene	0.67 UJ	0.81 UJ	0.56 UJ	2.20 UJ

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD23-02	Y2-SD24-01	Y2SD25-01
Form 1 ID	SD2302	SD2401	18019
Laboratory ID	38097-9	38097-7	1801.9
Total Phenols (mg/kg)	25.1 J	83.4 J	4.5 J
Phenol	1.80 UJ	2.20 UJ	1.20 UJ
2-Methylphenol	1.80 UJ	2.20 UJ	1.20 UJ
4-Methylphenol	1.80 UJ	2.20 UJ	1.20 UJ
Nitrobenzene	1.80 UJ	2.20 UJ	1.20 UJ
2-4-Dimethylphenol	1.80 UJ	2.20 UJ	1.20 UJ
Naphthalene	1.80 UJ	2.20 UJ	1.20 UJ
2-Methylnapthalene	1.80 UJ	2.20 UJ	1.20 UJ
Acenaphthylene	1.80 UJ	2.20 UJ	1.20 UJ
Acenaphthene	1.80 UJ	2.20 UJ	1.20 UJ
Dibenzofuran	1.80 UJ	2.20 UJ	1.20 UJ
Diethylphthalate	1.80 UJ	2.20 UJ	1.20 UJ
Fluorene	1.80 UJ	2.20 UJ	1.20 UJ
Phenanthrene	1.80 UJ	2.20 UJ	1.20 UJ
Anthracene	1.80 UJ	2.20 UJ	1.20 UJ
Carbazole	1.80 UJ	2.20 UJ	1.20 UJ
Di-n-butylphthalate	1.80 UJ	2.20 UJ	1.20 UJ
Fluoranthene	1.80 UJ	2.20 UJ	1.20 UJ
Pyrene	1.80 UJ	2.20 UJ	1.20 UJ
Butylbenzylphthalate	1.80 UJ	2.20 UJ	1.20 UJ
Benzo(a)anthracene	1.80 UJ	2.20 UJ	1.20 UJ
Chrysene	1.80 UJ	2.20 UJ	1.20 UJ
bis(2-ethylhexyl)phthalate	1.80 UJ	2.20 UJ	1.20 UJ
Di-n-octylphthalate	0.94 J	1.90 J	1.20 UJ
Benzo(b)fluoranthene	1.80 UJ	2.20 UJ	1.20 UJ
Benzo(a)pyrene	1.80 UJ	2.20 UJ	1.20 UJ
Indeno(1,2,3-cd)pyrene	1.80 UJ	2.20 UJ	1.20 UJ
Dibenz(a,h)anthracene	1.80 UJ	2.20 UJ	1.20 UJ
Benzo(g,h,i)perylene	1.80 UJ	2.20 UJ	1.20 UJ

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD26-01	Y2-SD26-02	Y2-SD27-01	Y2-SD28-01
Form 1 ID	SD2601	SD2602RE	SD2701	18477
Laboratory ID	38111-1	38111-2RE	38111-3	1847.7
Total Phenols (mg/kg)	6.3 J	7.4 J	38.8 J	5.2 J
Phenol	0.67 UJ	0.54 UJ	R	0.90 UJ
2-Methylphenol	0.67 UJ	0.54 UJ	R	0.90 UJ
4-Methylphenol	0.67 UJ	0.54 UJ	R	0.14 J
Nitrobenzene	0.67 UJ	0.54 UJ	R	0.90 UJ
2-4-Dimethylphenol	0.67 UJ	0.54 UJ	R	0.90 UJ
Naphthalene	0.67 UJ	0.54 UJ	R	0.90 UJ
2-Methylnapthalene	0.67 UJ	0.54 UJ	R	0.90 UJ
Acenaphthylene	0.67 UJ	0.54 UJ	R	0.90 UJ
Acenaphthene	0.67 UJ	0.54 UJ	R	0.90 UJ
Dibenzofuran	0.67 UJ	0.54 UJ	R	0.90 UJ
Diethylphthalate	0.67 UJ	0.54 UJ	R	0.90 UJ
Fluorene	0.67 UJ	0.54 UJ	R	0.90 UJ
Phenanthrene	0.67 UJ	0.54 UJ	R	0.90 UJ
Anthracene	0.67 UJ	0.54 UJ	R	0.90 UJ
Carbazole	0.67 UJ	0.54 UJ	R	0.90 UJ
Di-n-butylphthalate	0.67 UJ	0.54 UJ	R	0.90 UJ
Fluoranthene	0.67 UJ	0.54 UJ	R	0.90 UJ
Pyrene	0.67 UJ	0.54 UJ	R	0.90 UJ
Butylbenzylphthalate	0.67 UJ	0.54 UJ	R	0.90 UJ
Benzo(a)anthracene	0.67 UJ	0.54 UJ	R	0.90 UJ
Chrysene	0.67 UJ	0.54 UJ	R	0.90 UJ
bis(2-ethylhexyl)phthalate	0.67 UJ	0.54 UJ	R	0.90 UJ
Di-n-octylphthalate	0.67 UJ	0.54 UJ	R	0.90 UJ
Benzo(b)fluoranthene	0.67 UJ	0.54 UJ	R	0.90 UJ
Benzo(a)pyrene	0.67 UJ	0.54 UJ	R	0.12 J
Indeno(1,2,3-cd)pyrene	0.67 UJ	0.54 UJ	R	0.90 UJ
Dibenz(a,h)anthracene	0.67 UJ	0.54 UJ	R	0.90 UJ
Benzo(g,h,i)perylene	0.67 UJ	0.54 UJ	R	0.90 UJ

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD29-01	Y2-SD30-01	Y2-SD31-01	Y2-SD32-01
Form 1 ID	18027RE	SD3001	18531	SD3201
Laboratory ID	1802.7	38050-15	1853.1	38097-6
Total Phenols (mg/kg)	1.8 J	3.5 J	0.9 J	2.6 J
Phenol	0.51 U	0.80 UJ	0.46 U	0.48 U
2-Methylphenol	0.51 U	0.80 UJ	0.46 U	0.48 U
4-Methylphenol	0.51 U	0.80 UJ	0.46 U	0.48 U
Nitrobenzene	0.51 U	0.80 UJ	0.46 U	0.48 U
2-4-Dimethylphenol	0.51 U	0.80 UJ	0.46 U	0.48 U
Naphthalene	0.51 U	0.80 UJ	0.46 U	0.48 U
2-Methylnapthalene	0.51 U	0.80 UJ	0.46 U	0.48 U
Acenaphthylene	0.51 U	0.80 UJ	0.46 U	0.48 U
Acenaphthene	0.51 U	0.80 UJ	0.46 U	0.48 U
Dibenzofuran	0.51 U	0.80 UJ	0.46 U	0.48 U
Diethylphthalate	0.51 U	0.80 UJ	0.46 U	0.48 U
Fluorene	0.51 U	0.80 UJ	0.46 U	0.48 U
Phenanthrene	0.51 U	0.80 UJ	0.46 U	0.48 U
Anthracene	0.51 U	0.80 UJ	0.46 U	0.48 U
Carbazole	0.51 U	0.80 UJ	0.46 U	0.48 U
Di-n-butylphthalate	0.51 U	0.80 UJ	0.46 U	0.48 U
Fluoranthene	0.51 U	0.80 UJ	0.46 U	0.48 U
Pyrene	0.51 U	0.80 UJ	0.46 U	0.48 U
Butylbenzylphthalate	0.51 U	0.80 UJ	0.46 U	0.48 U
Benzo(a)anthracene	0.51 UJ	0.80 UJ	0.46 U	0.48 U
Chrysene	0.51 UJ	0.80 UJ	0.46 U	0.48 U
bis(2-ethylhexyl)phthalate	0.51 UJ	0.80 UJ	0.46 U	0.63 U
Di-n-octylphthalate	0.51 U	0.80 UJ	0.46 U	0.54
Benzo(b)fluoranthene	0.51 U	0.80 UJ	0.46 U	0.48 U
Benzo(a)pyrene	0.51 U	0.80 UJ	0.061 J	0.48 U
Indeno(1,2,3-cd)pyrene	0.51 U	0.80 UJ	0.46 U	0.48 U
Dibenz(a,h)anthracene	0.51 U	0.80 UJ	0.46 U	0.48 U
Benzo(g,h,i)perylene	0.51 U	0.80 UJ	0.46 U	0.48 U

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SD33-01	Y2-SDD9+	Y2-SD34-01	Y2-SD35-01	Y2-SD36-01	Y2-SDD3+
Form 1 ID	SD3301	SDD9	SD3401	SD3501	18540	18754RE
Laboratory ID	38097-5	38097-10	38068-1	38068-2	1854.0	1875.4
Total Phenols (mg/kg)	1.9 J	NR	1.4 J	2.4 J	18.6 J	1.10 J
Phenol	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	1.10 UJ
2-Methylphenol	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	1.10 UJ
4-Methylphenol	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	1.10 UJ
Nitrobenzene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	1.10 UJ
2-4-Dimethylphenol	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	1.10 UJ
Naphthalene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.26 J	0.31 J
2-Methylnapthalene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.34 J	0.46 J
Acenaphthylene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	0.082 J
Acenaphthene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.084 J	0.14 J
Dibenzofuran	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.17 J	0.28 J
Diethylphthalate	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	1.10 UJ
Fluorene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.11 J	0.19 J
Phenanthrene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	2.40 J
Anthracene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.27 J	1.20 J
Carbazole	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.16 J	0.50 J
Di-n-butylphthalate	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	0.35 J
Fluoranthene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	3.40 J	7.10 J
Pyrene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	5.50 J	15.00 J
Butylbenzylphthalate	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	1.10 UJ
Benzo(a)anthracene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	3.10 J	6.80 J
Chrysene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	3.70 J	9.10 J
bis(2-ethylhexyl)phthalate	0.65 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	0.92 J
Di-n-octylphthalate	580 U	0.52 U	0.50 UJ	0.54 UJ	0.90 UJ	1.10 UJ
Benzo(b)fluoranthene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	4.50 J	13.00 J
Benzo(a)pyrene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	2.80 J	5.70 J
Indeno(1,2,3-cd)pyrene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	2.90 J	5.10 J
Dibenz(a,h)anthracene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	0.74 J	1.20 J
Benzo(g,h,i)perylene	0.56 U	0.52 U	0.50 UJ	0.54 UJ	2.40 J	3.80 J

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SDDI-02*	Y2-SDDI-03*	Y2-SDDI-04*	Y2-SDDI-05*	Y2-SDDI-06*	Y2-SDDI-07*	Y2-SDDI-08*
Form 1 ID	17942	17950	18132	18361	18612	18760	18884
Laboratory ID	1794.2	1795.0	1813.2	1836.1	1861.2	1876.0	1888.4
Total Phenols (mg/kg)	10 U	10 U	10 U	10 U	10 U	10 U	137
Phenol	10 U	10 U	NP	10 U	10 U	10 U	10 U
2-Methylphenol	10 U	10 U	NP	10 U	10 U	10 U	10 U
4-Methylphenol	10 U	10 U	NP	10 U	10 U	10 U	10 U
Nitrobenzene	10 U	10 U	NP	10 U	10 U	10 U	10 U
2-4-Dimethylphenol	10 U	10 U	NP	10 U	10 U	10 U	10 U
Naphthalene	10 U	10 U	NP	10 U	10 U	10 U	10 U
2-Methylnapthalene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Acenaphthene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Dibenzofuran	10 U	10 U	NP	10 U	10 U	10 U	10 U
Diethylphthalate	10 U	10 U	NP	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Phenanthrene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Carbazole	10 u	10 U	NP	10 U	10 U	10 U	10 U
Di-n-butylphthalate	0.6 J	10 U	NP	10 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Butylbenzylphthalate	10 U	10 U	NP	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	NP	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)phthalate	10 U	10 U	NP	10 U	10 U	10 U	10 U
Di-n-octylphthalate	10 U	10 U	NP	10 UJ	10 U	10 U	10 U
Benzo(b)fluoranthene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10 U	10 U	NP	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	NP	10 U	10 U	10 U	10 U

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Y2-SDDI-09*	Y2-SDDI-13*	Y2-SDDI-12*	Y2-SDDI-14*	Y2-SDDI-15*
Form 1 ID	19031	SDDI13	SDDI12	SDDI14	SDDI15
Laboratory ID	1903.1	38068-12	38050-14	38097-11	38111-14
Total Phenols (mg/kg)	16 J	NR	NR	NR	NR
Phenol	10 U	10 U	10 U	10 U	R
2-Methylphenol	10 U	10 U	10 U	10 U	R
4-Methylphenol	10 U	10 U	10 U	10 U	R
Nitrobenzene	10 U	10 U	10 U	10 U	R
2-4-Dimethylphenol	10 U	10 U	10 U	10 U	R
Naphthalene	10 U	10 U	10 U	10 U	R
2-Methylnapthalene	10 U	10 U	10 U	10 U	R
Acenaphthylene	10 U	10 U	10 U	10 U	R
Acenaphthene	10 U	10 U	10 U	10 U	R
Dibenzofuran	10 U	10 U	10 U	10 U	R
Diethylphthalate	10 U	10 U	10 U	10 U	R
Fluorene	10 U	10 U	10 U	10 U	R
Phenanthrene	10 U	10 U	10 U	10 U	R
Anthracene	10 U	10 U	10 U	10 U	R
Carbazole	10 U	10 U	10 U	10 U	R
Di-n-butylphthalate	10 U	10 U	10 U	10 U	R
Fluoranthene	10 U	10 U	10 U	10 U	R
Pyrene	10 U	10 U	10 U	10 U	R
Butylbenzylphthalate	10 U	10 U	10 U	10 U	R
Benzo(a)anthracene	10 U	10 U	10 U	10 U	R
Chrysene	10 U	10 U	10 U	10 U	R
bis(2-ethylhexyl)phthalate	10 U	10 U	10 U	10 U	R
Di-n-octylphthalate	10 U	10 U	10 U	10 UJ	R
Benzo(b)fluoranthene	10 U	10 U	10 U	10 UJ	R
Benzo(a)pyrene	10 U	10 U	10 U	10 UJ	R
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 UJ	R
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 UJ	R
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 UJ	R

Table 6
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Sediment Semi-Volatile Organic Compound Data (mg/kg)

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in April and October 1993.
2. Concentrations reported in mg/kg unless otherwise noted.
3. U = analyte was undetected.
4. J = concentration of analyte is approximate.
5. R = data was rejected.
6. RE = reanalysis.
7. + = field duplicate as follows:
   Y2-SDD2 is a field duplicate of Y2-SD05-01
   Y2-SDD3RE is a field duplicate of Y2-SD36-01
   Y2-SDD8 is a field duplicate of Y2-SD09-01
   Y2-SDD9 is a field duplicate of Y2-SD33-01.
8. * = rinse blank (concentration reported in ug/l).
9. NP = analyses not performed because the sample bottle was broken at the laboratory before the extraction was performed.
10. NR = analysis was not requested.
11. Detectable concentrations of analytes are highlighted.
12. DL = dilution.
13. D = reported concentration is the result of a dilution.

Table 7

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Pesticide/PCB Data (mg/kg)

Field Sample No.	SBY0101R-01 (0-0.5)	SBY0101R-01 (2-4)	SBY0101R-01 (35-36)	SBY0102R-01 (0-0.5)	SBY0102R-01 (2-4)	SBY0102R-01 (38-40)
Form 1 ID	1R00.5	1R24	1R3536	2R00.5	2R24	2R3840
Laboratory ID	1279.7	1280.0	1305.0	1335.1	1334.3	1333.5
Heptachlor	0.0032 UJ	0.0022 UJ	0.0019 UJ	0.0024 U	0.0020 U	0.0019 U
Dieldrin	0.0062 UJ	0.0042 UJ	0.0037 UJ	0.0046 U	0.0040 U	0.0038 U
4,4'-DDE	0.0062 UJ	0.0042 UJ	0.0037 UJ	0.0046 U	0.0040 U	0.0038 U
Endrin	0.0062 UJ	0.0042 UJ	0.0037 UJ	0.0046 U	0.0040 U	0.0038 U
Endosulfan II	0.0062 UJ	0.0042 UJ	0.0037 UJ	0.0046 U	0.0040 U	0.0038 U
Methyoxychlor	0.55 J	0.022 UJ	0.019 UJ	0.024 U	0.020 U	0.019 U
Endrin Ketone	0.0062 UJ	0.0042 UJ	0.0037 UJ	0.0046 U	0.0040 U	0.0038 U
Gamma Chlordane	0.0032 UJ	0.0022 UJ	0.0019 UJ	0.0024 U	0.0020 U	0.0019 U
Aroclor 1248	0.062 UJ	0.042 UJ	0.037 UJ	0.046 U	0.040 U	0.038 U
Aroclor 1260	0.062 UJ	0.042 UJ	0.037 UJ	0.046 U	0.040 U	0.038 U

Field Sample No.	SYB0103R-01 (0-0.5)	SBY0103R-01 (8-10)	SBY0103R-01 (50-52)	SBY0104S-01 (0-0.5)	SBY0104S-01 (2-4)	SBY0104S-01 (12-14)
Form 1 ID	3R00.5	3R810	3R5052	4S00.5	4S24	4S1214
Laboratory ID	1281.9	1342.4	1315.7	1316.5	1318.1	1317.3
Heptachlor	0.0025 UJ	0.0019 U	0.0020 U	0.0027 U	0.0019 U	0.0023 U
Dieldrin	0.0049 UJ	0.0037 U	0.0038 U	0.0052 U	0.0038 U	0.0045 U
4,4'-DDE	0.0049 UJ	0.0037 U	0.0038 U	0.0052 U	0.0038 U	0.0045 U
Endrin	0.0049 UJ	0.0037 U	0.0038 U	0.0052 U	0.0038 U	0.0045 U
Endosulfan II	0.0049 UJ	0.0037 U	0.0038 U	0.0052 U	0.0038 U	0.0045 U
Methyoxychlor	0.037 NJ	0.019 U	0.020 U	0.027 U	0.019 U	0.023 U
Endrin Ketone	0.0049 UJ	0.0037 U	0.0038 U	0.0052 U	0.0038 U	0.0045 U
Gamma Chlordane	0.0025 UJ	0.0019 U	0.0020 U	0.0027 U	0.0019 U	0.0023 U
Aroclor 1248	0.049 UJ	0.037 U	0.038 U	0.052 U	0.038 U	0.045 U
Aroclor 1260	0.049 UJ	0.037 U	0.038 U	0.052 U	0.038 U	0.045 U

Table 7
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Pesticide/PCB Data (mg/kg)

Field Sample No.	SBY0105S-01 (0-0.5)	SBY0105S-01 (2-4)	SBY0105S-01 (14-16)	SBY0105S-01 (DUP)*	SBY0106B-01 (0-0.5)	SBY0106B-01 (2-4)
Form 1 ID	5S00.5	5S24	5S1416	5SDUP	6B00.5	6B24DL
Laboratory ID	1311.4	1312.2	1313.0	1314.9	1339.4	1340.8
Heptachlor	0.0028 U	0.0021 U	0.0022 U	0.0025 U	0.0022 U	0.020 U
Dieldrin	0.0054 U	0.0041 U	0.0042 U	0.0048 U	0.0043 U	0.043 NJ
4,4'-DDE	0.0054 U	0.0041 U	0.0042 U	0.0048 U	0.0043 U	0.038 U
Endrin	0.0054 U	0.0041 U	0.0042 U	0.0048 U	0.0043 U	0.038 U
Endosulfan II	0.0054 U	0.0041 U	0.0042 U	0.0048 U	0.0043 U	0.067 NJ
Methyoxychlor	0.028 U	0.021 U	0.022 U	0.025 U	0.022 U	0.025 NJ
Endrin Ketone	0.0054 U	0.0041 U	0.0042 U	0.0048 U	0.0043 U	0.038 U
Gamma Chlordane	0.0028 U	0.0021 U	0.0022 U	0.0025 U	0.0022 U	0.17 NJ
Aroclor 1248	0.054 U	0.041 U	0.042 U	0.048 U	0.043 U	4.80 NJ
Aroclor 1260	0.054 U	0.041 U	0.042 U	0.048 U	0.043 U	4.60 NJ

Field Sample No.	SBY0106B-01 (4-6)	SBY0107B-01 (0-0.5)	SBY0107B-01 (2-4)	SBY0107B-01 (14-16)	SBY0107B-01 (DUP)*	SBY0108B-01 (0-0.5)
Form 1 ID	6B46	7B00.5	7B24	7B1416	7BDUP	8B00.5
Laboratory ID	1341.6	1343.2	1334.0	1345.9	1346.7	1347.5
Heptachlor	0.0020 U	0.0022 U	0.0021 U	0.0019 U	0.0019 U	0.00071 NJ
Dieldrin	0.0039 U	0.0043 U	0.0040 U	0.0037 U	0.0037 U	0.017 NJ
4,4'-DDE	0.0039 U	0.0043 U	0.0040 U	0.0037 U	0.0037 U	0.0047 U
Endrin	0.0039 U	0.0043 U	0.0040 U	0.0037 U	0.0037 U	0.0047 U
Endosulfan II	0.0039 U	0.0043 U	0.0040 U	0.0037 U	0.0037 U	0.0047 U
Methyoxychlor	0.020 U	0.022 U	0.021 U	0.019 U	0.019 U	0.024 U
Endrin Ketone	0.0039 U	0.0043 U	0.0040 U	0.0037 U	0.0037 U	0.028 NJ
Gamma Chlordane	0.0020 U	0.0022 U	0.0021 U	0.0019 U	0.0019 U	0.0024 U
Aroclor 1248	0.039 U	0.043 U	0.040 U	0.037 U	0.037 U	0.047 U
Aroclor 1260	0.039 U	0.043 U	0.040 U	0.037 U	0.037 U	0.047 U

Table 7
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Pesticide/PCB Data (mg/kg)

Field Sample No.	SBY108B-01 (2-4)	SBY0108B-01 (14-16)	Rinse Blank* (3/3/93)	Rinse Blank* (3/4/93)	Rinse Blank* (3/5/93)	Rinse Blank* (3/6/93)
Form 1 ID	8B24	8B1416	RB33	RB34	RB35	RB36
Laboratory ID	1348.3	1349.1	1282.7	1306.8	1319.0	1320.3
Heptachlor	0.0019 U	0.0018 U	0.05 U	0.05 U	0.05 U	0.05 U
Dieldrin	0.0038 U	0.0036 U	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDE	0.0038 U	0.0036 U	0.10 U	0.10 U	0.10 U	0.10 U
Endrin	0.0038 U	0.0036 U	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II	0.0038 U	0.0036 U	0.10 U	0.10 U	0.10 U	0.10 U
Methyoxychlor	0.019 U	0.018 U	0.50 U	0.50 U	0.50 U	0.50 U
Endrin Ketone	0.0038 U	0.0036 U	0.10 U	0.10 U	0.10 U	0.10 U
Gamma Chlordane	0.0019 U	0.0018 U	0.05 U	0.05 U	0.05 U	0.05 U
Aroclor 1248	0.038 U	0.036 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor 1260	0.038 U	0.036 U	1.0 U	1.0 U	1.0 U	1.0 U

Field Sample No.	Rinse Blank* (3/7/93)	Rinse Blank* (3/8/93)
Form 1 ID	RB37	RB38
Laboratory ID	1321.1	1338.6
Heptachlor	0.05 U	0.051 U
Dieldrin	0.10 U	0.099 U
4,4'-DDE	0.10 U	0.099 U
Endrin	0.10 U	0.099 U
Endosulfan II	0.10 U	0.099 U
Methyoxychlor	0.50 U	0.51 U
Endrin Ketone	0.10 U	0.099 U
Gamma Chlordane	0.05 U	0.051 U
Aroclor 1248	1.0 U	0.99 U
Aroclor 1260	1.0 U	0.99 U

Table 7
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Pesticide/PCB Data (mg/kg)

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in March 1993.
2. Concentrations reported in mg/kg except where otherwise noted.
3. U = analyte was not detected.
4. J = concentration of analyte is estimated.
5. N = identification of analyte is tentative.
6. * = rinse blank (concentration reported in µg/l).
7. Detectable concentrations of analytes are highlighted.
8. + = field duplicates as follows:
   SBY0105S-01(DUP) is a field duplicate of SBY0105S-01(14-16)
   SBY0107B-01(DUP) is a field duplicate of SBY0107B-01(14-16)
9. The subsurface soil sampling depth interval (feet below ground surface) is identified inside the parenthesis for each field sample number.

Table 8

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Volatile Organic Compound Data (mg/kg)

Field Sample No.	SBY0101R-01 (0-0.5)	SBY0101R-01 (2-4)	SBY0101R-01 (35-36)	SBY0102R-01 (0-0.5)	SBY0102R-01 (2-4)	SBY0102R-01 (38-40)	SBY0103R-01 (0-0.5)
Form 1 ID	101R10.5	101R124	1013536	102R10	102R12	1023840	103R10.5RE
Laboratory ID	1279.7	1280.0	1305.0	1335.1	1334.3	1333.5	1281.9
Methylene Chloride	0.019 UJ	0.013 UJ	0.011 UJ	0.014 U	0.012 U	0.006 J	15 UJ
Acetone	0.019 UJ	0.013 UJ	0.011 UJ	0.014 U	0.011 J	0.052	15 UJ
Tetrachlorethene	0.019 UJ	0.013 UJ	0.011 UJ	0.014 U	0.012 U	0.011 U	15 UJ
Toluene	0.019 UJ	0.013 UJ	0.011 UJ	0.003 J	0.003 J	0.019	15 UJ
Ethylbenzene	0.019 UJ	0.013 UJ	0.011 UJ	0.014 U	0.012 U	0.011 U	15 UJ
Total Xylenes	0.019 UJ	0.013 UJ	0.011 UJ	0.014 U	0.012 U	0.011 U	15 UJ

Field Sample No.	SBY0103R-01 (8-10)	SBY0103R-01 (50-52)	SBY0104S-01 (0-0.5)	SBY0104S-01 (2-4)	SBY0104S-01 (12-14)	SBY0105S-01 (0-0.5)	SBY105S-01 (2-4)
Form 1 ID	103R810	10550S2	104S10.5	104S12	1041224	105S10.5	105S124
Laboratory ID	1342.4	1315.7	1316.5	1318.1	1317.3	1311.4	1312.2
Methylene Chloride	0.011 U	0.011 U	0.016 UJ	0.011 U	0.014 U	0.016 UJ	0.012 UJ
Acetone	0.011 U	0.011 U	0.016 UJ	0.011 U	0.014 U	0.016 UJ	0.012 UJ
Tetrachlorethene	0.011 U	0.011 U	0.016 UJ	0.011 U	0.014 U	0.016 UJ	0.012 UJ
Toluene	0.005 J	0.005 J	0.016 UJ	0.021	0.014 U	0.016 UJ	0.012 UJ
Ethylbenzene	0.011 U	0.011 U	0.016 UJ	0.006 J	0.014 U	0.016 UJ	0.012 UJ
Total Xylenes	0.011 U	0.011 U	0.016 UJ	0.011 U	0.014 U	0.016 UJ	0.012 UJ

Table 8
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Volatile Organic Compound Data (mg/kg)

Field Sample No.	SBY0105S-01 (14-16)	SBY0105S-01 (DUP)+	SBY0106B-01 (0-0.5)	SBY0106B-01 (2-4)	SBY0106B-01 (4-6)	SBY0107B-01 (0-0.5)	SBY0107B-01 (2-4)
Form 1 ID	1041416RE	1041416DRE	106B10.5	106B12	106B1	107B10.5	310-003
Laboratory ID	1313.0	1314.9	1339.4	1340.8	1341.6	1343.2	1344.0
Methylene Chloride	0.013 UJ	0.014 UJ	0.013 U	0.019 U	0.003 J	0.013 U	0.012 U
Acetone	0.013 UJ	0.014 UJ	0.013 U	0.014 J	0.014 J	0.013 U	0.012 U
Tetrachlorethene	0.013 UJ	0.014 UJ	0.013 U	0.020	0.004 J	0.013 U	0.012 U
Toluene	0.013 UJ	0.014 UJ	0.013 U	0.036	0.037	0.013 U	0.012 U
Ethylbenzene	0.013 UJ	0.014 UJ	0.013 U	0.008 J	0.020 U	0.013 U	0.012 U
Total Xylenes	0.013 UJ	0.014 UJ	0.013 U	0.004 J	0.020 U	0.013 U	0.012 U

Field Sample No.	SBY0107B-01 (14-16)	SBY0107B-01 (DUP)+	SBY0108B-01 (0-0.5)	SBY0108 B-01 (2-4)	SBY0108 B-01 (14-16)	Rinse Blank* 3/3/93	Rinse Blank* 3/4/93	Rinse Blank* 3/5/93	Rinse Blank* 3/6/93	Rinse Blank* 3/7/93
Form 1 ID	310-103	310-203	310-303	310-403	310-503	RB33	RB34	RB35	RB36	RB37
Laboratory ID	1345.9	1346.7	1347.5	1348.3	1349.1	1282.7	1306.8	1319.0	1320.3	1321.0
Methylene Chloride	0.011 U	0.011 U	0.014 U	0.011 U	0.011 U	10 U	10 U	10 U	10 U	10 U
Acetone	0.011 U	0.011 U	0.014 U	0.011 U	0.011 U	10 U	10 U	10 U	10 U	10 U
Tetrachlorethene	0.011 U	0.011 U	0.014 U	0.011 U	0.011 U	10 U	10 U	10 U	10 U	10 U
Toluene	0.010 J	0.007 J	0.009 J	0.011 U	0.011 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	0.011 U	0.011 U	0.014 U	0.011 U	0.011 U	10 U	10 U	10 U	10 U	10 U
Total Xylenes	0.011 U	0.011 U	0.014 U	0.011 U	0.011 U	10 U	10 U	10 U	10 U	10 U

Notes:

1. Samples collected by Blasland, Bouck & Lee, Inc. in March 1993.
2. Concentrations reported in mg/kg except where otherwise noted.
3. Only detected compounds are listed.
4. U = analyte was not detected.
5. J = concentration of analyte is approximate.
6. Detectable concentrations of analytes are highlighted.
7. D = duplicate.
8. RE = reanalysis.
9. * = Rinse blank (concentration reported in µg/l).
10. + = Field duplicates as follows:
    SBY0105S-01 (DUP) is a field duplicate of SBY0105S-01 (14-16)
    SBY0107B-01 (DUP) is a field duplicate of SBY0107B-01 (14-16)
11. The subsurface soil sampling depth interval (feet below ground surface) is identified inside the parenthesis for each field sample number.

Table 9

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	SBY0101R-01 (0-0.5)	SBY0101R-01 (2-4)	SBY0101R-01 (35-36)	SBY0102R-01 (0-0.5)	SBY0102R-01 (2-4)	SBY0102R-01 (38-40)	SBY0103R-01 (0-0.5)
Form 1 ID	1R00.5	1R24	1R3536	2R00.5	2R24	2R3840	3R00.5
Laboratory ID	1279.7	1280.0	1305.0	1335.1	1334.3	1333.5	1281.9
Total Phenols (mg/kg)	2.9 J	1.0 J	0.55 UJ	10.4 J	0.61 UJ	0.57 UJ	2.3 J
1,4-Dichlorobenzene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.00 UJ
4-Methylphenol	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.00 UJ
Napthalene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	0.24 J
2-Methylnapthalene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	0.30 J
Dimethylphthalate	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.00 UJ
Acenapthylene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.00 UJ
Acenaphthene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	0.044 J
Dibenzofuran	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	0.17 J
Fluorene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.00 UJ
Diethylphthalate	0.63 UJ	0.42 UJ	0.37 UJ	0.057 J	0.031 J	0.38 U	1.00 UJ
Phenanthrene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	0.90 J
Anthracene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	0.13 J
Carbazole	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	0.12 J
Fluoranthene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	3.00 J
Pyrene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	3.00 J
Benzo(a)anthracene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.50 J
Chrysene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	2.60 J
bis(2-ethylhexyl)phthalate	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.00 UJ
Di-n-octylphthalate	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.00 UJ
Benzo(b)fluoranthene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	3.40 J
Benzo(a)pyrene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.30 J
Indeno(1,2,3-cd)pyrene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.50 J
Dibenz(a,h)anthracene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	0.38 J
Benzo(g,h,i)perylene	0.63 UJ	0.42 UJ	0.37 UJ	0.46 U	0.40 U	0.38 U	1.20 J

Table 9
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	SBY0103R-01 (8-10)	SBY0103R-01 (50-52)	SBY0104S-01 (0-0.5)	SBY0104S-01 (2-4)	SBY0104S-01 (12-14)	SBY0105S-01 (0-0.5)	SBY0105S-01 (2-4)
Form 1 ID	3R810	3R5052	4S00.5	4S24	4S1214	5S00.5	5S24
Laboratory ID	1342.4	1315.7	1316.5	1318.1	1317.3	1311.4	1312.2
Total Phenols (mg/kg)	0.56 U	0.57 UJ	4.9 J	0.57 UJ	0.68 UJ	1.7 J	1.3 J
1,4-Dichlorobenzene	0.37 U	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
4-Methylphenol	0.37 U	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Napthalene	0.37 U	0.025 J	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
2-Methylnapthalene	0.37 U	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Dimethylphthalate	0.37 U	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Acenapthylene	0.37 U	0.058 J	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Acenaphthene	0.37 U	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Dibenzofuran	0.37 U	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Fluorene	0.37 U	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Diethylphthalate	0.37 U	0.38 U	0.53 U	0.38 U	0.082 J	0.55 U	0.41 U
Phenanthrene	0.37 U	0.036 J	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Anthracene	0.37 U	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Carbazole	0.37 U	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Fluoranthene	0.37 U	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Pyrene	0.37 UJ	0.054 J	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Benzo(a)anthracene	0.37 UJ	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Chrysene	0.37 UJ	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
bis(2-ethylhexyl)phthalate	0.37 UJ	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Di-n-octylphthalate	0.37 UJ	0.10 J	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Benzo(b)fluoranthene	0.37 UJ	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Benzo(a)pyrene	0.37 UJ	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.46
Indeno(1,2,3-cd)pyrene	0.37 UJ	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Dibenz(a,h)anthracene	0.37 UJ	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U
Benzo(g,h,i)perylene	0.37 UJ	0.38 U	0.53 U	0.38 U	0.46 U	0.55 U	0.41 U

Table 9
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	SBY0105S-01 (14-16)	SBY0105S-01 (DUP)*	SBY0106B-01 (0-0.5)	SBY0106B-01 (2-4)	SBY0106B-01 (4-6)	SBY0107B-01 (0-0.5)	SBY0107B-01 (2-4)
Form 1 ID	5S1416	5SDUP	6B00.5RE	6B24	6B46	7B00.5	7B24
Laboratory ID	1313.0	1314.9	1339.4	1340.8	1341.6	1343.2	1334.0
Total Phenols (mg/kg)	0.64 UJ	0.72 UJ	4.1	2.8	0.7	3.7	1.0
1,4-Dichlorobenzene	0.43 U	0.48 U	0.88 U	0.38 U	0.39 U	0.44 U	0.41 U
4-Methylphenol	0.43 U	0.48 U	0.88 U	0.38 U	0.39 U	0.036 J	0.41 U
Napthalene	0.43 U	0.48 U	0.26 J	0.38 U	0.39 U	0.44 U	0.41 U
2-Methylnapthalene	0.43 U	0.48 U	0.32 J	0.38 U	0.39 U	0.44 U	0.41 U
Dimethylphthalate	0.43 U	0.48 U	0.88 U	0.38 U	0.39 U	0.44 U	0.41 U
Acenapthylene	0.43 U	0.48 U	0.88 U	0.38 U	0.39 U	0.44 U	0.41 U
Acenaphthene	0.43 U	0.48 U	0.040 J	0.38 U	0.39 U	0.44 U	0.41 U
Dibenzofuran	0.43 U	0.48 U	0.18 J	0.38 U	0.39 U	0.44 U	0.41 U
Fluorene	0.43 U	0.48 U	0.88 U	0.38 U	0.39 U	0.44 U	0.41 U
Diethylphthalate	0.43 U	0.48 U	0.88 U	0.38 U	0.39 U	0.44 U	0.41 U
Phenanthrene	0.43 U	0.48 U	0.65 J	0.38 U	0.39 U	0.44 U	0.41 U
Anthracene	0.43 U	0.48 U	0.88 U	0.38 U	0.39 U	0.44 U	0.41 U
Carbazole	0.43 U	0.48 U	0.88 U	0.38 U	0.39 U	0.44 U	0.41 U
Fluoranthene	0.43 U	0.48 U	1.50 J	0.083 J	0.39 U	0.44 U	0.41 U
Pyrene	0.43 U	0.48 U	2.50 J	1.30 J	0.025 J	0.44 UJ	0.41 U
Benzo(a)anthracene	0.43 U	0.48 U	1.50 J	0.38 UJ	0.39 U	0.44 UJ	0.41 U
Chrysene	0.43 U	0.48 U	2.10 J	0.38 UJ	0.39 U	0.44 UJ	0.41 U
bis(2-ethylhexyl)phthalate	0.43 U	0.48 U	0.88 UJ	0.58 J	0.39 U	0.44 UJ	0.41 U
Di-n-octylphthalate	0.43 U	0.48 U	0.88 UJ	0.38 UJ	0.39 U	0.44 U	0.41 U
Benzo(b)fluoranthene	0.43 U	0.48 U	3.30 J	0.38 UJ	0.39 U	0.44 U	0.41 U
Benzo(a)pyrene	0.059 J	0.068 J	1.30 J	0.38 UJ	0.39 U	0.44 U	0.41 U
Indeno(1,2,3-cd)pyrene	0.43 U	0.48 U	1.00 J	0.38 UJ	0.39 U	0.44 U	0.41 U
Dibenz(a,h)anthracene	0.43 U	0.48 U	0.36 J	0.38 UJ	0.39 U	0.44 U	0.41 U
Benzo(g,h,i)perylene	0.43 U	0.48 U	0.83 J	0.38 UJ	390 U	0.44 U	0.41 U

Table 9
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	SBY0107B-01 (14-16)	SBY0107B-01 (DUP)'	SBY0108B-01 (0-0.5)	SBY0108B-01 (2-4)	SBY0108B-01 (14-16)
Form 1 ID	7B1416	7BDUP	8B00.5	8B24	8B1416
Laboratory ID	1345.9	1346.7	1347.5	1348.3	1349.1
Total Phenols (mg/kg)	0.56 U	0.55 U	7.8	0.57 U	1.1
1,4-Dichlorobenzene	0.37 U	0.37 U	0.48 U	0.38 U	0.050 J
4-Methylphenol	0.37 U	0.37 U	0.48 U	0.38 U	0.36 U
Napthalene	0.37 U	0.37 U	0.11 J	0.38 U	0.36 U
2-Methylnapthalene	0.37 U	0.37 U	0.11 J	0.38 U	0.36 U
Dimethylphthalate	0.37 U	0.37 U	0.48 UJ	0.38 U	0.36 U
Acenapthylene	0.37 U	0.37 U	0.065 J	0.38 U	0.36 U
Acenaphthene	0.37 U	0.37 U	0.48 UJ	0.38 U	0.36 U
Dibenzofuran	0.37 U	0.37 U	0.072 J	0.38 U	0.36 U
Fluorene	0.37 U	0.37 U	0.077 J	0.38 U	0.36 U
Diethylphthalate	0.37 U	0.37 U	0.48 UJ	0.38 U	0.36 U
Phenanthrene	0.37 U	0.37 U	2.00 J	0.38 U	0.36 U
Anthracene	0.37 U	0.37 U	0.80 J	0.38 U	0.36 U
Carbazole	0.37 U	0.37 U	0.48 UJ	0.38 U	0.36 U
Fluoranthene	0.37 U	0.37 U	11.00 D	0.38 U	0.36 U
Pyrene	0.37 U	0.37 U	8.50 D	0.38 U	0.36 U
Benzo(a)anthracene	0.37 U	0.37 U	8.10 D	0.38 U	0.36 U
Chrysene	0.37 U	0.37 U	8.60 D	0.38 U	0.36 U
bis(2-ethylhexyl)phthalate	0.37 U	0.37 U	0.48 U	0.38 U	0.36 U
Di-n-octylphthalate	0.37 U	0.37 U	0.48 U	0.38 U	0.36 U
Benzo(b)fluoranthene	0.37 U	0.37 U	18.00 D	0.38 U	0.36 U
Benzo(a)pyrene	0.37 U	0.37 U	6.80 D	0.38 U	0.36 U
Indeno(1,2,3-cd)pyrene	0.37 U	0.37 U	4.20 D	0.38 U	0.36 U
Dibenz(a,h)anthracene	0.37 U	0.37 U	1.40	0.38 U	0.36 U
Benzo(g,h,i)perylene	0.37 U	0.37 U	3.90 JD	0.38 U	0.36 U

Table 9
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Semi-Volatile Organic Compound Data (mg/kg)

Field Sample No.	Rinse Blank*	Rinse Blank*	Rinse Blank*	Rinse Blank*	Rinse Blank*	Rinse Blank*
Form 1 ID	RB33	RB34	RB35	RB36	RB37	RB38
Laboratory ID	1282.7	1306.8	1319.0	1320.3	1321.1	1338.6
Total Phenols (mg/kg)	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U
Napthalene	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnapthalene	10 U	10 U	10 U	10 U	10 U	10 U
Dimethylphthalate	10 U	10 U	4 J	1 J	2 J	10 U
Acenapthylene	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthene	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U
Phenanthrene	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-ethylhexyl)phthalate	2 J	10 U	10 U	1 J	10 U	10 U
Di-n-octylphthalate	10 U	10 U	10 U	0.6 J	10 U	10 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U	10 U

Table 9
(Cont'd)

York Oil Superfund Site Contamination Pathways

Summary of Subsurface Soil Semi-Volatile Organic Compound Data (mg/kg)

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc. in March, 1993.
2. Concentrations reported in mg/kg except where otherwise noted.
3. Only detected compounds are listed.
4. U = analyte was not detected.
5. J = concentration of analyte is approximate.
6. R = data was rejected.
7. NA = not analyzed.
8. * = rinse blank (concentration reported in µg/l).
9. + = field duplicates as follows:
   SBY0105S-01 (DUP) is a field duplicate for SBY0105S-01 (14-16)
   SBY0107B-01 (DUP) is a field duplicate for SBY0105S-01 (14-16)
10. Detectable concentrations of analytes are highlighted.
11. The subsurface soil sampling depth interval (feet below ground surface) is identified inside the parenthesis for each field sample number.
12. D = reported concentration is the result of a dilution.

TABLE 10

York Oil superfund Site Contamination Pathways

Summary of PCB/Pesticide Analysis u1
Terrestrial Species

Sample Description u2		Lipids (%)	Total PCBs (mg/kg)	Alpha-Chlorda (mg/kg)	4,4'-DD (mg/kg)	Alpha-BHC (mg/kg)	Gamma-BHC (mg/kg)
Reference Wetland							
Masked Shrew	Y2-BS053-MS	3.52	ND	ND	ND	ND	ND
Short-tail Shrew	Y2-BS033-SS	3.56	ND	ND	0.0052	ND	ND
Red-backed vole	Y2-BS032-RV	3.7	ND	ND	ND	ND	ND
Earthworm	Y2-BS020-EW	1.64	ND	ND	ND	ND	ND
Earthworm	Y2-BS040-EW	1.57	ND	ND	ND	ND	ND
Earthworm	Y2-BS042-EW	1.53	ND	ND	ND	ND	ND
Green Frog	Y2-BS017-GF	1.94	ND	ND	ND	ND	ND
Green Frog	Y2-BS018-GF	3.48	ND	ND	ND	ND	ND
Green Frog	Y2-BS019-GF	1.97	ND	ND	ND	ND	ND
Western Wetland							
Masked Shrew	Y2-BS051-MS	4.4	0.14	0.007	0.0045	ND	ND
Short-tail Shrew	Y2-BS014-SS	3.7	1.0	0.041	ND	ND	ND
Red-backed vole	Y2-BS052-RV	3.16	ND	ND	ND	ND	ND
Earthworm	Y2-BS027-EW	1.67	1.19	ND	ND	ND	ND
Earthworm	Y2-BS047-EW	1.6	ND	ND	ND	ND	ND
Earthworm	Y2-BS048-EW	1.7	ND	ND	ND	ND	ND
Green Frog	Y2-BS004-GF	1.45	0.228	0.01	ND	0.002	ND
Green Frog	Y2-BS006-GF	1.15	0.039	ND	ND	ND	ND
Green Frog	Y2-BS026-GF	1.76	0.12	0.01	ND	ND	0.0017
Southern Wetland							
Masked Shrew	Y2-BS050-MS	4.4	0.23	ND	ND	ND	ND
Short-tail Shrew	Y2-BS025-SS	3.54	ND	ND	0.0077	ND	ND
Red-backed vole	Y2-BS024-RV	3.82	ND	ND	ND	ND	0.0027
Earthworm	Y2-BS002-EW	1.68	ND	ND	ND	ND	ND
Earthworm	Y2-BS015-EW	1.29	ND	ND	ND	ND	ND
Earthworm	Y2-BS016-EW	1.45	ND	ND	ND	ND	ND
Green Frog	Y2-BS022-GF	1.76	ND	ND	ND	ND	ND
Green Frog	Y2-BS023-GF	2.52	ND	ND	ND	ND	ND
Green Frog	Y2-BS043-GF	1.86	ND	ND	ND	ND	ND

Notes:

u1 Only detected chemicals are presented.
u2 Samples represent whole-body composite samples. Results reported on wet-weight basis.
ND = Not detected (Detection limits are 0.01 mg/kg to 0.03 mg/kg for PCB Aroclors, 0.0036 mg/kg for Alpha-Chlordane, 0.0026 mg/kg for 4,4'-DDE, and 0.001 mg/kg for Alpha-BHC).

TABLE 11

York Oil superfund Site Contamination Pathways

Summary of Inorganic Analysis
Terrestrial Species

Sample Description u2		Lipids (%)	Arsenic (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)
Reference Wetland					
Masked Shrew	Y2-BS053-MS	3.52	ND	0.25 J	0.16
Short-tail Shrew	Y2-BS033-SS	3.56	0.21 J	ND	0.13
Red-backed vole	Y2-BS032-RV	3.7	ND	2.2 J	0.03
Earthworm	Y2-BS020-EW	1.64	0.19 J	0.73 J	0.15
Earthworm	Y2-BS040-EW	1.57	0.43 J	2.3 J	0.07
Earthworm	Y2-BS042-EW	1.53	0.21 J	1.1	0.1
Green Frog	Y2-BS017-GF	1.94	ND	ND	0.03
Green Frog	Y2-BS018-GF	3.48	ND	ND	0.03
Green Frog	Y2-BS019-GF	1.97	ND	0.14 J	0.03
Western Wetland					
Masked Shrew	Y2-BS051-MS	4.4	0.17 J	0.39 J	0.15
Short-tail Shrew	Y2-BS014-SS	3.7	ND	0.37 J	0.11
Red-backed vole	Y2-BS052-RV	3.16	0.11 J	ND	0.02 J
Earthworm	Y2-BS027-EW	1.67	0.3 J	13.7	0.06
Earthworm	Y2-BS047-EW	1.6	0.89 J	0.69 J	0.15
Earthworm	Y2-BS048-EW	1.7	0.39 J	1.9	0.24
Green Frog	Y2-BS004-GF	1.45	ND	10.5 J	0.02 J
Green Frog	Y2-BS006-GF	1.15	ND	0.3 J	0.02 J
Green Frog	Y2-BS026-GF	1.76	0.12 J	0.62 J	0.04
Southern Wetland					
Masked Shrew	Y2-BS050-MS	4.4	0.11 J	1.5 J	0.05
Short-tail Shrew	Y2-BS025-SS	3.54	0.11 J	0.29 J	0.12
Red-backed vole	Y2-BS024-RV	3.82	ND	0.27 J	0.02 J
Earthworm	Y2-BS002-EW	1.68	3.1	11.4 J	0.11
Earthworm	Y2-BS015-EW	1.29	0.35	3.3 J	0.13
Earthworm	Y2-BS016-EW	1.45	0.41 J	2.2 J	0.09
Green Frog	Y2-BS022-GF	1.76	ND	0.13 J	0.03
Green Frog	Y2-BS023-GF	2.52	ND	0.12 J	0.02 J
Green Frog	Y2-BS043-GF	1.86	0.13 J	ND	0.02 J

Notes:

Results reported on wet-weight basis.
u Samples represent whole-body composite samples.
ND = Not detected (Detection limits range from 0.09 mg/kg to 0.1 mg/kg).
J = Estimated value.

TABLE 12

York Oil superfund Site Contamination Pathways

Summary of PCB/Pesticide Analysis u1
Aquatic Species

Sample Description u2		Lipids (%)	Total PCBs (mg/kg)	4,4'-DDE (mg/kg)	Gamma-BHC (mg/kg)
Reference Aquatic Site					
White Sucker	Y2-BS044-WS	1.34	ND	ND	ND
White Sucker	Y2-BS045-WS	1.49	ND	ND	ND
White Sucker	Y2-BS046-WS	1.0	ND	ND	ND
Fantail Darter	Y2-BS010-FD	4.11	0.067	0.007	ND
Fantail Darter	Y2-BS011-FD	4.47	0.068	0.0066	ND
Fantail Darter	Y2-BS012-FD	5.43	0.054	0.0046	ND
Adjacent Aquatic Site					
White Sucker	Y2-BS034-WS	1.03	ND	ND	ND
White Sucker	Y2-BS035-WS	0.77	ND	ND	ND
White Sucker	Y2-BS036-WS	0.78	ND	ND	ND
Fantail Darter	Y2-BS037-FD	4.26	0.062	0.0065	ND
Fantail Darter	Y2-BS038-FD	3.97	ND	0.0068	ND
Fantail Darter	Y2-BS039-FD	3.54	0.037	0.0056	ND
Wetland Boundary Aquatic Site					
White Sucker	Y2-BS104-WS	0.98	ND	ND	ND
White Sucker	Y2-BS105-WS	1.25	ND	ND	0.0026
White Sucker	Y2-BS106-WS	1.12	ND	ND	ND
Johnny Darter	Y2-BS101-TD	3.69	0.086	0.0049	ND
Johnny Darter	Y2-BS102-TD	2.89	0.074	0.0046	ND
Johnny Darter	Y2-BS103-TD	2.81	0.066	0.0041	ND

Notes:

u1 Only detected chemicals are presented. Results are reported on a wet-weight basis.
u2 Samples represent whole-body composite samples for darters, and individual skin-on fillets for white suckers.
ND = Not detected (Detection limits are 0.01 mg/kg to 0.03 mg/kg for PCB Aroclors, and 0.0026 mg/kg for 4,4'DDE and gamma-BHC).

TABLE 13

York Oil superfund Site Contamination Pathways

Summary of Inorganic Analysis
Aquatic Species

Sample Description u1		Lipids (%)	Arsenic (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)
Reference Aquatic Site					
White Sucker	Y2-BS044-WS	1.34	ND	ND	0.15
White Sucker	Y2-BS045-WS	1.49	ND	ND	0.18
White Sucker	Y2-BS046-WS	1.0	0.19 J	ND	0.19
Fantail Darter	Y2-BS010-FD	4.11	ND	0.12 J	0.14
Fantail Darter	Y2-BS011-FD	4.47	ND	ND	0.12
Fantail Darter	Y2-BS012-FD	5.43	ND	ND	0.14
Adjacent Aquatic Site					
White Sucker	Y2-BS034-WS	1.03	0.16 J	0.37 J	0.29
White Sucker	Y2-BS035-WS	0.77	ND	0.12 J	0.26
White Sucker	Y2-BS036-WS	0.78	ND	ND	0.17
Fantail Darter	Y2-BS037-FD	4.26	ND	ND	0.14
Fantail Darter	Y2-BS038-FD	3.97	0.1 J	ND	0.16
Fantail Darter	Y2-BS039-FD	3.54	ND	ND	0.12
Wetland Boundary Aquatic Site					
White Sucker	Y2-BS104-WS	0.98	ND	0.39	0.24
White Sucker	Y2-BS105-WS	1.25	0.11 J	0.12 J	0.14
White Sucker	Y2-BS106-WS	1.12	ND	0.25 J	0.19
Johnny Darter	Y2-BS101-TD	3.69	ND	0.20 J	0.2
Johnny Darter	Y2-BS102-TD	2.89	ND	0.21 J	0.17
Johnny Darter	Y2-BS103-TD	2.81	ND	0.17 J	0.18

Notes:

u Samples represent whole-body composite samples for darters, and individual skin-on fille for white suckers. Results are reported on a wet-weight basis.
ND = Not detected (Detection limits range from 0.09 mg/kg to 0.1mg/kg).
J = Estimated value.

TABLE 14

CHEMICALS OF POTENTIAL CONCERN
YORK OIL SITE CONTAMINATION PATHWAYS

CHEMICAL	SURFACE WATER	SHALLOW SEDIMENT			SURFACE SOIL				GROUND WATER
		Southern Wetland	Western Wetland	Northwestern Wetland	Southern Wetland	Western Wetland	North of Site Proper	East of Site Proper	
VOLATILE ORGANICS									
Acetone	ND	X	X	X	X	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	X
Bromomethane	ND	X	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	X	X	X	ND	ND	ND	ND	ND
Chloromethane	ND	X	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	X
cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	X
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	X
Methylene chloride	ND	ND	ND	X	ND	ND	ND	ND	ND
Toluene	ND	X	X	ND	X	ND	ND	X	•
SEMI-VOLATILE ORGANICS									
bis(2-Ethylhexyl) phthalate	ND	ND	ND	X	ND	ND	ND	X	ND
Butyl benzylphthalate	ND	ND	ND	X	ND	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND	ND	ND	ND	X	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	X	ND
Di-n-butylphthalate	ND	ND	ND	ND	ND	ND	ND	X	ND
Di-n-octyl phthalate	ND	ND	X	X	ND	ND	ND	ND	ND
Diethyl phthalate	ND	ND	ND	ND	X	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	X	ND	ND	ND	ND	ND	X
2-Methylphenol	ND	ND	X	ND	ND	ND	ND	ND	ND
4-Methylphenol	ND	X	X	ND	X	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	X	ND
Napthalene	ND	ND	ND	ND	ND	ND	ND	X	ND
Phenol	ND	ND	X	X	ND	ND	ND	ND	ND
tPAHs	ND	X	X	ND	ND	X	X	X	ND
cPAHs	ND	ND	ND	ND	ND	ND	X	X	ND

TABLE 14

CHEMICALS OF POTENTIAL CONCERN continued
YORK OIL SITE CONTAMINATION PATHWAYS

CHEMICAL	SURFACE WATER	SHALLOW SEDIMENT			SURFACE SOIL				GROUND WATER
		Southern Wetland	Western Wetland	Northwestern Wetland	Southern Wetland	Western Wetland	North of Site Proper	East of Site Proper	
PESTICIDES/PCBs									
Aldrin	ND	ND	X	ND	ND	ND	ND	ND	ND
alpha-BHC	ND	ND	ND	ND	ND	X	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	X	ND	ND
gamma-BHC	ND	ND	ND	ND	X	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	X	ND	ND	ND	X	ND
4,4'-DDE	ND	X	ND	X	X	ND	ND	X	ND
4,4'-DDT	ND	ND	X	X	ND	ND	ND	X	ND
Dieldrin	ND	ND	ND	ND	ND	ND	ND	X	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	X	ND	ND
Endrin	ND	ND	X	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	X	X	ND	ND	ND	X	ND
Heptachlor	ND	ND	ND	ND	ND	ND	ND	X	ND
Heptachlor epoxide	ND	ND	ND	ND	ND	X	ND	ND	ND
Methoxychlor	ND	ND	X	ND	X	ND	ND	X	•
PCBs	ND	ND	X	X	ND	ND	ND	ND	ND
INORGANICS									
Aluminum	ND	•	•	•	X	X	X	X	•
Antimony	ND	ND	ND	X	ND	ND	ND	ND	X
Arsenic	ND	•	•	•	•	•	X	X	X
Barium	•	•	•	•	X	X	X	X	•
Beryllium	ND	X	ND	X	X	ND	ND	X	•
Cadmium	ND	X	ND	X	ND	ND	ND	ND	X
Chromium	ND	•	•	•	X	X	X	X	•
Cobalt	ND	X	X	X	X	X	X	X	•
Copper	X	•	•	•	•	•	X	X	•
Cyanide	ND	X	ND	X	ND	ND	ND	ND	ND
Lead	ND	•	X	X	X	X	X	X	•
Manganese	X	X	X	X	•	•	X	X	•
Mercury	ND	X	X	X	X	X	ND	X	•
Nickel	ND	•	•	•	X	X	X	X	•
Selenium	ND	ND	X	X	X	ND	ND	X	ND
Silver	ND	X	ND	X	•	•	•	•	ND
Vanadium	ND	X	X	X	•	•	X	X	•
Zinc	ND	•	X	X	•	•	X	•	X

ND - Not Detected
• - Detected but not chosen as a chemical of potential concern
X - Selected as a chemical of potential concern

TABLE 15

SUMMARY OF COMPLETE EXPOSURE PATHWAYS
YORK OIL SITE CONTAMINATION PATHWAYS

Potentially Exposed Population	Exposure Route, Medium, and Exposure Point	Pathway Selected for Evaluation?	Reason for Selection or Exclusion
Current Use Scenario			
Recreationalists	Ingestion of and dermal contact with chemicals in surface soil.	Yes	Contaminated surface soil in the wetland areas south and west of the site may be encountered by recreationalists.
Recreationalists	Ingestion of and dermal contact with chemicals in shallow sediment.	Yes	Recreationalists may encounter contaminated shallow sediment in the wetland areas south, west and northwest of the site.
Recreationalists	Dermal contact with chemicals in surface water.	Yes	Recreationalists may encounter contaminated surface water in the wetland area west of the site. Although surface water in Lawrence Brook and the wetland area south of the site may be encountered by recreationalists, limited, low-level contamination indistinguishable from the reference aquatic site was detected.
Recreationalists	Ingestion of chemicals in fish.	No	Although fish from Lawrence Brook may be consumed by fisherman, limited, low-level contamination indistinguishable from that in fish in the reference aquatic site was detected.
Utility/Maintenance Workers	Ingestion of and dermal contact with chemicals in surface soil.	Yes	Contaminated surface soil north and east of the site may be encountered by workers.
Utility/Maintenance Workers	Ingestion of and dermal contact with chemicals in surface soil, subsurface soil, sediment and surface water.	No	Land uses allowing such contact in the wetland areas south, west and northwest of the site are unlikely.

TABLE 15

SUMMARY OF COMPLETE EXPOSURE PATHWAYS
YORK OIL SITE CONTAMINATION PATHWAYS

Potentially Exposed Population	Exposure Route, Medium, and Exposure Point	Pathway Selected for Evaluation?	Reason for Selection or Exclusion
Current Use Scenario			
Recreationalists, Utility/Maintenance Workers, Off-Site Residents	Inhalation of chemicals from volatilization or fugitive dust generation.	No	Limited low-level VOC contamination, intermittent release and low exposure potential are such that inhalation of volatilized chemicals is unlikely. Fugitive dust is unlikely to be generated in the wetland areas throughout much of the year by either natural or mechanical means.
Future Use Scenario			
On-Site Workers and Residents	Ingestion of and dermal contact with chemicals in soil, sediment and surface water. Inhalation of chemicals from volatilization or fugitive dust generation.	No	Commercial/industrial or residential development in federal and New York State regulated wetlands is unlikely.
Off-Site Residents	Ingestion of, dermal contact with and inhalation of chemicals in groundwater.	Yes	Residents in the vicinity of OU2 with private water supplies may be exposed to contaminated groundwater.

TABLE 16

MATRIX OF POTENTIAL EXPOSURE PATHWAYS
YORK OIL SITE CONTAMINATION PATHWAYS

Exposure Medium/Exposure Route	Recreationalists	Utility/Maintenance Worker	Residents
Surface Soil			
Ingestion	T	A	--
Dermal Contact	T	A	--
Shallow Sediment			
Ingestion	T	--	--
Dermal Contact	T	--	--
Surface Water			
Dermal Contact	T	--	--
Groundwater			
Ingestion	--	--	L, C
Dermal Contact	--	--	L, C
Inhalation	--	--	L, C

Notes:

L = Lifetime exposure for adults
A = Exposure to adults in a non-residential scenario
T = Teenaged Adolescents
C = Children

TABLE 17
SUMMARY OF NON-CARCINOGENIC AND CARCINOGENIC RISKS
YORK OIL SITE CONTAMINATION PATHWAYS

	EXPOSURE POPULATION AND PATHWAY	HAZARD INDEX[1]	CANCER RISK[2]
Current Use Scenario			
	ADOLESCENT RECREATIONALISTS		
	Ingestion of Sediment from the Southern Wetland	3E-03	4E-08
	Dermal Contact with Sediment from the Southern Wetland	8E-04	
	Ingestion of Surface Soil from the Southern Wetland	4E-03	4E-08
	TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	**8E-03**	**8E-08**
	ADOLESCENT RECREATIONALISTS		
	Ingestion of Sediment from the Western Wetland	1E-01	2E-06
	Dermal Contact with Sediment from the Western Wetland	2E-01	2E-06
	Dermal Contact with Surface Water from the Western Wetland	6E-03	
	Ingestion of Surface Soil from the Western Wetland	1E-03	2E-10
	TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	**3E-01**	**4E-06**
	ADOLESCENT RECREATIONALISTS		
	Ingestion of Sediment from the Northwestern Wetland	7E-02	7E-07
	Dermal Contact with Sediment from the Northwestern Wetland	6E-02	7E-07
	TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	**1E-01**	**1E-06**
	ADOLESCENT RECREATIONALISTS		
	Ingestion of Sediment upgradient of the Northwestern Wetland	2E-03	
	TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	**2E-03**	
	UTILITY/MAINTENANCE WORKER		
	Ingestion of Surface Soil North of Site Proper	2E-02	8E-08
	TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	**2E-02**	**8E-08**
	UTILITY/MAINTENANCE WORKER		
	Ingestion of Surface Soil East of Site Proper	5E-02	8E-07
	TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	**5E-02**	**8E-07**
Future Use Scenario			
	RESIDENT ADULT		
	Ingestion of Groundwater	3E+00	8E-05[3]
	Dermal Contact with Groundwater	8E-02	3E-07[3]
	Inhalation of Chemicals Volatilized from Groundwater	1E-02	4E-07[3]
	TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	**3E+00**	**8E-05**
	RESIDENT CHILD		
	Ingestion of Groundwater	6E+00	3E-05
	Dermal Contact with Groundwater	1E-01	9E-08
	Inhalation of Chemicals Volatilized from Groundwater	4E-02	2E-07
	TOTAL PATHWAY HAZARD INDEX/CANCER RISK:	**6E+00**	**3E-05**

1 Non-carcinogenic risks
2 Carcinogenic risks
3 Based on 30-year exposure, 6 years of child exposure plus 24 years of adult exposure.

Table 18
Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
ORGANICS													
Acenaphthene	-	-	-	-	-	-	-	-	0.06	-	-	-	-
Acifluorfen	T	zero	-	F	2	2	0.1	0.4	0.013	0.4	-	0.1	B2
Acrylamide	F	zero	TT	F	1.5	0.3	0.02	0.07	0.0002	0.007	-	0.001	B2
Acrylonitrile	T	zero	-	D	-	-	-	-	-	-	-	0.006	B1*
Adipate (diethylhexyl)	F	0.4	0.4	-	20	20	20	60	0.6	20	0.4	3	C
Alachlor	F	zero	0.002	F	0.1	0.1	-	-	0.01	0.4	-	0.04	B2
Aldicarb**	D	0.007	0.007	D	-	-	-	-	0.001	0.035	0.007	-	D
Aldicarb sulfone**	D	0.007	0.007	D	-	-	-	-	0.001	0.035	0.007	-	D
Aldicarb sulfoxide**	D	0.007	0.007	D	-	-	-	-	0.001	0.035	0.007	-	D
Aldrin	-	-	-	D	0.0003	0.0003	0.0003	0.0003	0.00003	0.001	-	0.0002	B2
Ametryn	-	-	-	F	9	9	0.9	3	0.009	0.3	0.06	-	D
Ammonium sulfamate	-	-	-	F	20	20	20	80	0.28	8	2	-	D
Anthracene (PAH)***	-	-	-	-	-	-	-	-	0.3	-	-	-	D
Atrazine	F	0.003	0.003	F	0.1	0.1	0.05	0.2	0.035	0.2*	0.003*	-	C
Baygon	-	-	-	F	0.04	0.04	0.04	0.1	0.004	0.1	0.003	-	C
Bentazon	T	-	-	F	0.3	0.3	0.3	***1.0***	***0.032***	***1.0***	***0.2****	-	D
Benz(a)anthracene (PAH)	-	-	-	-	-	-	-	-	-	-	-	-	B2
Benzene	F	zero	0.005	F	0.2	0.2	-	-	-	-	-	0.1	A
Benzo(a)pyrene (PAH)	F	zero	0.0002	-	-	-	-	-	-	-	-	0.0002*	B2*
Benzo(b)fluoranthene (PAH)	-	-	-	-	-	-	-	-	-	-	-	-*	B2
Benzo(g,h,i)perylene (PAH)	-	-	-	-	-	-	-	-	-	-	-	-	D
Benzo(k)fluoranthene (PAH)	-	-	-	-	-	-	-	-	-	-	-	-*	B2
bis-2-Chloroisopropyl ether	-	-	-	F	4	4	4	13	0.04	1	0.3	-	D
Bromacil	L	-	-	F	5	5	3	9	0.13	5	0.09	-	C
Bromobenzene	L	-	-	D	-	-	-	-	-	-	-	-	-

* Under review.
**NOTE: The HA value or the MCLG/MCL value for any two or more of these three chemicals should remain at 0.007 mg/L because of similar mode of action.
***PAH = Polyaromatic hydrocarbon
*See 40CFR Parts 141 and 142
Revised value based on change in RfD
NOTE: Anthracene and Benzo(g,h,i)perylene — not proposed in Phase V.
NOTE: Changes from the last version are noted in Italic and Bold Face print.

Table 18
Drinking Water Standards and Health Advisories *continued*

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Bromochloroacetonitrile	T	-	-	D	-	-	-	-	-	-	-	-	-
Bromochloromethane	-	-	-	F	0.1	1	0.1	0.5	0.013	0.05	0.01	-	-
Bromodichloromethane (THM)	P	zero	0.1*/0.08*	D	6	6	4	13	0.02	0.7	-	0.06	B2
Bromoform (THM)	P	zero	0.1*/0.08*	D	5	2	2	6	0.02	0.7	-	0.4	B2
Bromomethane	T	-	-	D	0.1	0.1	0.1	0.5	0.001	*0.05*	0.01	-	D
Butyl benzyl phthalate (PAE)***	-	-	-	-	-	-	-	-	0.2	7	-	-	C
Butylate	-	-	-	F	2	2	1	4	0.05	2	0.35	-	D
Butylbenzene n-	-	-	-	D	-	-	-	-	-	-	-	-	-
Butylbenzene sec-	-	-	-	D	-	-	-	-	-	-	-	-	-
Butylbenzene tert-	-	-	-	D	-	-	-	-	-	-	-	-	-
Carbaryl	-	-	-	F	1	1	1	1	0.1	4	0.7	-	D
Carbofuran	F	0.04	0.04	F	0.05	0.05	0.05	0.2	0.005	0.2	0.04	-	E
Carbon tetrachloride	F	zero	0.005	F	4	0.2	0.07	0.3	0.0007	0.03	-	0.03	B2
Carboxin	-	-	-	F	1	1	1	4	0.1	4	0.7	-	D
Chloral hydrate	P	0.04	0.06**	D	7	0.2	0.2	0.6	0.0002	0.06	0.06	-	C
Chloramben	-	-	-	F	3	3	0.2	0.5	0.015	0.5	0.1	-	D
Chlordane	F	zero	0.002	F	0.06	0.06	-	-	0.00006	0.002	-	0.003	B2
Chlorodibromomethane (THM)	P	0.06	0.1*/0.08*	D	6	6	2	8	0.02	0.7	0.06	-	C
Chloroethane	L	-	-	D	-	-	-	-	-	-	-	-	B
Chloroform (THM)	P	zero	0.1*/0.08*	D	4	4	0.1	0.4	0.01	0.4	-	0.6	B2
Chloromethane	L	-	-	F	9	0.4	0.4	1	0.004	0.1	0.003	-	C
Chlorophenol (2-)	-	-	-	D	0.5	0.5	0.5	2.0	0.005	0.2	0.04	-	D
p-Chlorophenyl methyl sulfide/sulfone/sulfoxide	-	-	-	**	-	-	-	-	-	-	-	-	D
Chloropicrin	L	-	-	-	-	-	-	-	-	-	-	-	-
Chlorothalonil	-	-	-	F	0.2	0.2	0.2	0.5	0.015	0.5	-	0.15	B2
Chlorotoluene o-	L	-	-	F	2	2	2	7	0.02	0.7	0.1	-	D
Chlorotoluene p-	L	-	-	F	2	2	2	7	0.02	0.7	0.1	-	D
Chlorpyrifos	-	-	-	F	0.03	0.03	0.03	0.1	0.003	0.1	0.02	-	D
Chrysene (PAH)	-	-	-	-	-	-	-	-	-	-	-	-***	B2
Cyanazine****	T	0.001	-	D	0.1	0.1	0.02	0.07	0.002	0.07	0.001****	-	C

* Current MCL **A HA will not be developed due to insufficient data; a "Database Deficiency Report has been published.

* 1994 Proposed rule for Disinfectants and Disinfection By-products : Total for all THMs combined cannot exceed the 0.08 level.

**Total for all haloacetic acids cannot exceed 0.06 level. ***PAE = phthalate acid ester ****Draft HA updated for the Phase VIB regulation, which has been postponed. It includes the change of the cancer classification from D to C, thus justifying the use of an additional 10-fold safety factor for the lifetime HA.

Table 18
Drinking Water Standards and Health Advisories *continued*

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Cyanogen chloride	T	-	-	-	-	-	-	-	-	-	-	-	-
Cymene p-	-	-	-	D	-	-	-	-	-	-	-	-	-
2,4-D	F	0.07	0.07	F	1	0.3	0.1	0.4	0.01	0.4	0.07	-	D
DCPA (Dacthal)	L	-	-	F	80	80	5	20	*0.01*	-	-	-	D
Dalapon	F	0.2	0.2	F	3	3	0.3	0.9	0.026	0.9	0.2	-	D
Di[2-ethylhexyl]adipate	F	0.4	0.4	-	20	20	20	60	0.6	20	0.4	3	C
Diazinon	-	-	-	F	0.02	0.02	0.005	0.02	0.00009	0.003	0.0006	-	E
Dibromoacetonitrile	L	-	-	D	2	2	2	8	0.02	0.8	0.02	-	C
Dibromochloropropane (DBCP)	F	zero	0.0002	F	0.2	0.05	-	-	-	-	-	0.003	B2
Dibromomethane	L	-	-	-	-	-	-	-	-	-	-	-	D
Dibutyl phthalate (PAE)	-	-	-	-	-	-	-	-	0.1	4	-	-	D
Dicamba	L	-	-	F	0.3	0.3	0.3	1	0.03	1	0.2	-	D
Dichloroacetaldehyde	L	-	-	D	-	-	-	-	-	-	-	-	-
Dichloroacetic acid	P	zero	0.06**	D	1	1	1	4	0.004	0.1	-	**	B2
Dichloroacetonitrile	L	-	-	D	1	1	0.8	3	0.008	0.3	0.006	-	C
Dichlorobenzene o-	F	0.6	0.6	F	9	9	9	30	0.09	3	0.6	-	D
Dichlorobenzene m- *	-	-	-	F	9	9	9	30	0.09	3	0.6	-	D
Dichlorobenzene p-	F	0.075	0.075	F	10	10	10	40	0.1	4	0.075	-	C
Dichlorodifluoromethane	L	-	-	F	40	40	9	30	0.2	5	1	-	D
Dichloroethane (1,2-)	F	zero	0.005	F	0.7	0.7	0.7	2.6	-	-	-	0.04	B2
Dichloroethylene (1,1-)	F	0.007	0.007	F	2	1	1	4	0.009	0.4	0.007	-	C
Dichloroethylene (cis-1,2-)	F	0.07	0.07	F	4	3	3	11	0.01	0.4	0.07	-	D
Dichloroethylene (trans-1,2-)	F	0.1	0.1	F	20	2	2	6	0.02	0.6	0.1	-	D
Dichloromethane	F	zero	0.005	F	10	2	-	-	0.06	2	-	0.5	B2
Dichlorophenol (2,4-)	-	-	-	D	0.03	0.03	0.03	0.1	0.003	0.1	0.02	-	D
Dichloropropane (1,1-)	-	-	-	D	-	-	-	-	-	-	-	-	-
Dichloropropane (1,2-)	F	zero	0.005	F	-	0.09	-	-	-	-	-	0.06	B2
Dichloropropane (1,3-)	L	-	-	D	-	-	-	-	-	-	-	-	-

* The values for m-dichlorobenzene are based on data for o-dichlorobenzene.
** A quantitative risk estimate has not been determined.
** Total for all haloacetic acids cannot exceed 0.06 level.

Table 18
Drinking Water Standards and Health Advisories *continued*

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Dichloropropane (2,2-)	L	-	-	D	-	-	-	-	-	-	-	-	-
Dichloropropene (1,1-)	L	-	-	D	-	-	-	-	-	-	-	-	-
Dichloropropene (1,3-)	T	zero	-	F	0.03	0.03	0.03	0.09	0.0003	0.01	-	0.02	B2
Dieldrin	-	-	-	F	0.0005	0.0005	0.0005	0.002	0.00005	0.002	-	0.0002	B2
Diethyl phthalate (PAE)	-	-	-	D	-	-	-	-	0.8	30	5	-	D
Diethylene glycol dinitrate	-	-	-	*	-	-	-	-	-	-	-	-	-
Di(2-ethylhexyl)phthalate (PAE)	F	zero	0.006	D	-	-	-	-	0.02	0.7	-	0.3	B2
Diisopropyl methylphosphonate	-	-	-	F	8	8	8	30	0.08	3	0.6	-	D
Dimethrin	-	-	-	F	10	10	10	40	0.3	10	2	-	D
Dimethyl methylphosphonate	-	-	-	F	2	2	2	6	0.2	7	0.1	0.7	C
Dimethyl phthalate (PAE)	-	-	-	-	-	-	-	-	-	-	-	-	D
1,3-Dinitrobenzene	-	-	-	F	0.04	0.04	0.04	0.14	0.0001	0.005	0.001	-	D
Dinitrotoluene (2,4-)	L	-	-	F	0.50	0.50	0.30	1	0.002	0.1	-	0.005	B2
Dinitrotoluene (2,6-)	L	-	-	F	0.40	0.40	0.40	1	0.001	0.04	-	0.005	B2
tg 2,6 & 2,4 dinitrotoluene **	-	-	-	-	-	-	-	-	-	-	-	0.005	B2
Dinoseb	F	0.007	0.007	F	0.3	0.3	0.01	0.04	0.001	0.04	0.007	-	D
Dioxane p-	-	-	-	F	4	0.4	-	-	-	-	-	0.7	B2
Diphenamid	-	-	-	F	0.3	0.3	0.3	1	0.03	1	0.2	-	D
Diphenylamine	-	-	-	F	1	1	0.3	1	0.03	1	0.2	-	D
Diquat	F	0.02	0.02	-	-	-	-	-	0.0022	0.08	0.02	-	D
Disulfoton	-	-	-	F	0.01	0.01	0.003	0.009	0.00004	0.001	0.0003	-	E
Dithiane (1,4-)	-	-	-	F	0.4	0.4	0.4	1	0.01	0.4	0.08	-	D
Diuron	-	-	-	F	1	1	0.3	0.9	0.002	0.07	0.01	-	D
Endothall	F	0.1	0.1	F	0.8	0.8	0.2	0.2	0.02	0.7	0.1	-	D
Endrin	F	0.002	0.002	F	0.02	0.02	0.003	0.01	0.0003	0.01	0.002	-	D
Epichlorohydrin	F	zero	TT	F	0.1	0.1	0.07	0.07	0.002	0.07	-	0.4	B2
Ethylbenzene	F	0.7	0.7	F	30	3	1	3	0.1	3	0.7	-	D
Ethylene dibromide (EDB)	F	zero	0.00005	F	0.008	0.008	-	-	-	-	-	0.00004	B2
Ethylene glycol	-	-	-	F	20	6	6	20	2	40	7	-	D
ETU	L	-	-	F	0.3	0.3	0.1	0.4	0.00008	0.003	-	0.03	B2
Fenamiphos	-	-	-	F	0.009	0.009	0.005	0.02	0.00025	0.009	0.002	-	D

* An HA will not be developed due to insufficient data; a "Database Deficiency Report" has been published.
** tg = technical grade

Table 18
Drinking Water Standards and Health Advisories *continued*

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Fluometron	-	-	-	F	2	2	2	5	0.013	0.4	0.09		D
Fluorene (PAH)	-	-	-	-	-	-	-	-	0.04	-	-	-	D
Fluorotrichloromethane	L	-	-	F	7	7	3	10	0.3	10	2	-	D
Fog Oil	-	-	-	D	-	-	-	-	-	-	-	-	D
Fonofos	-	-	-	F	0.02	0.02	0.02	0.07	0.002	0.07	0.01	-	D
Formaldehyde	D	-	-	D	10	5	5	20	0.15	5	1	-	B1**
Gasoline, unleaded (benzene)	-	-	-	D	-	-	-	-	-	-	0.005	-	-
Glyphosate	F	0.7	0.7	F	20	20	1	1	0.1	4	0.7	-	E
Heptachlor	F	zero	0.0004	F	0.01	0.01	0.005	0.005	0.0005	0.02	-	0.0008	B2
Heptachlor epoxide	F	zero	0.0002	F	0.01	-	0.0001	0.0001	1E-5	0.0004	-	0.0004	B2
Hexachlorobenzene	F	zero	0.001	F	0.05	0.05	0.05	0.2	0.0008	0.03	-	0.002	B2
Hexachlorobutadiene	T	0.001	-	F	0.3	0.3	0.1	0.4	0.002	0.07	0.001	-	C
Hexachlorocyclopentadiene	F	0.05	0.05	-	-	-	-	-	0.007	0.2	-	-	D
Hexachloroethane	L	-	-	F	5	5	0.1	0.5	0.001	0.04	0.001	-	C
Hexane (n-)	-	-	-	F	10	4	4	10	-	-	-	-	D
Hexazinone	-	-	-	F	3	3	3	9	0.033*	1*	0.2*	-	D
HMX	-	-	-	F	5	5	5	20	0.05	2	0.4	-	D
Indeno(1,2,3,-c,d)pyrene (PAH)	-	-	-	D	-	-	-	-	-	-	-	-***	B2
Isophorone	L	-	-	F	15	15	15	15	0.2	7	0.1	4	C
Isopropyl methylphosphonate	-	-	-	D	30	30	30	100	0.1	4.0	0.7	-	D
Isopropylbenzene	-	-	-	D	-	-	-	-	-	-	-	-	-
Lindane	F	0.0002	0.0002	F	1	1	0.03	0.1	0.0003	0.01	0.0002	-	C
Malathion	-	-	-	F	0.2	0.2	0.2	0.8	0.02	0.8	0.2	-	D
Maleic hydrazide	-	-	-	F	10	10	5	20	0.5	20	4	-	D
MCPA	-	-	-	F	0.1	0.1	0.1	0.4	0.0015	0.05	0.01	-	E
Methomyl	L	-	-	F	0.3	0.3	0.3	0.3	0.025	0.9	0.2	-	D
Methoxychlor	F	0.04	0.04	F	0.05	0.05	0.05	0.2	0.005	0.2	0.04	-	D
Methyl ethyl ketone*	-	-	-	F	-	-	-	-	-	-	-	-	D
Methyl parathion	-	-	-	F	0.3	0.3	0.03	0.1	0.00025	0.009	0.002	-	D

* Under review.
** Carcinogenicity based on inhalation exposure.
***See 40CFR Parts 141 and 142

Table 18
Drinking Water Standards and Health Advisories *continued*

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Methyl tert butyl ether	L	-	-	D	24	24	3	12	0.03	1.0	0.02-0.2*		C***
Metolachlor	L	-	-	F	2	2	2	5.0	0.1	3.5	0.07	-	C
Metribuzin	L	-	-	F	5	5	0.3	0.5	0.013**	0.5	0.1	-	D
Monochloroacetic acid	L	-	-	D	-	-	-	-	-	-	-	-	-
Monochlorobenzene	F	0.1	0.1	F	2	2	2	7	0.02	0.7	0.1	-	D
Naphthalene	-	-	-	F	0.5	0.5	0.4	1	0.004	0.1	0.02	-	D
Nitrocellulose (non-toxic)	-	-	-	F	-	-	-	-	-	-	-	-	-
Nitroguanidine	-	-	-	F	10	10	10	40	0.1	4	0.7	-	D
Nitrophenol p-	-	-	-	F	0.8	0.8	0.8	3	0.008	0.3	0.06	-	D
Oxamyl (Vydate)	F	0.2	0.2	F	0.2	0.2	0.2	0.9	0.025	0.9	0.2	-	E
Paraquat	-	-	-	F	0.1	0.1	0.05	0.2	0.0045	0.2	0.03	-	E
Pentachloroethane	-	-	-	D	-	-	-	-	-	-	-	-	-
Pentachlorophenol	F	zero	0.001	F	1	0.3	0.3	1	0.03	1	-	0.03	B2
Phenanthrene (PAH)	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	D	6	6	6	20	0.6	20	4	-	D
Picloram	F	0.5	0.5	F	20	20	0.7	2	0.07	2	0.5	-	D
Polychlorinated biphenyls (PCBs)	F	zero	0.0005	P	-	-	-	-	-	-	-	0.0005	B2
Prometon	L	-	-	F	0.2	0.2	0.2	0.5	0.015*	0.5*	0.1*	-	D
Pronamide	-	-	-	F	0.8	0.8	0.8	3	0.075	3	0.05	-	C
Propachlor	-	-	-	F	0.5	0.5	0.1	0.5	0.013	0.5	0.09	-	D
Propazine	-	-	-	F	1	1	0.5	2	0.02	0.7	0.01	-	C
Propham	-	-	-	F	5	5	5	20	0.02	0.6	0.1	-	D
Propylbenzene n-	-	-	-	D	-	-	-	-	-	-	-	-	-
Pyrene (PAH)	-	-	-	-	-	-	-	-	0.03	-	-	-	D
RDX	-	-	-	F	0.1	0.1	0.1	0.4	0.003	0.1	0.002	0.03	C
Simazine	F	0.004	0.004	F	0.07	0.07	0.07	0.07	0.005	0.2	0.004	-	C
Styrene	F	0.1	0.1	F	20	2	2	7	0.2	7	0.1	-	C
2,4,5-T	L	-	-	F	0.8	0.8	0.8	1	0.01	0.35	0.07	-	D
2,3,7,8-TCDD (Dioxin)	F	zero	3E-08	F	1E-06	1E-07	1E-08	4E-08	1E-09	4E-08	-	2E-08	B2

* Under review. NOTE: Phenanthrene — not proposed.
** The RfD for metribuzin was revised Dec. 1994 to 0.013 mg/kg/day. Based on this revised RfD the Lifetime HA would be 0.1 mg/l assuming a 20% relative source contribution for drinking water. This information has not been incorporated in the Health Advisory document.
*** Tentative.
* If the cancer classification C is accepted, the Lifetime HA is *0.02*; otherwise it is 0.200 mg/L

Table 18
Drinking Water Standards and Health Advisories *continued*

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Tebuthiuron	-	-	-	F	3	3	0.7	2	0.07	2	0.5	-	D
Terbacil	-	-	-	F	0.3	0.3	0.3	0.9	0.013	0.4	0.09	-	E
Terbufos	-	-	-	F	0.005	0.005	0.001	0.005	0.0001 3	0.005	0.0009	-	D
Tetrachloroethane (1,1,1,2-)	L	-	-	F	2	2	0.9	3	0.03	1	0.07	0.1	C
Tetrachloroethane (1,1,2,2-)	L	-	-	D	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	F	zero	0.005	F	2	2	1	5	0.01	0.5	-	0.07	-
Tetranitromethane	-	-	-	**	-	-	-	-	-	-	-	-	-
Toluene	F	1	1	F	20	2	2	7	0.2	7	1	-	D
Toxaphene	F	zero	0.003	F	-	-	-	-	0.1*	-	-	0.003	B2
2,4,5-TP	F	0.05	0.05	F	0.2	0.2	0.07	0.3	0.0075	0.3	0.05	-	D
1,1,2-Trichloro-1,2,2-trifluoroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroacetic acid	P	0.3	0.06**	D	4	4	4	13	0.1	4.0	0.3	-	C
Trichloroacetonitrile	L	-	-	D	0.05	0.05	-	-	-	-	-	-	-
Trichlorobenzene (1,2,4-)	F	0.07	0.07	F	0.1	0.1	0.1	0.5	*0.01*	0.04	0.07	-	D
Trichlorobenzene (1,3,5-)	-	-	-	F	0.6	0.6	0.6	2	0.006	0.2	0.04	-	D
Trichloroethane (1,1,1-)	F	0.2	0.2	F	100	40	40	100	0.035	1	0.2	-	D
Trichloroethane (1,1,2-)	F	0.003	0.005	F	0.6	0.4	0.4	1	0.004	0.1	0.003	-	C
Trichloroethanol (2,2,2-)	L	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	F	zero	0.005	F	-	-	-	-	-	0.3	-	0.3	B2
Trichlorophenol (2,4,6-)	L	-	-	D	-	-	-	-	-	-	-	0.3	B2
Trichloropropane (1,1,1-)	-	-	-	D	-	-	-	-	-	-	-	-	-
Trichloropropane (1,2,3-)	L	-	-	F	0.6	0.6	0.6	2	0.006	0.2	0.04	0.5	B2
Trifluralin	L	-	-	F	0.08	0.08	0.08	0.3	0.0075	0.3	0.005	0.5	C
Trimethylbenzene (1,2,4-)	-	-	-	D	-	-	-	-	-	-	-	-	-
Trimethylbenzene (1,3,5-)	-	-	-	D	-	-	-	-	-	-	-	-	-
Trinitroglycerol	-	-	-	F	0.005	0.005	0.005	0.005	-	-	0.005	-	-
Trinitrotoluene	-	-	-	F	0.02	0.02	0.02	0.02	0.0005	0.02	0.002	0.1	C
Vinyl chloride	F	zero	0.002	F	3	3	0.01	0.05	-	-	-	0.0015	A
Xylenes	F	10	10	F	40	40	40	100	2	60	10	-	D

* Under review.

** A HA will not be developed due to insufficient data; a "Database Deficiency Report" has been published.

** Total for all haloacetic acids cannot exceed 0.06 mg/l level.

Table 18
Drinking Water Standards and Health Advisories *continued*

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
INORGANICS													
Aluminum	L	-	-	D	-	-	-	-	-	-	-	-	-
Ammonia	-	-	-	D	-	-	-	-	-	-	30	-	D
Antimony	F	0.006	0.006	F	0.01	0.01	0.01	0.015	0.0004	0.01	0.003	-	D
Arsenic	*	-	0.05	D	-	-	-	-	-	-	-	0.002	A
Asbestos (fibers/l >10µm length)	F	7 MFL	7 MFL	-	-	-	-	-	-	-	-	700 MFL	A
Barium	F	2	2	F	-	-	-	-	0.07	2	2	-	D
Beryllium	F	0.004	0.004	D	30	30	4	20	0.005	0.2	-	0.0008	B2
Boron	L	-	-	D	4	0.9	0.9	3	0.09	3	0.6	-	D
Bromate	L	zero	0.01	-	-	-	-	-	-	-	-	-	-
Cadmium	F	0.005	0.005	F	0.04	0.04	0.005	0.02	0.0005	0.02	0.005	-	D
Chloramine	P	4***	4	D	1	1	1	1	0.1	3.3	3/4***	-	-
Chlorate	L	-	-	D	-	-	-	-	-	-	-	-	-
Chlorine	P	4	4	D	-	-	-	-	0.1	-	-	-	D
Chlorine dioxide	T	0.3	0.8	D	-	-	-	-	0.01	0.35	0.3	-	D
Chlorite	L	0.08	1	D	-	-	-	-	0.003	0.1	0.08	-	D
Chromium (total)	F	0.1	0.1	F	1	1	0.2	0.8	0.005	0.2	0.1	-	D
Copper (at tap)	F	1.3	TT**	-	-	-	-	-	-	-	-	-	D
Cyanide	F	0.2	0.2	F	0.2	0.2	0.2	0.8	0.022	0.8	0.2	-	D
Fluoride*	F	4	4	-	-	-	-	-	0.12	-	-	-	-
Hypochlorite	P	4[1]	-	-	-	-	-	-	-	-	-	-	-
Hypochlorous acid	P	4[1]	-	-	-	-	-	-	-	-	-	-	-
Lead (at tap)	F	zero	TT**	-	-	-	-	-	-	-	-	-	B2
Manganese	L	-	-	-	-	-	-	-	0.14[2]	-	-	-	-
Mercury (inorganic)	F	0.002	0.002	F	-	-	-	0.002	0.0003	0.01	0.002	-	D
Molybdenum	L	-	-	D	*0.02*	*0.02*	*0.01*	0.05	0.005	0.2	0.04	-	D
Nickel	F	0.1[4]	0.1[4]	F	1	1	0.5	1.7	0.02	0.6	0.1	-	D
Nitrate (as N)	F	10	10	F	-	10*	-	-	1.6	-	-	-	*

* Under review.
** Copper — action level 1.3 mg/L, Lead — action level 0.015 mg/L.
*** Measured as free chlorine.
[1] Regulated as chlorine.
[2] In food.
[3] In water.

Table 18
Drinking Water Standards and Health Advisories *continued*

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Nitrite (as N)	F	1	1	F	-	1*	-	-	0.16*	-	-	-	*
Nitrate + Nitrite (both as N)	F	10	10	F	-	-	-	-	-	-	-	-	*
Selenium	F	0.05	0.05	-	-	-	-	-	0.005	-	-	-	-
Silver	-	-	-	D	0.2	0.2	0.2	0.2	0.005	0.2	0.1	-	D
Sodium	-	-	-	D	-	-	-	-	-	20**	-	-	-
Strontium	L	-	-	D	25	25	25	90	0.6	90	17	-	D
Sulfate	P	500	500	D	-	-	-	-	-	-	-	-	-
Thallium	F	0.0005	0.002	F	0.007	0.007	0.007	0.02	0.00007	0.0023	0.0005	-	-
Vanadium	*T*	-	-	D	-	-	-	-	-	-	-	-	D
White phosphorous	-	-	-	F	-	-	-	-	0.00002	0.0005	0.0001		D
Zinc	L	-	-	*D*	6	6	3	10	0.3	10	2	-	D
Zinc chloride (measured as Zinc)	L	-	-	F	6	6	3	10	0.3	10	2	-	D
RADIONUCLIDES													
Beta particle and photon activity (formerly man-made radionuclides)	*F*	++	4 mrem	-	-	-	-	-	-	-	-	4 mrem/y	A
Gross alpha particle activity	*F*	++	15 pCi/L	-	-	-	-	-	-	-	-	15 pCi/L	A
Combined Radium 226 & 228	*F*	++	5 pCi/L	-	-	-	-	-	-	-	-	20 pCi/L	A
Radon*	P	zero	300 pCi/L	-	-	-	-	-	-	-	-	150 pCi/L	A
Uranium*	P	zero	20 µg/L	-	-	-	-	-	0.003	-	-	*	A

* Under review. ** Guidance.
\+ 1991 Proposed National Primary Drinking Water Rule for Radionuclides
++No final MCLG, but zero proposed in 1991.

Table 19
New York State Maximum Contaminant Levels
Organics
(Milligrams per liter)

Principal Organic Contaminant (POC)[18]	MCL
Benzene	0.005
Bromobenzene	0.005
Bromochloromethane	0.005
Bromomethane	0.005
n-butylbenzene	0.005
sec-butylbenzene	0.005
tert-butylbenzene	0.005
Carbon tetrachloride	0.005
Chloroethane	0.005
2-chlorotoluene	0.005
4-chlorotoluene	0.005
Dibromomethane	0.005
o-Dichlorobenzene (1,2)	0.005
m-Dichlorobenzene (1,3)	0.005
p-Dichlorobenzene (1,4)	0.005
Dichlorodifluoromethane	0.005
1,1-Dichloroethane	0.005
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.005
cis-1,2-Dichloroethylene	0.005
trans-1,2-Dichloroethylene	0.005
Dichloromethane (Methylene chloride)	0.005
1,2-Dichloropropane	0.005
1,3-Dichloropropane	0.005
2,2-Dichloropropane	0.005
1,1-Dichloropropene	0.005
cis-1,3-Dichloropropene	0.005
trans-1,3-Dichloropropene	0.005
Ethylbenzene	0.005
Hexachlorobutadiene	0.005
Isopropylbenzene	0.005

Table 19
New York State Maximum Contaminant Levels *continued*
Organics
(Milligrams per liter)

Principal Organic Contaminant (POC)[18]	MCL
p-Isopropyltoluene	0.005
Monochlorobenzene	0.005
n-Propylbenzene	0.005
Styrene	0.005
1,1,1,2-Tetrachloroethane	0.005
1,1,2,2-Tetrachloroethane	0.005
Tetrachloroethylene	0.005
Toluene	0.005
1,2,3-Trichlorobenzene	0.005
1,2,4-Trichlorobenzene	0.005
1,1,1-Trichloroethane	0.005
1,1,2-Trichloroethane	0.005
Trichloroethylene (TCE)	0.005
Trichlorofluoromethane	0.005
1,2,3-Trichloropropane	0.005
1,2,4-Trimethylbenzene	0.005
1,3,5-Trimethylbenzene	0.005
Xylenes (total)	0.005

Unspecified organic contaminant (UOC)[18]	MCL
• •	0.05

Total POCs[18] and UOCs[18]	MCL
• •	0.1

Vinyl chloride	MCL
• •	0.002

Table 19
New York State Maximum Contaminant Levels *continued*
Organics
(Milligrams per liter)

PESTICIDES/HERBICIDES

Contaminant	MCL
Endrin	0.0002
Ethylene dibromide	0.005
Lindane	0.004
Methoxychlor	0.050
Toxaphene	0.005
2,4-D	0.050
2,4,5-TP (Silvex)	0.010

TRIHALOMETHANES

Contaminant	MCL
Total Trihalomethanes	0.10

Table 19
New York State Maximum Contaminant Levels *continued*
Inorganics
(Milligrams per liter)

Contaminants	MCL (mg/l)[4]	Determination of MCL violation
Asbestos	7.0 Million fibers/liter (MFL) (Longer than 10 microns)	If the results of a monitoring sample analysis exceed the MCL, the supplier of water shall collect one more sample from the same sampling point within 2 weeks or as soon as practical. An MCL violation occurs when the average[1] of the two results exceeds the MCL.
Arsenic	0.05	
Barium	2.00	
Cadmium	0.005	
Chromium	0.10	
Mercury	0.002	
Selenium	0.01	
Silver	0.05	
Fluoride	2.2	
Chloride	250.0	
Iron	0.3[2]	
Manganese	0.3[2]	
Sodium	No designated limits[3]	
Sulfate	250.0	
Zinc	5.0	
Color	15 Units	
Odor	3 Units	

[1]Rounded to the same number of significant figures as the MCL for the contaminant in question.

[2]If iron and manganese are present, the total concentration of both should not exceed 0.5 mg/l. Higher levels may be allowed by the State when justified by the supplier of water.

APPENDIX III

ADMINISTRATIVE RECORD INDEX

YORK OIL SITE
OPERABLE UNIT TWO
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

3.0 REMEDIAL INVESTIGATION

3.3 Work Plans

P. 300001-300324 Report: Final Field Operations Plan, Contamination Pathways Remedial Investigation, York Oil Superfund Site, Moira, New York, Volume 1 of 2, prepared by Blasland & Bouck Engineers, P.C., March 1993.

P. 300325-301067 Report: Final Field Operations Plan, Contamination Pathways Remedial Investigation, York Oil Superfund Site, Moira, New York, Volume 2 of 2, prepared by Blasland & Bouck Engineers, P.C., March 1993.

P. 301068-301353 Report: Final Field Operations Plan for Remedial Investigation/ Feasibility Study, York Oil Company Site, Town of Moira, Franklin County, New York, prepared by Ebasco Services Incorporated, ARCS Program II, October 1991.

P. 301354-301549 Report: Final Remedial Investigation/ Feasibility Study Work Plan, York Oil Site, Operable Unit Two, prepared by Ebasco Services Incorporated, ARCS II Program, October 1991.

P. 301550-301648 Report: Site-Specific Health and Safety Plan for ARCS II Hazardous Waste Site Activities, York Oil Site, prepared by Ebasco Services Incorporated, April 11, 1991.

YORK OIL SITE
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3.0 REMEDIAL INVESTIGATION

3.4 Remedial Investigation Reports

P. 301649 - 301969 Report: Interim Ecological Investigation Report, Contamination Pathways Remedial Investigation/ Feasibility Study, York Oil Superfund Site, Moira, New York, Volume I of II, prepared by Blasland, Bouck & Lee, Inc., January 1994, Revised August 1994.

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3.0 REMEDIAL INVESTIGATION

3.4 Remedial Investigation Reports

P. 301970-302488 Report: Contamination Pathways Remedial Investigation Report, Volume I of II, York Oil Superfund Site, Moira, New York, prepared for the Steering Committee of the York Oil Superfund Site, Contamination Pathways RI/FS Participation Agreement, prepared by Blasland, Bouck & Lee, Inc., April 1996 (Revision Dates: October 1996, June 1997, October 1997, March 1998).

P. 302489-302819 Report: Contamination Pathways Remedial Investigation Report, Volume II of II - Appendices, York Oil Superfund Site, Moira, New York, prepared for the Steering Committee of the York Oil Superfund Site, Contamination Pathways RI/FS Participation Agreement, prepared by Blasland, Bouck & Lee, Inc., April 1996.

P. 302820-302850 Report: Candidate Technologies Memorandum, Contamination Pathways RI/FS, York Oil Superfund Site, Moira, New York, prepared for the Steering Committee of the York Oil Superfund Site, Contamination Pathways RI/FS Participation Agreement, prepared by Blasland, Bouck & Lee, Inc., April 1996.

P. 302851-303107 Report: Risk Assessment Contamination Pathways RI/FS (OU2), York Oil Company, Franklin County, New York, prepared by Malcolm Pirnie, Inc., December 1995.

P. 303108-303394 Report: Contamination Pathways Characterization Summary Report, Contamination Pathways RI/FS, Volume I of II, York Oil Superfund Site, Moira, New York, prepared for the Steering Committee of the York Oil Superfund Site, Contamination Pathways RI/FS Participation Agreement, prepared by Blasland, Bouck & Lee, Inc., January 1995.

P. 303395- 303741 Report: Contamination Pathways Characterization Summary Report, Contamination Pathways RI/FS, Volume II of II, York Oil Superfund Site, Moira, New York, prepared for the Steering Committee of the York Oil Superfund Site, Contamination Pathways RI/FS Participation Agreement, prepared by Blasland, Bouck & Lee, Inc., January 1995.

3.5 Correspondence

P. 303742- 303742 LAN message to Mr. Joel Singerman, Chief, U.S. EPA, Region II, from Mr. Arnold Bernas, U.S. EPA, Region II, re: BB&L letter 2/19/98 on York Oil OU2 Prediction of Groundwater Cleanup Time, February 20, 1998.

P. 303743- 303744 Letter to Mr. Arnold R. Bernas, Project Manager, Western New York Superfund Section I, U.S. EPA, Region II, from Mr. Gary R. Cameron, Vice President, Blasland, Bouck & Lee, Inc., re: York Oil Site Operable Unit 2, Prediction of Ground Water Cleanup Times, February 19, 1998.

P. 303745- 303745 Facsimile transmittal to Mr. Arnold Bernas, Project Manager, Western New York Superfund Section I, U.S. EPA, Region II, from Mr. Victor Cardona, Bureau of Eastern Remedial Action, New York State Department of Environmental Conservation (NYSDEC), re: enclosed letter to Mr. Victor Cardona, Bureau of Eastern Remedial Action, NYSDEC, from Mr. Robert E. Griffiths, Public Health Specialist II, State of New York Department of Health, re: Contamination Pathways, Remedial Investigation Report, York Oil Superfund Site, Moira, Franklin County, May 22, 1996.

P. 303746- 303747 Letter to Mr. Arnold Bernas, Project Manager, Western New York Superfund Section I, U.S. EPA, Region II, from Mr. Victor Cardona, Bureau of Eastern Remedial Action, NYSDEC, re: York Oil Company OU2 Draft Remedial Investigation, May 21, 1996.

P. 303748- 303749 Memorandum to Mr. Joel Singerman, Chief, Western New York Superfund Section I, U.S. EPA, Region II, from Ms. Galina Tsoukanova, Hydrogeologist, Technical and Pre-Remedial Support Section, U.S. EPA, Region II, re: Hydrogeological review of the Draft Contamination Pathway Remedial Investigation Report for the York Oil Superfund Site, Moira, New York, May 15, 1996.

P. 303750- 303765 Letter to Mr. Bruce R. Nelson, Site Manager, Malcolm Pirnie, Inc., from Mr. Arnold R. Bernas, P.E., Project Manager, Western New York Superfund Section I, U.S. EPA, Region II, re: Comments on the Baseline Risk Assessment of the York Oil Contaminant Pathways RI/FS, May 16, 1995.

P. 303766- 303766 Letter to Mr. Arnold Bernas, Western New York/ Caribbean Section I, U.S. EPA, Region II, re: Contamination Pathways Characterization Pathways, York Oil Company, February 24, 1995. (Note: Missing page(s).)

P. 303767- 303775 Memorandum to Mr. Victor Cardona, Division of Hazardous Waste Remediation, NYSDEC, from Mr. Richard Koeppicus, Bureau of Environmental Protection, DFW, re: Review of "Contamination Pathways Characterization Summary Report Contamination Pathways", Vol. 1 & 2 and the "Candidate Technologies Memorandum Contamination Pathways RI/FS" all dated January 1995, February 21, 1995.

P. 303776- 303776 Letter to Mr. Arnold Bernas, Western New York/ Caribbean Section I, U.S. EPA, Region II, from Mr. Victor Cardona, Bureau of Eastern Remedial Action, Division of Hazardous Waste Remediation, NYSDEC, re: York Oil OU2, Interim Ecological Investigation, June 24, 1994.

P. 303777- 303779 Memorandum to Mr. Victor Cardona, Bureau of Eastern Remedial Action, DHWR, NYSDEC, from Mr. Richard Koeppicus, Hazardous Waste Site Evaluation Unit, Division of Fish and Wildlife, re: York Oil Site, review of Blasland, Bouck & Lee, Inc., letter of May 25, 1994 to Arnold Bernas of the U.S. EPA, Region II, June 21, 1994. (Attachment: Memorandum to Mr. Victor Cardona, Bureau of Eastern Remedial Action, DHWR, NYSDEC, from Mr.

Richard Koeppicus, Hazardous Waste Site Evaluation Unit, DFW, re: York Oil Site, Review of "Interim Ecological Investigation Report Contamination Pathways RI/FS York Oil Superfund Site, Moira, New York, Volumes I and II" for the Steering Committee of the York Oil Superfund Site Contamination Pathways RI/FS Participation Agreement, dated January 1994 by Blasland, Bouck & Lee Inc., March 8, 1994.)

P. 303780-303793 Memorandum to Mr. Arnold Bernas, ERRD, U.S. EPA, Region II, from Mr. Arthur Block, Senior Regional Representative, Agency for Toxic Substances and Disease Registry (ATSDR), re: Site Review and Update (SRU) for York Oil Company, Moira, Franklin County, New York, October 13, 1993. (Attachment: Report: Site Review and Update, York Oil Company, Moira, Franklin County, New York, prepared by the New York State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry, September 20, 1993.)

P. 303794-303798 Memorandum to Mr. Stephen D. Luftig, Director, ERRD, U.S. EPA, Region II, from Mr. William J. Muszynski, Acting Regional Administrator, U.S. EPA, Region II, re: York Oil Site Source Control Remedy Compliance with the Toxic Substances Control Act PCB Disposal Requirements, September 13, 1989. (Attachment: (1) Post-Decision Declaration for Toxic Substances Control Act Waiver, York Oil Site, Moira, Franklin County, New York, September 19, 1989, and (2) Post-Decision Declaration Summary, York Oil Site, Moira, New York, undated.)

4.0 FEASIBILITY STUDY

P. 400001-400157 Report: Contamination Pathways Feasibility Study, York Oil Superfund Site, Moira, New York, prepared for the Steering Committee of the York Oil Superfund Site, Contamination Pathways RI/FS Participation Agreement, prepared by Blasland, Bouck & Lee, Inc., November 1996 (Revision Dates: December 1997, March 1998).

10.0 PUBLIC PARTICIPATION

10.1 Comments and Responses

P. 10.00001- 10.00002 Letter to Mr. Salvatore Ervolina, P.E., Director, NYSDEC, from Mr. John E. LaPadula, P.E., Chief, New York Remediation Branch, U.S. EPA, Region II, re: Comments on the NYSDEC's comments on the revised version of the Proposed Plan for the York Oil site, undated.

P. 10.00003- 10.00005 Letter to Mr. Victor A. Cardona, Bureau of Eastern Remedial Action, NYSDEC, from Mr. Arnold Bernas, P.E., Project Manager, U.S. EPA, Region II, re: Receipt of letter dated January 15, 1998 transmitting New York State's comments on the York Oil site Proposed Plan, January 30, 1998.

P. 10.00006- 10.00008 Letter to Mr. Arnold Bernas, U.S. EPA, Region II, from Mr. Victor A. Cardona, Bureau of Eastern Remedial Action, NYSDEC, re: York Oil Site OU2, Proposed Plan November 1997, January 15, 1998. (Attachment: Memorandum to Mr. Victor Cardona, DER, NYSDEC, from Mr. Richard Koeppicus, Division of Fish, Wildlife and Marine Resources, re: York Oil Operable Unit 2 Site, Addendum to my comments on the PRAP dated December 15, 1997, December 22, 1997.)

P. 10.00009- 10.00009 Memorandum to Mr. Victor Cardona, DER, NYSDEC, from Mr. Richard Koeppicus, Division of Fish, Wildlife and Marine Resources, re: York Oil Operable Unit 2 Site, Review of Superfund Proposed Plan, December 15, 1997.

3.0 REMEDIAL INVESTIGATION

3.4 Remedial Investigation Reports

P. 303799-303812 Report: Contamination Pathways Remedial Investigation, Field Operations Plan - Addendum No. 1, York Oil Superfund Site, Moira, New York, prepared for U.S. EPA, Region II, prepared by Blasland, Bouck & Lee, Inc., August 1994.

P. 303813-304136A Report: Contamination Pathways Remedial Investigation, Field Operations Plan, Volume 1 of 2, Site Management Plan, Field Sampling Plan, Health & Safety Plan, Wetland Mitigation/Restoration Plan, York Oil Superfund Site, Moira, New York, prepared for the Steering Committee of the York Oil Superfund Site Contamination Pathways RI/FS Participation Agreement, prepared by Blasland, Bouck & Lee, March 1993.

P. 304137-304884 Report: Contamination Pathways Remedial Investigation Field Operations Plan, Volume 2 of 2, Quality Assurance Project Plan, York Oil Superfund Site, Moria, New York, prepared for Steering Committee of the York Oil Superfund Site Contamination Pathways RI/FS Participation Agreement, prepared by Blasland, Bouck & Lee,Inc., March 1993.

4.0 FEASIBILITY STUDY

4.6 Correspondence

P. 400158- 400185 Letter to Mr. Bruce Thompson, de maximus, inc, from Mr. Arnold R. Bernas, P.E, Project Manager, Central New York Remediation Section, U.S. EPA, Region II, re: Review of the revised June 97 Remedial Investigation Report and Feasibility Study Report for the York Oil Contamination Pathways OU2, August 11, 1997. (Attachments: (1) Letter to Mr. Arnold Bernas, U.S. EPA Region II, from Mr. Victor Cardona, Bureau of Eastern Remedial Action Division of Environmental Remediation, U.S. EPA Region II, re: York Oil Company, OU2, Revised Feasibility Study dated June 1997, July 23, 1997; (2) Letter to Mr. Arnold Bernas, U.S. EPA Region II, from Mr. Richard Koeppicus, Biologist 1 (Ecology), re: York Oil, OU2, ID No. 517002, Revised Feasibility Study and Revised Remedial Investigation Report dated June 1997, August 4, 1997; (3) Letter to Mr. Arnold Bernas, U.S. EPA, Region II, from Mr.Bruce R. Nelson, Site Manager,C.P.G., Malcolm Pirnie, Inc. re: Response to Comments on the Remedial Investigation and Feasibility Study Report, York Oil Superfund Site, Moira, New York, dated March 10, 1997 (Operable Unit 2) July 22, 1997; (4) Memorandum to Ms. Shari Stevens, BTAG Coordinator, U.S. EPA Region II from Lisa Rosman, NOAA Associate CRC, re: Contamination Pathways Feasibility Study, York Oil Superfund Site, Moira, New York, November 1996, Revised June 1997, Blasland, Bouck and Lee, Inc., August 7, 1997; (5) Memorandum to Mr. Arnold Bernas, Remedial Project Manager, New York Remediation Branch, U.S. EPA, Region II, from Ms. Shari Stevens, Coordinator Biological Technical Assistance Group, U.S. EPA, Region II, re: Biological Technical Assistance Group Review, RI and FS for York Oil, August 11, 1997; (6) Comments prepared by Mr. Arnold Bernas, U.S. EPA, Region II, undated.)

7.0 ENFORCEMENT

7.3 Administrative Orders

P. 700001- 700047 Administrative Order on Consent for Remedial Investigation/Feasibility Study Operable Unit No. 2, In the Matter Of The York Oil Superfund Site, Aluminum Company of America; Borg-Wagner Corporation; Bristol Myers Squibb Company, Inc.; Chrysler Corporation; General Electric Company; Crucible Materials Corporation; Niagara Mohawk Power Corporation; Reynolds Metals Company; USAir, Inc.; United States Department of the Air Force; United States Department of the Army, United States Department of Transportation, Respondents, Index No. II CERCLA-20210, May 20, 1992.

10.0 PUBLIC PARTICIPATION

10.3 Public Notices

P. 10.00010- 10.00010 Notice: "The United States Environmental Protection Agency Invites Public Comment on the Proposed Remedy For The York Oil Site Superfund Site", prepared by the U.S. EPA, Region II, July 13, 1998.

10.6 Fact Sheets and Press Releases

P. 10.00011- 10.00013 Fact Sheet: York Oil Company, Moria, New York, EPA Region II, March 1998.

10.9 Proposed Plan

P. 10.00014- 10.00029 Report: Superfund Proposed Plan, York Oil Site, Town of Moira, Franklin County, New York, prepared by U.S EPA, Region II, June 1998.

P. 10.00030- 10.00035 Memorandum to Ms. Mindy Pensak, Acting BTAG Coordinator, U.S. EPA, Region II, from Ms. Lisa Rosman, NOAA CRC, re: York Oil Site, York Oil Site Superfund Proposed Plan Town of Moira, Franklin County, New York, April 1998, May 7, 1998.

P. 10.00036- 10.00041 Memorandum to Mr. Joel Singerman, Section Chief, New York Remediation Branch, U.S. EPA, Region II, from Ms. Mindy J. Pensak, Acting Coordinator, Biological Technical Assistance Group, U.S. EPA, Region II, re: Biological Technical Assistance Group Review Proposed Plan for York Oil, undated.

NOTE: The documents listed on the attached index for the York Oil Administrative Record file for Operable Unit (OU1) are hereby incorporated by reference into this Administrative Record file for OU2.

APPENDIX IV

STATE LETTER OF
CONCURRENCE

New York State Department of Environmental Conservation
Division of Environmental Remediation
50 Wolf Road, Albany, New York 12233-7010
Phone: (518) 457-5861 FAX: (518) 485-8404

John P. Cahill
Commissioner

SEP 29 1998

Mr. Richard L. Caspe, P.E.
Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
290 Broadway
New York, N.Y. 10007-1866

1998 SEP 29 PM 1:39

Dear Mr. Caspe:

RE: York Oil, Operable Unit 2
Site No. 517002

I am pleased to inform you that the Department of Environmental Conservation has reviewed your draft Record Of Decision for the referenced site and finds it acceptable.

The selected remedy, Alternate SED-2, consists of excavation and/or dredging of lead and PCB contaminated sediments from the Western Wetland, solidification/stabilization, and disposal under a cap meeting the requirements of 6NYCRR Part 360 on the site proper, with Alternative SED-3 as a contingent sediment alternative for the Northwest Wetland. Additional sediment samples will be collected and ecological studies will be designed and conducted to assess the ecological threat posed by lead and PCBs in the Northwestern Wetland and in the "remaining areas" of the Western Wetland and, if appropriate, would delineate the sediments requiring remediation.

If you have any questions, please have your staff contact Mr. Salvatore Ervolina at 518-457-4349.

Sincerely,

Michael J. O'Toole, Jr.
Director
Division of Environmental Remediation

APPENDIX V

RESPONSIVENESS
SUMMARY

**RESPONSIVENESS SUMMARY
FOR THE
CONTAMINATION PATHWAYS
OPERABLE UNIT OF THE
YORK OIL SUPERFUND SITE
MOIRA, FRANKLIN COUNTY, NEW YORK**

INTRODUCTION

This Responsiveness Summary provides a summary of citizens' comments and concerns received during the public comment period related to the York Oil site Contamination Pathways remedial investigation and feasibility study (RI/FS) and Proposed Plan and the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation's (NYSDEC's) responses to those comments and concerns. All comments summarized in this document have been considered in EPA and NYSDEC's final decision in the selection of a remedial alternative to address the contamination that has emanated or is presently emanating from the Site Proper (the source of the contamination).

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The Contamination Pathways RI/FS report describes the nature and extent of the contamination at and emanating from the site, evaluates the risks associated with the site, and identifies and evaluates various remedial alternatives. This document and the Proposed Plan were made available to the public in both the Administrative Record and information repositories maintained at the EPA Docket Room in the Region II New York City office and at the Moira Town Hall located at North Lawrence Road, Moira, New York. The notice of availability for these documents was published in the *Malone Telegraph* on June 24, 1998. A public comment period was held from June 24, through July 23, 1998. A public meeting was held on July 13, 1998 at the Moira Town Hall in Moira, New York. At this meeting, representatives from EPA presented the findings of the Contamination Pathways RI/FS, identified the preferred remedy and the basis for the preference, and answered questions from the public about the site and the remedial alternatives under consideration. Approximately 25 people, consisting of residents, representatives of the media, and state and local government officials, attended the public meeting.

OVERVIEW

The public generally supports the preferred remedy, which includes excavation/dredging the contaminated sediments from the Western Wetland, followed by solidification/stabilization and on-site disposal. In addition, the contaminated sediments in the Northwestern Wetland would be similarly remediated if ecological studies, which would be conducted during the design phase, indicate potential ecological impacts. EPA's preferred groundwater alternative is natural attenuation, institutional controls to prevent the installation and use of groundwater wells in the affected area, and long-term monitoring.

During the public comment period, concerns that were expressed by the public relate to historical contaminant concentrations, project cost, and drinking water. The potentially responsible parties (PRPs) expressed concerns related to utilizing NYSDEC sediment guidance values to establish sediment cleanup objectives, analytical methods, long-term monitoring, surface water contamination, and the risk assessment, which are summarized below.

Summary of Oral Comments and Responses Concerning the York Oil Superfund Site Contamination Pathways Proposed Plan

The following summarizes the oral comments received by EPA during the public comment period and EPA's responses.

Historical Contaminant Concentrations

Comment No. 1: A commentor asked whether historical data exist for contaminants in the groundwater and whether these data indicate that natural attenuation of these contaminants is occurring.

Response No. 1: Groundwater quality data for the site exist back to the early 1980s. Current data show a 400-foot wide and 500-foot long groundwater contaminant plume emanating from the source area (the Site Proper). The concentrations of volatile organic compounds (VOCs) in the plume—benzene, trichloroethene (TCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), and toluene—decrease with increasing distance from the Site Proper. The presence of *cis*-1,2-DCE, a breakdown product of TCE, suggests that degradation is occurring.

Based upon preliminary groundwater modeling, it has been estimated that the contaminated groundwater migrating from the Site Proper will naturally attenuate to groundwater standards in 10 years, once the source of groundwater contamination is addressed through excavating and treating the contaminated soils on the Site Proper, in combination with the installation of extraction wells at the downgradient boundary of the Site Proper. Once the source of the groundwater contamination is addressed and the extraction wells are operating, a long-term groundwater monitoring program will be implemented in order to verify that the level and extent of contaminants are declining.

Comment No. 2: A commentor asked if the rate at which the groundwater contamination is migrating from the site has changed since it was first identified. The commentor also asked if there was any indication as to the rate at which the natural attenuation is occurring.

Response No. 2: To date, VOCs have migrated approximately 500 feet south of the Site Proper in the 34 years since York Oil began operations, indicating a slow rate of migration.

The precise time required for the groundwater to naturally attenuate will have to be determined based on the results of groundwater monitoring and additional groundwater modeling. Based upon preliminary groundwater modeling, however, it has been estimated that the contaminated groundwater will naturally attenuate to groundwater standards in about 10 years, once the source of the groundwater contamination is addressed through the Site Proper remedy. It is anticipated that construction of the source control remedy on the Site Proper will commence in the spring of 1999.

Project Cost

Comment No. 3: A commentor asked how much money has been spent on the York Oil site so far.

Response No. 3: To date, approximately $6 million dollars has been spent on various investigations and studies at the site. It is estimated that the design, construction, and operation, maintenance, and monitoring related to the Site Proper and Contamination Pathways remedies will be approximately $21 million. The work at the York Oil site is being financed, predominantly, by the PRPs.

Drinking Water

Comment No. 4: A commentor asked if there are any plans to install a public drinking water system for the residents of the Town of Moira as part of the remedy.

Response No. 4: Drinking water samples taken from wells in the vicinity of the site do not show any evidence of contamination. In addition, local groundwater flow is towards the south into the southern wetland, away from any residences. Since no private wells are threatened by contamination from the site, there are no plans for the installation of a public water system.

Comment No. 5: A commentor asked if there are plans to continue monitoring the residential drinking water wells.

Response No. 5: Residential wells will be periodically monitored as part of the long-term monitoring program.

Summary of Written Comments and Responses Concerning the York Oil Superfund Site Contamination Pathways Proposed Plan

The following correspondence (see Appendix V-a) was received during the public comment period:

- Letter to Arnold Bernas, dated July 22, 1998, from Bruce Thompson, de maximis, inc., written on behalf of the private party signatories of the York Oil Superfund Site Contamination Pathways Remedial Investigation/Feasibility Study Administrative Order on Consent.

The following summarizes the written comments received by EPA during the public comment period and EPA's responses.

Sediment Screening Levels

Comment No. 6: The commentor expressed concern about the Proposed Plan's indication that NYSDEC's *Technical Guidance for Screening Contaminated Sediments* (Sediment Guidance) would be the basis for establishing cleanup objectives for lead and PCBs (31 mg/kg lead and 1 mg/kg PCBs). According to the commentor, the Sediment Guidance was prepared as screening criteria with the objective of "establishing equilibrium partitioning-based sediment criteria for identifying areas of sediment contamination and providing an initial assessment of potential adverse impacts." NYSDEC guidance specifically states that the Sediment Guidance does not identify cleanup objectives.

The Commentor states that the Sediment Guidance recognizes that "risk assessment, risk management, and the results of further biological and chemical tests and analysis are vital tools for managing sediment contamination. Moreover, EPA's National Contingency Plan recommends against using screening criteria as cleanup standards under the circumstances present at the York Oil site. There are currently no promulgated federal or state standards for contaminant levels in sediments. The Sediment Guidance is used on a "To-Be-Considered" basis.

The Commentor states further that the Sediment Guidance establishes criteria for metals using the "effects-based" approach of the Ontario Ministry of the Environment "because of the inability to predict biological effects from metals concentrations in sediments." The guidance discusses limitations to the effects-based approach, stating: "Once a site is found to be contaminated with metals, further studies are necessary to quantify risk and determine if remediation actions are necessary. Remediation should not be based solely on exceedences of these criteria."

The commentor suggests that the Record of Decision (ROD) direct the delineation of Western and Northwestern Wetland sediments exceeding Sediment Guidance screening criteria, and further site-specific sediment testing as outlined in the Sediment Guidance to determine appropriate cleanup levels for lead and PCBs. If sediment biological toxicity testing is to be performed, that testing should also be performed on sediment samples collected from background locations, so that non-site related impacts can be discerned. This information can then be applied to York Oil Contamination Pathways sediments to support an appropriate risk management decision that balances actual ecological risk with the unavoidable impacts of remediation.

Response No. 6: The Proposed Plan called for excavating and/or dredging sediments exceeding NYSDEC's Sediment Guidance values for lead and PCBs of 31 mg/kg and 1 mg/kg, respectively. After considering the comment, while EPA agrees that using a 31 mg/kg lead sediment screening value as a cleanup objective for the York Oil site is inappropriate, EPA believes that the 1 mg/kg cleanup objective for PCBs is justified. At New York State Superfund sites, EPA has consistently used 1 mg/kg PCBs as a cleanup objective for sediments. However, in response to the concerns that were raised, the remedy in the ROD as it relates to both lead and PCBs has been modified as is noted below.

In the Western Wetlands, the most significant potential ecological risk is associated with the elevated PCB and lead concentrations in the sediments located to the immediate west and northwest of the Site Proper Western Drainage Area and in the drainage channel leading to North Lawrence Road. These sediments, which contain approximately 96% of the PCBs in the Western Wetlands, will be removed. Excavation and/or dredging of additional sediments in the Western Wetlands will be contingent upon the results of design-phase sediment sampling to more accurately define the extent of contamination and the existence of any "channelized" contaminants, and design-phase studies to determine whether lead and/or PCBs in these sediments pose an ecological threat. Those sediments which exceed 1 mg/kg PCBs would be removed; those sediments which are otherwise determined to pose a substantial ecological threat would also be removed.

Excavation and /or dredging of contaminated sediments in the Northwestern Wetland will be contingent upon the results of studies which will be conducted during the design phase to determine whether these sediments pose an ecological threat.

The studies that are contemplated will include the measurement of lead and PCB toxicity.

Measurement of lead toxicity would be based on laboratory sediment toxicity tests using sediments collected in the field. It is anticipated that two test organisms (*e.g., Hyalella* and *Limnodrilus* or *Chironomus*) would be run side-by-side for each sample location following standard EPA or ASTM sediment toxicity testing methods. The tests would be for survival and growth, with a minimum 14-day duration. Sediment sampling in the field would include collection and homogenization of an adequate volume of sediment for both the toxicity tests and the required accompanying analytical testing. Analysis of the sediment would include full Target Compound List/Target Analyte List, pesticides/PCB, total organic carbon, pH, grain size, and oil and grease. Sediments from a local reference wetland unimpacted by the Site would be collected with Site sediments to assist in interpreting any potential confounding regional sediment or water quality factors.

Measurement of lead and PCB bioaccumulation would be based on tissue residue analysis using biota collected in the field (such as frogs, crayfish, large macroinvertebrates, or bottom dwelling or foraging fish). Tissue analysis for lead, PCBs, and lipids would be conducted. The tissue residue concentrations would be used as the assumed food source for modeling risk to both aquatic foraging avian and mammalian receptors (such as the green-backed heron and mink, respectively) to address food chain threats.

Based on the modeling of the lead and PCB tissue residue concentrations, the prediction of a significant reduction in survival or growth or a significant impact to higher trophic level receptors would indicate the need to remediate the sediments.

Analytical Methods

Comment No. 7: The Simultaneously Extracted Metal (SEM)/Acid Volatile Sulfide (AVS) approach should be used to assess the significance of metals in Northwestern and Western Wetlands sediments, as it has been recognized as the best currently-available technique to quantify the actual levels of metals that may be biologically available in sediments. This approach is appropriate due to the recognized variability of toxicity with respect to sediment contaminant concentrations and the impact of remediation on sensitive wetland habitats.

Response No. 7: Since SEM/AVS can only quantify the levels of metals that may be biologically available in the sediments, using this approach would require modeling (estimating) the toxicity of the contaminants in the sediments. The studies that are described in Response No. 6 above, on the other hand, will not only provide a measurement of the bioavailability of the contaminants in the sediments, but will quantify their toxicity.

Long-Term Monitoring

Comment No. 8: The commentor suggested that long-term monitoring of surface water, sediment, and biota within the Southern Wetland and the wetlands to the northwest of the Northwest Wetland are not necessary, since the levels of contaminants present in these areas do not pose a significant human health or ecological risk. They also questioned why post-remediation monitoring of sediments and biota in the Western Wetlands is necessary, proposed that semi-annual long-term monitoring of groundwater should only be for VOCs, suggested that statistical analysis of the groundwater sampling results be employed to discern trends, and recommended that the results of the monitoring and site conditions be assessed at least once every five years to determine whether the long-term monitoring should continue.

Response No. 8: Since the levels of contaminants present in the Southern Wetland and the wetlands to the northwest of the Northwest Wetland do not pose a significant human health or ecological risk, long-term monitoring will not be conducted in these areas, as was suggested.

Short-term post-remediation monitoring of Western Wetland sediments, surface water, and biota will be conducted to evaluate the effectiveness of the remedy. If Alternative SED-3, the contingent alternative, is implemented, short-term post-remediation monitoring of Northwestern Wetland sediments, surface water, and biota would be conducted to evaluate the effectiveness of the remedy in this area. If Alternative SED-3, the contingent alternative, is not implemented, since contaminants would be left in place in the Northwest Wetland, long-term monitoring in this area would be performed. This monitoring would include sediment sampling to determine if the residual contaminant concentrations are decreasing and studies to assess the risk to receptors.

The specific details of the groundwater monitoring program (such as the parameters and frequency) will be developed during the design phase.

The results of the monitoring and site conditions will be assessed at least once every five years to determine whether additional remedial actions are necessary, whether the monitoring should continue, and/or whether the parameters and/or frequency of the monitoring should be adjusted.

Source of Mercury and Phenols

Comment No. 9: The Proposed Plan inappropriately characterizes the Site Proper and Contamination Pathways sediments as the "likely source" of downstream detections of mercury and total phenols in Lawrence Brook surface water. Mercury and total phenols were not detected in surface water samples collected from the drainage ditch within the Site Proper or in surface water samples collected between the Site Proper and the downgradient detections. Therefore, no relationship between the downgradient detections and the site has been established. The Proposed Plan creates a speculative link based on Site Proper and Contamination Pathways sediment data, yet fails to mention that mercury was also detected in sediment samples collected from upstream background locations. The Proposed Plan also fails to discuss the inherent inadequacy of the total phenols analytical method. Total phenols colorimetric analysis does not discriminate between naturally-occurring and anthropogenic phenolic compounds. Phenolic macromolecules are naturally formed in wetlands as the main component of humus, the organic decay product of plant tissue and animal waste.

Response No. 9: Elevated levels of mercury and total phenols were detected in samples collected in Lawrence Brook at 0.22 µg/l (collected approximately 1.5 miles downstream of the Site Proper) and 21 µg/l (collected approximately 2.7 miles downstream of the Site Proper), respectively. On-site disposal activities are a possible source of these two constituents in the downstream surface water samples, since elevated concentrations were observed in Site Proper and Contamination Pathways sediments.

EPA acknowledges that phenolic compounds are produced naturally under certain conditions and that colorimetric measurement of total phenolics would not differentiate between natural and anthropogenic phenolics. Regardless of the source of the mercury and phenols, the levels of contaminants that are present in the surface waters do not pose a significant human health or ecological risk.

Risk Assessment

Comment No. 10: The conservative approach taken in the risk assessment resulted in calculated potential ecological risks to a wide variety of biota. It should be noted that the ecological risk assessment procedure used by EPA is intentionally conservative and tends to overestimate risk rather than underestimate risk to receptor species. Notwithstanding the fact that the risk assessment concluded that the levels of PCBs and lead in the Western Wetland sediments pose an ecological threat in that wetland and that the levels of lead present in Northwestern Wetland sediments exceed NYSDEC's screening values and; therefore, may pose an ecological risk, the RI concluded that these two wetlands appear to be healthy, functioning ecosystems with active wildlife populations.

Response No. 10: The conclusion in the RI report that the wetlands appear to be healthy and functioning and contain active wildlife populations is based on just that, their appearance. Outward appearances, may, however, be misleading. The flora and fauna may appear healthy, but they or the animals that prey on them could very likely be adversely impacted by the contamination. For example, a fish would not necessarily demonstrate any visible indications that it is accumulating PCBs, yet there could be a bioaccumulative impact on a predator. This is why EPA intentionally uses conservative assumptions in its risk assessments which tend to overestimate the risk to the receptor species.

APPENDIX V-a

RESPONSIVENESS SUMMARY

LETTER SUBMITTED DURING THE PUBLIC COMMENT PERIOD

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July 22, 1998

Arnold Bernas, Remedial Project Manager
Western New York Superfund Section I
Emergency and Removal Response Division
U.S. Environmental Protection Agency, Region II
390 Broadway
New York, NY 10007

Subject: Comments on the Proposed Plan for the York Oil Site, Operable Unit 2

Dear Mr. Bernas:

The following comments on the Proposed Plan for the York Oil Site, Operable Unit 2 (OU2) are submitted on behalf of the signatories of the York Oil Superfund Site Contamination Pathways Remedial Investigation (RI)/Feasibility Study (FS) Participation Agreement (the Group). The Group generally supports the remedy proposed for the Site by the U.S. Environmental Protection Agency (EPA). However, the Group has several concerns relative to the Proposed Plan. The Group's specific comments on the Proposed Plan are as follows:

1. **The Proposed Plan Inappropriately Uses New York State Department of Environmental Conservation (NYSDEC) "Technical Guidance for Screening Contaminated Sediments" (Sediment Guidance), November 1993, to Establish Clean-Up Objectives.**

The Proposed Plan inappropriately characterizes the Sediment Guidance "screening levels" as "NYSDEC's sediment cleanup objectives." This error is compounded when the Proposed Plan selects those "screening levels" as remediation standards. Footnote 4 (page 9) and the Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) section (page 12) of the Proposed Plan incorrectly state that NYSDEC's "sediment clean-up objectives" are specified in the Sediment Guidance. The Sediment Guidance was prepared with the objective of: "establishing Equilibrium Partitioning (EP)-based sediment criteria for identifying areas of sediment contamination, and providing an initial assessment of potential adverse impacts."

Allentown, PA • Clinton, NJ • Danville, IN • Knoxville, TN • Livonia, MI • Palo Alto, CA • Riverside, CA
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NYSDEC guidance specifically states that the Sediment Guidance does not identify cleanup objectives.

The Sediment Guidance recognizes that: "Risk assessment, risk management, and the results of further biological and chemical tests and analysis are vital tools for managing sediment contamination. To view sediment criteria in a one-dimensional, go/no go context is to miss potential opportunities for resource utilization through appropriately identified and managed risk." NYSDEC's April 1997 "Supplemental Guidance for Using Sediment Criteria at Inactive Hazardous Waste Sites" states: "The sediment criteria are not cleanup standards." This guidance then directs "If sediment criteria are exceeded, additional site-specific information may need to be gathered to determine the extent to which adverse impacts, if any, are occurring."

Moreover, EPA's National Contingency Plan (NCP) recommends against using such screening criteria as cleanup standards under the circumstances present at the York Oil Site. There are currently no promulgated Federal or State standards for contaminant levels in sediments. The Sediment Guidance was therefore used in the FS on a "To-Be-Considered" (TBC) basis. The preamble to the final NCP (55 FR. 8744, March 8, 1990) discusses EPA's expectations regarding how TBCs will be used, and describes three types of TBCs: health effects information with a high degree of credibility, technical information on how to perform or evaluate site investigations or remedial actions, and policy. The Sediment Guidance incorporates both technical guidance and NYSDEC policy. The NCP preamble states clearly that "TBCs should not be required as cleanup standards in the rule, because they are, by definition, generally neither promulgated nor enforceable, so they do not have the same status under the Comprehensive Environmental Response, Compensation and Liability Act as do ARARs." Accordingly, the Group believes that both state and federal guidance oppose the use of the Sediment Guidance screening levels as cleanup standards and that they should not be used as cleanup standards at the York Oil Site.

In any event, the approach used to establish screening criteria is inconsistent with site conditions. The Sediment Guidance relies on the use of the EP approach to derive criteria for non-polar organic compounds such as polychlorinated biphenyls (PCBs), and outlines several limitations to the EP approach. Sediment Guidance ¶ IV.D.3 notes: "EP-based criteria should only be derived for sediments with organic carbon fractions between approximately 0.2 - 12% (EPA Science Advisory Board (SAB), 1992)." The RI (Blasland, Bouck & Lee, Inc., April 1996, final revision March 1998), documented an average Total Organic Carbon (TOC) fraction of 19.7% across twenty-eight sediment samples, which included four within OU1 and two duplicates. Excluding the OU1 samples and duplicates, the average TOC level in OU2 sediment samples was 13.8%.

The Sediment Guidance establishes criteria for metals using the "effects-based" approach of the Ontario Ministry of the Environment, "because of the inability to predict biological effects from metals concentrations in sediments." It notes that "The toxicity of metals are dependent on many environmental conditions and are difficult at best to predict consistently." The effects-based approach uses field and laboratory data on the co-occurrence of benthic animals and contaminants to predict potential adverse effects. The screening criteria are divided into two levels of protection, predicting the lowest and severe effects levels, respectively, based on the total metals concentration in the sediment. The Sediment Guidance recognizes that many of the lowest effects levels are "lower than mean background locations," and suggests that remediation would likely be required "if severe effects levels are exceeded in significant portions of the ecosystem of concern." Severe effects levels for lead of 110 mg/kg or 250 mg/kg are listed in the two references cited in the Sediment Guidance. The Sediment Guidance discusses limitations to the effects-based approach in ¶ VI.C.1, which states: "Once a site is found to be contaminated with metals, further studies are necessary to quantify risk and determine if remediation actions are necessary. Remediation should not be based solely on exceedences of these criteria." The Proposed Plan directs use of the screening criteria lowest effects level of 31 mg/kg of total lead as a clean-up standard for Western Wetland sediment. This approach neglects the inherent uncertainty recognized in the Sediment Guidance, and does not allow for a site-specific determination of actual biologically available metals to set the clean-up level.

The Proposed Plan directs, without any of the additional investigation suggested in the Sediment Guidance, excavation of Western Wetlands sediments exceeding screening criteria. On the other hand, the Proposed Plan acknowledges that Northwestern Wetlands sediment contamination exceeding screening criteria should be subject to additional testing and the risk management process contemplated in the Sediment Guidance. The Group agrees that additional site-specific data should be collected to support a risk management decision for OU2 sediment. Additional data needs are discussed below. The Group suggests that the Proposed Plan recognize and consistently apply the approach directed when the Sediment Guidance states: "Comprehensive sediment testing and risk management are necessary to establish when remediation is appropriate and what final contaminant concentrations the sediment remediation efforts should achieve."

The Group suggests that the Record of Decision (ROD) direct the delineation of Western and Northwestern Wetland sediments exceeding Sediment Guidance screening criteria, and further site-specific sediment testing as outlined in the Sediment Guidance to determine appropriate clean-up levels for lead and PCBs. If sediment biological toxicity testing is to be performed, that testing should also be performed on sediment samples collected from background locations, so that non-site related impacts can be discerned. This information can then be applied to York Oil OU2 sediments to support an appropriate risk management decision that balances actual ecological risk with the unavoidable impacts of remediation.

2. The Simultaneously Extracted Metal (SEM)/Acid Volatile Sulfide (AVS) Approach Should be Used to Assess the Significance of Metals in Northwestern and Western Wetlands Sediments

EPA's SAB stated in its September 1995 "Review of the Agency's Approach for Developing Sediment Criteria for Five Metals" that "the best technology identified to date for assessing the significance of five metals (cadmium, copper, lead, nickel and zinc) in sediments is the SEM procedure." The SEM approach uses the difference between the SEM and AVS (a binding factor for metals in sediments) to quantify the amount of metals that may be biologically available. The Group suggests that future sediment testing use the SEM/AVS approach, as it has been recognized as the best currently available technique to quantify the actual levels of metals that may be biologically available in sediments. This approach is appropriate due to the recognized variability of toxicity with respect to sediment contaminant concentrations, and the impact of remediation on sensitive wetland habitats. Similar to the AVS effect for metals, higher TOC levels generally sequester more non-polar contaminants, reducing bioavailability. The EPA SAB (1992), identified a range of concentrations up to five times an EP-derived sediment criterion as a "grey" area, where observable impacts may or may not occur. This is a further indication of why the Sediment Guidance establishes "screening criteria" and not cleanup levels, and supports the need for additional characterization prior to remediation to determine if actual adverse impacts exist due to site-related contamination in OU2 sediments.

3. Level of Detail and Scope of Future Monitoring

Predesign, remedial, and long-term monitoring work for York Oil OU2 will be directed in the ROD and detailed in legal agreements between the EPA and the Potentially Responsible Parties. The work will then be specified in predesign investigation work plans, remedial design reports and long-term operations and maintenance plans, which will be subject to Agency review and approval. The rationale behind some of the items discussed in the Proposed Plan is not apparent, and the costs would be significant, particularly for long-term monitoring over 30 years or more. These items include the following:

a. Annual post-remediation long-term monitoring of surface water, sediment and biota within the Southern Wetland and the wetlands northwest of the Northwest Wetland should not be required, as the Proposed Plan notes: "the levels of contaminants present in sediments in the depositional areas of the Southern Wetland do not pose a significant human health or ecological risk." The distant northwest wetlands are not even discussed in the risk summary, as the levels of contaminants were near or at background. Accordingly, no remediation is needed within the Southern Wetland or the wetlands northwest of the Northwest Wetland, and long-term monitoring should also not be needed in these areas.

b. No long-term monitoring of surface water should be specified, as the Proposed Plan notes that: "the levels of contaminants that are present in surface water do not pose a significant human health or ecological risk."

c. The need for annual post-remediation monitoring of sediments and biota in the Western Wetlands is unclear. The only monitoring in this area since the 1980 closure of York Oil occurred during the OU2 RI, and revealed no significant impacts to biota due to pre-remedy sediment contamination. The need for annual post-remediation monitoring is unclear, as remediation will remove current sources of contamination.

d. While the Group agrees that characterization of natural attenuation parameters in groundwater is appropriate, semi-annual long-term monitoring of groundwater should only be for VOCs. The OU2 RI reported a mean value of 3.2×10^{-4} cm/sec for overburden hydraulic conductivity and a high value of 0.018 (unitless) for hydraulic gradient. Using an effective porosity value of 25%, a representative groundwater velocity would be 24 feet/year. This suggests that contaminant concentrations are unlikely to change rapidly, even after remediation of the Site Proper (OU1) source areas. Future review of groundwater data should incorporate statistical analysis to discern trends.

The Group recommends that the ROD outline the general scope of the predesign investigation and indicate such procedures will be detailed following issuance of the

ROD. Similarly, the ROD should indicate long-term monitoring will be conducted periodically following remediation, based on a long-term monitoring plan to be prepared as part of the remedial effort and that site conditions and the level of monitoring will be reassessed no less frequently than every five years until a decision is made that no further monitoring or other action is warranted.

4. Other Issues

a. The Proposed Plan inappropriately characterizes the OU1 and Contamination Pathways (OU2) sediments as the "likely source" of downstream detections of mercury and total phenols in Lawrence Brook surface water. Mercury and total phenols were not detected in surface water samples collected from the drainage ditch within OU1. Mercury and total phenols were also not detected in OU2 surface water samples collected between OU1 and the downgradient detections, therefore no relationship between the downgradient detections and the site was established in the RI. The Proposed Plan creates a speculative link based on OU1 and OU2 sediment data, yet fails to mention that mercury was also detected in sediment samples collected from upstream background locations. The Proposed Plan also fails to discuss the inherent inadequacy of the total phenols analytical method. As stated in the RI, total phenols colorimetric analysis does not discriminate between naturally-occurring and anthropogenic phenolic compounds. Phenolic compounds are defined as any compound possessing an aromatic ring with an -OH functional group. Phenolic macromolecules are naturally formed in wetlands as the main component of humus, the organic decay product of plant tissue and animal waste. Humic and fulvic acids are the soluble forms of this organic matter. Total phenols were detected in Lawrence Brook where wetlands drain into Lawrence Brook. The unsupported link to York Oil of the only detections of mercury and total phenols in surface water should be removed from Footnote 3 (page 5) of the Proposed Plan.

b. The Ecological Risk Assessment summary section of the Proposed Plan should incorporate a discussion of the uncertainty analysis conducted as part of that assessment. The conservative approach taken in the assessment resulted in calculated potential ecological risks to a wide variety of biota and plants. The discussion in the Proposed Plan should mention that the ecological risk assessment procedure used by EPA is intentionally conservative, and tends to overestimate risk rather than underestimate risk to receptor species. This statement was made in the risk assessment, and is supported by the RI conclusion the OU2 wetlands appear to be healthy, functioning ecosystems with active wildlife populations.

Please call me at (860) 651-1196 if you have any questions.

Sincerely,

Bruce Thompson

cc: York Oil CPRI/FS Steering/Technical Committees

YORK OIL SITE, Operable Unit # 2 Contamination Pathways

TOWN OF MOIRA, FRANKLIN COUNTY, NEW YORK

PUBLIC MEETING

PRESENTATION OF THE PROPOSED PLAN

July 13, 1998

MR. SINGERMAN: I guess we'll get started. First, I welcome you to the York Oil Site public meeting.

First of all, I'm Joel Singerman with EPA, the removal program. This is Arnold Bernas. He's the project manager for the site. And also from the EPA, we have Lou DiGuardia and Curtis Clifford from the removal program. We also have John Sheehan from the Department of health and Dan Steenberge from the DEC regional office.

Before we start the meeting, first of all let me call your attention to the handouts in the back. If you haven't picked one up, they are the blue things. They look like this. There's also a sign-in sheet. We would ask you to sign it, this way you can make sure that you're on our mailing list.

The purpose of tonight's meeting is to discuss the results of the contamination pathways remedial investigation and feasibility study, and our preferred remedy for the site.

The remedial investigation and feasibility study, proposed plan, and other supporting documents, are available in the repositories identified on page two of the proposed plan, this document here. And I believe the repository is in this building.

If after tonight's meeting, you think of some questions or have some comments that were not discussed tonight, you can either call Arnie. His phone number is on here, or you can fax, write or e-mail the comments directly to him. All his addresses and whatever are also in here. But we ask that you submit comments or contact him by July 23rd, the end of the public comment period.

Tonight we intend to make several very short presentations, and then we'll spend the rest of the time answering any questions you might have. Therefore, we ask that you hold your questions to the end of the presentations.

Several well-publicized toxic waste disposal disasters in the late 1970's, among them Love Canal, shocked the nation and highlighted the fact that past waste disposal practices were not safe.

In 1980, congress responded with the creation of the comprehensive environmental Response, Compensation, and Liability Act, more commonly known as Superfund.

The Superfund law provided a federal fund to be used in the cleanup of uncontrolled and abandoned hazardous waste sites, and for responding to emergencies involving hazardous substance.

In addition, EPA was empowered to compel those parties that are responsible for these sites to pay for or to conduct the necessary response actions.

The work to remediate a site is very complex and takes place in many stages.

Once a site is discovered, an inspection further identifies the hazards and contaminants.

A determination is then made whether to include the site on the Superfund national priorities list, a list of the nation's worst hazardous waste sites.

Sites are placed on the national priorities list primarily on the basis of their scores obtained from the hazard ranking system, which evaluates the risk -- the relative risks posed by a site.

Only sites on the national priorities list are eligible for remedial work financed by Superfund.

The selection of a remedy for a Superfund site is based on two studies: a remedial investigation and a feasibility study.

The purpose of the remedial investigation is to determine the nature and extent of the contamination at and emanating from the site and the associated risk to public health and the environment.

The purpose of the feasibility study is to identify and evaluate remedial alternatives to address contamination problems.

Public participation is a key feature of the Superfund process.

The public is invited to participate in all of the decisions that will be made at a site through the community relations program.

Town meetings, such as this one, are held, as necessary, to keep the public informed about what has happened and what is planned for a site.

The public is also given the opportunity to comment on the results of the investigations and the studies conducted at the site and the proposed remedy.

After considering public comments on the proposed remedy, a Record of Decision is signed.

A Record of Decision documents why a particular remedy was chosen.

The site then enters the design phase, where the plans and specifications associated with the selected remedy are prepared.

The remedy action, which follow is the actual hands-on work that cleans up the site.

Following the completion of the remedial action, the site is monitored, if necessary. Once the site no longer poses a threat to public health or the environment, it may be deleted from the Superfund national priorities list.

Now Arnie will talk about some of the background about the site.

MR. BERNAS: Okay, York Oil Site is composed of a two parts. The ~~part~~ site proper, which is the area just outside here (indicating) is also referred to O.U. One, Operable Unit Number One. And I'll speak a little bit about that during this presentation. The rest of this area surrounding the site is really the main subject of tonight's meeting. It's called the contamination pathway. And it's also referred to as Operable Unit Number Two.

A little bit about the background and status of the whole site. Now, just to review the history of York Oil briefly from, 1964 to 1977 York Oil Company collected waste oil from surrounding areas and processed it to resell it. Also during that period of time, when that operation stopped, oil was just collected and sold as U -- for dusting the roads.

Now, during the time of operation unfortunately the contaminants in the oil got into the sediment, soil, ground and surface water on the site proper. The nature of the contaminants were P.C.B.s, lead, also organic compounds, arsenic, and many others compounds, but the major ones are the ones that I just mentioned.

Now, when this problem was discovered by the State ~~and~~ in 1979 the EPA was called into action and we started a series of removal actions.

And as you may recall from Joel's presentation, the Superfund works in two parts. One part is removal, and that's short-term action to protect the health and safety of the public and the environment. And the other activity is remediation, which is more complex because it involves coming up with the final remedy and trying to get the responsible parties to pay for the clean up. So while this second activity goes on, the removal actions quickly move in to take care of the problems.

Now as you can see, in 1980, the first major removal action took place and the contaminated soil was excavated and mixed with Fly ash (phonetic spelling) and that mountain is the result of that back there. Oil was collected and stored in tanks and trenches were put in to help prevent the oil from spilling into the surrounding area.

In 1983, further actions -- further removal actions took place, more oil was collected. A filter fence system was installed and oil booms were put in to soak up the oil that was seeping out of the ground.

In 1992, some of the tanks were found to be leaking, so the oil was transferred into other tanks and drums.

In 1994, the oil and P.C.B. was removed from the tanks and taken off site for treatment. There are special incinerators in Texas that burn some of these P.C.B. oil mixtures, and that was done. And also many of the drums containing contaminated material were also removed from the site at that time.

And in 1995, an interceptor trench was installed near the southern wetland in hopes of intercepting any oil that might flow in that direction when the water table was high.

A remedial investigation and feasibility study for the source area, the O.U. One area, was completed by New York State and EPA in 1987. A Record of Decision, which outlines the remedy for the first operable unit, the source, was completed in 1988.

Now the Record of Decision for the source basically had the remedy being excavation of all the contaminated soils and mixing it with cement. That process is call solidification. The solidified material was then to be reburied under the site and on top of that we would put a special kind of cap conforming to New York State standards. So, the cementing of the excavated soils would make it almost impossible for the contaminants to migrate. And as an extra step, putting this special cap would also prevent water from having any effect on leaching out the contaminants.

Also in its Record of Decision some of the things that were done in the removal were also mentioned, like taking away the oil and the tanks and the drums that were on the site. That part of the remedial effort action was done in the removal action.

However, one of the objectives of the Superfund program is to identify responsible parties and get them to pay for the clean up. Now when that's done the EPA, the Department of Justice, and the responsible parties entered into an agreement, which is legally called a consent decree. When this consent decree finished it's given to the federal judge, and then it's sent out for comment, and then it's entered into the Record. And that's when the design and construction of the remedy can start.

Now, I'm sure you can see that 1989 to 1996 is seven years. That's a long time. The seven years resulted from the fact that in the York Oil situation we had seventy-five responsible parties, many of which agreed on their responsibility and share, but some did not agree, as is their right. They did not agree with the share or they did not feel they were -- had any responsibility.

So, in an effort to be fair, we entered negotiations. On two occasions we came very close to completing the consent decree, but at the last minute something happened and the consent decree had to be withdrawn. This is the way the process works.

Finally, in August 1996, we finally got it done. The consent decree was completed. All the parties agreed on their share. And incidentally, since we could not recover the total cost. We agreed that the Superfund would pay fifteen percent of the cost and that the responsible parties would pay eighty-five percent. So we gave a little to get this thing done.

Now, at this time as soon as the consent decree was entered, we began the remedial design for the first operable unit. That's in progress right now. And we expect it to be completed at the end of this year.

Now while we're discussing the first operable unit, I would like to present David Babcock from Parsons Engineering, who was hired by the responsible parties to do the design and the construction for the first operable unit. And Dave has few illustrations of hopefully what the York Oil site will look like after we complete the remedy. Dave.

MR. BABCOCK: Thank you. I want to bring these out here so you can see them a little bit.

This is cross section -- how shall I explain it easily? The site, this is like if you're up in an airplane or a helicopter looking down on the site. After the design is complete and the remedial action is complete there will be a larger mound, if you will, or a hill out there where it is now. And this the footprint of the area all within the existing fence that's out there right now.

And this is a cross section cutting through that hill or that mound. And feel free to come up and look at it after the meeting if you'd like. There are various parts of the cross-section. And all of the contaminated materials will be up above the water table. So, it won't be in contact with the groundwater at all.

And then just to give you a sense for what the site will look like, this is a rendition, and I know it looks like kind of pretty, but we wanted to try to give a sense for what the site would look like. This is North Lawrence Road here, if you're driving up, okay toward Savage Road, for example. And if you're just driving by, this is pretty much what it would look like. This is called the ground view rendition into the site. And, again, feel free to come up after the meeting and have a look at these.

And this is the type of view, but it's a little bit -- it's up at about a ten degree angle, if you will, from the ground. So if you're up in a low flying helicopter, this is what you would see. It kind of gives you a sense for the breadth of the site.

One item that's not shown here that Arnold asked me to mention is there will be a small building for groundwater treatment, which is part of the remedy. That will be behind the capped area here.

So again feel free to come look at these after the meeting, but this is just to give you a sense for what the site will look like after the construction.

MR. BERNAS: Okay, thank you, Dave.

Okay, now we start to move on to the main subject of tonight, the contamination pathway. Again, as Joel explained the procedure, on the administrative order on consent to do the remedial investigation and feasibility study for the second unit contamination pathway was agreed to in 1992. And from 1992 until now, the process of the remedial investigation and feasibility study for the second operable unit has been in progress and it culminates in tonight's meeting where we present the public with the proposed plan.

Now at this time, I would like to

introduce Bruce Thompson who works for a consultant employed by the responsible parties. Bruce and his contractors performed the field work to do the remedial investigation and feasibility study. And I've asked Bruce this evening to quickly review the major findings of the remedial investigation and the feasibility study.

MR. THOMPSON: Good evening. My goal here is to summarize in about fifteen or twenty minutes six years of work and about one point eight million dollars of investment in what went on. And while the blue fact sheet summarizes all the work and basically the highlights, when we talk about what's in your public record here's the -- these are the two sides of reports with all the various figures and text and everything else that one went in to what we did.

MR. BERNAS: I might mention, those reports are in the repository here.

MR. THOMPSON: If you want to get in the nitty-gritty details, the hydrogeology, and everything else, please do. What my goal here is to just summarize and give you an overview. If you have questions as we go through it, please go ahead and ask them.

So the goal that -- we started with as has been described Operable Unit One, the site proper, which on this scale is this little slice down here. And the investigation objectives for us was to look at where typically waste oil from this site could have gone to, and to assess whether that that waste oil or the contaminants that were contained into it imposed any threat to human health and the environment.

And just to give you a view of how far out we went, if this is the site, this area is called the southern wetland and we will talk about it little bit more. There's a western wetland. Then we kept going right down the drainage pathway all the way until they hit Lawrence Brook. And then as far as down as to where Lawrence Brook goes into the Deer River.

The total area that we looked at is

somewhere around five hundred acres. We started out by taking aerial photographs, making base maps, picking out where we were going investigate. And this would be described here as surface feature survey, basically trying to set up maps to figure out where we needed to go to look further.

We looked at just basically how is the area used. And we'll have to apologize. We don't live here. We have to go in and look at records and figure out what areas around here are farming, where do people live, where are people using groundwater for drinking. And that's what the population land we survey.

We do a cultural resources evaluation, which at this site what we identified as, you know, it's basically looking for archeological interest. At this site there is an old milk production barn basically right next to Operable Unit One, but -- that's a typical part of your investigation to see if there is anything that you might end up disturbing through remedial efforts.

Surface water, just by indication, we looked at eight different locations, came in in the spring and back again in the fall so we could see what kind of contaminants might be in surface water, you know, right after snow melt and then again in the fall when it's at low water.

We -- in the vast -- as I'm sure you understand living here, that most of the area surrounding the site is wetland. So, we took a grand total of almost ninety-five different samples of sediment. And then we looked at it for basically every kind of chemical that we can find in analysis, that's volatile compounds; which are solvents, P.C.B.s, pesticides, metals basically the hold gamut. We also, in the same area, we looked at surface soil, basically what somebody might come in to contact with if they're walking out in the area, if somebody is out hunting. Certainly when we were up here doing our investigation we saw a lot of people out on A.T.V.s, snowmobiling. So, surface soil we looked at a total of twenty-nine different locations spread around this area.

We did a groundwater investigation. And here's a closeup view. Here is the site itself. There's a total of thirty-one different monitoring wells, which is basically just, you know, think of it as a pipe that's stuck down in the ground. Sometimes it's going to be drilled in down -- all the way down into the bedrock. Some of them are in the shallow area. We went out into the southern wetlands. This area here. And there's groundwater from here -- from the site that flows down the southern wetland. We went out during the winter, basically so we wouldn't disrupt the wetland by having to put in roads. We installed eight of our monitoring wells. And then we came back in August of '93 we sampled a grand total of thirty-one wells to try to delineate what was happening to the groundwater.

The final portion of our investigation was an ecological investigation. For us that started with doing wetland delineation using the New York State and the Corps of Engineers criteria. We did what we call flora and fauna surveys. Basically we went out walking through the wetlands looking at both kind of trees, groundcover, what kind of habit essentially that are formed. We also did fauna surveys. We did those in the Lawrence Brook near the site. And basically, trying to figure out what kind of fish and other things live there. We did it in the wetlands in the nearby area. And then we came back in after we had basically assessed what kind of creatures lived in the environment and sampled some of them to see if any of them were carrying contamination in their body.

And we based where we sampled the critters based on where we had done sediment sampling. And we focused on the areas that had the highest amount of contamination. For example, from the site and along the draining pathway here and then right out here in what's called western wetlands, we sampled frogs. We sampled shrews. And we sampled earthworms looking for the levels of contamination that they would have in their body because it's a way that you can look at ecological risk. As other animals higher up the food chain eat those, you want to make sure that they don't have a risk from consuming any kind of contaminated animal. So, that was the overall scope of the work we've done.

The results: In surface water, we didn't find anything. We found some elevated concentrations in this drainage ditch immediately within the site. Drainage pathways out through here and out through Lawrence Brook, we didn't have any constituents of concern.

In sediment, we focused -- back up. In sediment, we sampled the southern wetland, the western wetland, and all through the drainage pathways. We ended up really initializing on two areas. In the western wetland, we found predominately P.C.B.s and lead in the highest concentrations right at the end of the O.U. One area right in the western wetland, and then through the drainage pathway through the western wetlands. And then if you continue up north of Lawrence Road in an area that's termed in the document here as the northwestern wetlands, in diminishing levels. However, we still have concentrations up in here that exceed New York State screening criteria. So there's a potential for ecological risk there.

Surface soil, as we said, we found some low levels of P.C.B.s in the areas immediately adjacent to the site. Subsurface soil, we did some soil borings in the areas immediately adjacent to the site. A couple of those we also found P.C.B.s.

Groundwater, I'd like to talk about a little bit more and drop back to my site. As I mentioned earlier, groundwater as we found by looking at how high the groundwater elevations are and monitoring well and also by sampling and -- sampling the groundwater for chemical constituents. We defined a plume of solvents in the groundwater. It extends about three hundred, four hundred feet out into this area called the southern wetlands. There's currently -- it's a New York State regulated wetland. It's not -- to our knowledge, it isn't really able to go and develop that. There's currently no houses there. So there's no current use of groundwater. However, the concentrations exceed both New York State and federal standards and, therefore, they would be a potential human health risk. If somebody was to go out here and put a well and pump on that and use that water, that would exceed drinking water criteria.

The last thing I want to talk about is the biological tissue residues. As I said, both frogs, earthworms, and shrews that we sampled in this area and along the edge of the western wetland, we found P.C.B.s and lead in those that we can definitely say are associated with the site. It wasn't at levels that would cause an acute -- meaning that the animals are still running around out there. They have part per million of P.C.B. in their tissue, but nothing that's making them drop dead in their tracks. But that derives the ecological risk and, therefore, says that this area needs to be looked at for remediation.

Any questions so far?

MR. BERNAS: We'll take our questions at the end.

MR. THOMPSON: Okay.

So conclusions, for groundwater, as I mentioned, we exceed both federal and state standards and the objective then becomes to prevent human contact with that groundwater until such a time that it's remediated.

The other media of concern is sediment. We found no current human health risk from contact with it. However, there's an ecological risk associated with the area of highest contamination, and that needs to be remediated.

So our -- I won't define all the fine terms that come out of Superfund. R.A.O. is the remedial action objective, but the point is that if you have sediment contamination that leaves an ecological risk you need to do something about it.

The next piece of the process that we did -- and what I just went through is basically looking at the remedial investigation. That's trying to define where the problem and the nature and extent of it.

The second piece is called feasibility study. The feasibility study is used to assess what we do about it, how much will it cost, and how long will it take, and what will its effectiveness be.

And for sediment we looked at really three different alternatives. The law that drives this entire process, National Contingency Plan, it says we have to look no action as a point of comparison. So, we looked at no action and we said, you know, that's not going to cost anything. It's going to drive us to monitor for the long term. And when we talk about monitoring for the long term, we're talking about going out and assessing this on a periodic basis for thirty years. And that's how you can come up with two hundred and twenty thousand dollars for long term monitoring.

The second alternative was to go in to this area of the western wetland, and here is North Lawrence Road. We're sitting over here at the site. Go in to this area and up in the drainage channel that goes up to the North Lawrence Road and dig that material out, add it in to what's about to be done for Operable Unit One and go in and then revegetate and restore the area after we're done.

The second component of that alternative was then to go -- actually you can put those on top of each other. That's the Northwest wetlands. It had -- in this yellow area had much lower levels of contamination, however, they're still sufficient that they exceeded ecological health screening criteria. So, the second piece is to go in and monitor that long term.

Alternative three is basically just to go in and presumptively remediate that area right off the bat as well.

The groundwater, we also looked at three options. One is no action, which basically just means don't do anything further.

Alternative two is labeled as natural attenuation. And in the last, really since we started this project the science of being able to figure out what happens underground has increased tremendously. And what we realize now is that these solvents that are in the ground are degraded biologically over time. We've come up with a whole bunch of new laboratory techniques to be able to track what's going on. So, alternative two says natural attenuation, institutional controls, and long-term monitoring.

So, with the natural attenuation it's a matter of going out to the monitoring wells and collecting various kinds of samples so you can track the natural attenuation process.

Institutional controls means basically putting a deed restriction on that property so you can't go into that property in the future and build on it or put in a drinking water well. That will protect people over the time period span for that to occur.

And the last is to actually go and in put in extraction wells, pump the water out, and put it through a treatment system and put it back into the ground.

Now I'll just overview the costs. For the natural attenuation approach we're dealing with a -- when we say present worth cost that's how much dollars we need in hand in the bank today to fund it for thirty years. And that cost would be six hundred thousand dollars.

For going out and doing active pumping and treatment -- treating that water it would be about one point seven million dollars.

One of the things we looked at is how long will it take under either scenario. We did some -- some computer modeling or basically trying to look at it and say how long it will take. It's about ten years once the Operable Unit One basically cuts off the source of the solvents, about ten years for it to remediate under natural attenuation. Because groundwater flows very slowly through this area and you can only pump so much out of the ground, it would take about seven years to do it under active pumping and treatment. So, the time scale is very similar.

I let me back up. I know I just skipped over the cost for the sediment. On the sediment the no action alternative doing nothing except monitoring for the next thirty year is about two hundred and twenty thousand dollars.

To go in, as I mentioned, and dig out this western wetland all of it and incorporate it in to the remedy is -- I have to look at it because I don't have memorized, three point two nine million dollars. And then to add in this area up here up in the northwestern wetlands you can add about another million dollars to that total. Give you a total of about four million dollars to make that happen.

Arnold is going to talk about how EPA makes that selection.

When you do a feasibility study you use

nine different criteria to try to evaluate and come up with what solution makes sense for any particular problem. Every remedy that we look at that is potentially kept has to meet the first two. They have to comply or they have to protect both human health and the environment. They also have to comply with what is called ARARs. ARARs are state and federal laws. And for example, for groundwater it's -- both state and federal law say that we have to be below a certain level of solvents for it to be drinking water quality. So, if a remedy is going to be selected, it's going to have to meet state and federal laws.

The next five are what we went through in the feasibility study trying to balance. And that's looking at how does this remedy work in the long term. Is it effective over the long term?

The best example of that is looking up at the northwestern wetland. That's a forested area. If we go in and dig it out, we're not going to have fifty-year old trees in there any more. We're going to have an open area. And we're going to have to plant saplings. And those are going to take a long time to recover.

You look at how does this approach reduce the toxicity or the mobility or the volume of contamination at any particular part of the site.

Short term effectiveness looks primarily at things like, does this remedy have a risk to the population. If you're digging or disturbing something that's contaminated how -- what impact might that have on anybody that lives in the nearby area. That's one of the things we weighed there. Implementability is simply are you able to actually do something effective or make this remedy work.

And cost is the final factor. You have to assess, the ideas is you're going to be cost effective, but it's not going to be at a risk to human health and the environment. Cost is a secondary factor after protection.

The last two factors are basically one of the reasons we're here tonight. Public acceptance is very important. And your comments on the approach that's been proposed here for this site is something that EPA will weigh when they make their final decision.

And then state acceptance, we have representatives of New York State. The State has to concur with where the remedy is going. So, these nine factors are what are weighed in trying to the select the right decisions for this site and that's what Arnold is going to present now.

MR. BERNAS: Okay, thank you, Bruce.

As you can tell from what Bruce had to say, these nine factors take a lot of iteration to come up with the final decision, and that's between the EPA and the State. And after a lot of analysis on the pros and cons of each of the three remedies that were suggested for sediment, we decided to recommend as our preferred alternative ~~seven and~~ two remedy, which is excavating the sediment in the western wetland solidifying them. Solidification, again, is the process of mixing the sediment with cement so the contaminants are immobilized and disposing of those under the cap that's going to be placed on the site proper. This way we would consolidate all the contaminants under the O.U. One cap.

Now to make sure -- as Bruce mentioned, there is some contamination in the northwestern wetland, but it's on a low level. However, it exceeds certain standards for ecological purposes. And what we are going to do there is we're going to do more sampling in that area while we're designing the remedy for dredging of the western wetland. And when that later is evaluated by the State and the EPA, we will then decide whether it is safe to bypass the remedy -- this kind of remedy for the northwestern wetland. If we decide that the data suggests there's too much risk to the ecology, then we will excavate the contaminated sediment in the northwestern wetland. But the decision now is to do these studies and see if it has to be done.

As was mentioned, if we just go ahead and do it, we're going to be tearing up that wetland. And it's hard to restore a wetland to its natural source. So, we think that it's not that -- the levels are in a gray area and we want to study it some more in that northwestern wetland.

The remedy that we selected for the groundwater was the natural attenuation, institutional control, and monitoring.

Now natural attenuation is a fancy word for breakdown. In other words, the volatile organic compounds that are the contaminants in the water, nature breaks them down in to harmless materials over time. However, it's not a hundred percent guarantee. We have to monitor to make sure that this process is happening. And that's what we're going to do. It is a real thing. It does happen, but unless you monitor you're never sure that it is going to happen to an extent where after the ten years or so that the levels of contaminant will meet the State -- New York State requirement for drinking water standards. That will be monitored.

Institutional controls, as previously mentioned, involve getting deed restrictions to make sure nobody is going to be putting any drinking water wells in the southern wetland. And that's going to be done also.

Monitoring is what we've just explained; that a schedule will be made to sample these wells periodically and evaluate the data to make sure that this breakdown process of the contaminants is occurring.

Now finally to review the cost of our preferred remedy, basically sediment two and groundwater two add up to the three point eight nine million dollars. And that's really the final selection at this time subject to any input that we get from you folks or anything else that comes up during the comment period.

We're hoping to -- that we could coordinate the effort with the first operable unit, but that's going to be something we're going to try. In either event, this pretty much closes out our formal presentation on the

York Oil Proposed Plan. And at this time -- okay, Joel Singerman would like to make a few more remarks.

MR. SINGERMAN: Okay, just as a reminder the remedy that Arnie described as the preferred remedy EPA and the State won't make a decision until we've heard all public comments. You know, all the documents related in the proposed plan, the remedial investigation and feasibility study, I believe, are available for your view in this building. And if you have any comments following this meeting, we will accept them up until July 23rd. You can fax them. You can e-mail them. You can telephone them. You can mail them, however you prefer.

The last point, we have a court stenographer here tonight to make a transcript of the meeting. That if you do speak, in order for us to have a complete record, we would ask that you identify yourself before asking a question. So at this point, if there are any questions, we'd be happy to answer them.

MR. BERNAS: Yes.

MS. MARTIN: Christine Martin, from the Courier-Observer. Throughout the entire -- what I've read and the presentation, the term current levels was used and we talked about natural attenuation. Do we have any idea what they -- those levels were for those P.C.B.s, arsenic, mercury and lead twenty or thirty years ago?

MR. BERNAS: We have some data from the '80s. We don't know what they were like thirty years ago, but I would say the most -- the data that we have that's worth anything is mostly not before the '80s.

And the P.C.B.s and the lead don't attenuate. The only thing that could possible attenuate is the V.O.C.s. And we have some evidence that the V.O.C. levels and the types of V.O.C.s that existed ten years ago have changed enough to give us hope that natural attenuation will work.

So the answer is yes, we have those levels. And I think in the Proposed Plan it mentions some of the levels that existed. And the current levels are lower and also have changed composition, which is an indication that this attenuation process is occurring.

MS. MARTIN: But do we have any idea of how toxic the area was twenty years ago? I mean was it far beyond the federal guidelines that --?

MR. BERNAS: Well, certainly the first operable unit was. That's why we did all those removal actions to stabilize the area. The path -- the contamination pathways were possibly a little higher, but we don't think so in terms of P.C.B. and lead, because they don't change much over time. But in terms of the V.O.C.s, they might have been a little higher ten years ago, but I wouldn't say significantly.

Yes, ma'am.

MS. HUTCHINS: Rita Hutchins, Moira supervisor. Since the first well -- the monitoring wells were put in and the contamination identified, do you have a rate that you can say what the rate of mitigation has been of the contaminants or is that identifiable?

MR. BERNAS: Well, again, the only contaminants that might decrease are the -- mainly the volatile compounds. And there is some evidence of a change in the nature of these volatile compounds, which indicates degradation. But, for example, in the southern wetlands, we don't have any data from -- when we did the O.U. One remedial investigation we do have that data. We did -- that's why we did the contamination pathways, because we knew that it was a good probability that the contaminants were moving off site. And that was really the purpose of doing this study to get the numbers, and that's what we got now. So, I can only speculate that the V.O.C. numbers might have been a little higher ten or twenty years ago.

Does that answer your questions?

MS. HUTCHINS: Yeah. I just wonder if it was identifiable that it was moving anymore so then what was first --?

MR. BERNAS: In terms of the migration, the groundwater is moving very slowly towards the south. And York Oil has been around for, I guess, from '64, that's thirty-four years, and the extent of the V.O.C. contaminants were only about five hundred feet south of the O.U. One site. So, that they are moving very slowly. But they -- right now, whatever they were before, I can't say for sure, but they only exist about five hundred feet out. Beyond that there's nothing. There's no contamination in the groundwater beyond that point.

And we fully believe that once we remediate the source that's like it's going to cut the supply of contamination off. So, what's ever left in the southern wetland will, you might say, dry up over time or as we call it, attenuate to drinking water standards.

But that's what we'll find out in the monitoring program.

Anyone else?

Well, again, as Joel said, sometimes

people feel a little bashful about asking questions in a public meeting, but don't hesitate to just write to me a little note or fax or e-mail anything that might come to you later on. Hopefully, doing it before July 23rd, because we have certain legal obligations to move on with our selection process. It's not that we're trying to rush anybody, but it's just a legal requirement that we have to move on. And we certainly would like to hear from you if you think of anything more to ask us.

MS. HUTCHINS: How much money did you say has been spent to this point?

MR. BERNAS: On York Oil?

MS. HITCHINS: Uh-huh.

MR. BERNAS: Probably five or six million dollars. When it's all done it will be twenty or twenty-five million dollars.

MR. THOMPSON: This study to date is just under two million for potential work that we've done for the P.R.P.

MR. BERNAS: Well, that's just the study, but, you know, we all spent -- had money spent in other areas, but that has to be done.

MR. SINGERMAN: But this is all being financed by the potential responsible parties. It's not being -- the federal government is not paying for this.

MS. MARTIN: Do you happen to have a list of the seventy-five responsible parties?

MR. BERNAS: Yes, we do. I don't have it with me, but we do have a list.

UNIDENTIFIED SPEAKER: Is Franklin County one of them? Is Franklin County one of them?

MR. BERNAS: Is Franklin County?

MR. DiGUARDIA: No.

MR. BERNAS: I don't think so. The major responsible parties are ALCOA and Uncle Sam.

UNIDENTIFIED SPEAKER: The United States Air Force, isn't it? The Department of Defense?

MR. BERNAS: As I said, Uncle Sam. Those three are like seventy-five percent -- have agreed to pay about seventy-five percent. And the other seventy-two are going are going to put up the ten percent and the Superfund will pay fifteen percent. As I said, it took a long time to get this agreement, but we're there. We're moving on now.

Anyone else?

MS. HUTCHINS: I have one silly question --

MR. BERNAS: Sure. That's okay.

MS. HUTCHINS: -- or comment. As the money is being spent to remediate and over the years, what would be the chance of a water system being put in the town of Moira for the residents?

MR. BERNAS: I haven't heard any -- I haven't heard that before. I don't think the situation of contamination at York Oil, frankly, I don't think it would warrant --

MS. HUTCHINS: Okay.

MR. BERNAS: -- a public water system, because we've taken -- Lou, am I right? We've taken samples from the surrounding homes and to this date we have no evidence of contamination. Fortunately because of the geography, the groundwater is moving south in to the southern wetland and away from any residential homes. So, I think that would be a tough one.

UNIDENTIFIED SPEAKER: Are you still going to monitor wells? I mean --.

MR. BERNAS: Yeah, what do have them scheduled, every couple of years -- every two or three years?

MR. DiGUARDIA: I think so.

MR. SINGERMAN: Anymore questions?

MR. BERNAS: Okay, well if there are no more questions, thank you all very much for coming and participating in this democratic process. And hopefully, we'll see some progress next year in finalizing the York Oil site. Thanks again.

(The public meeting concluded at 8:00 p.m.)

STATE OF NEW YORK)

COUNTY OF ST. LAWRENCE)

I, Mary Elizabeth Burnham, a Notary Public in the state of New York, do hereby certify that the foregoing public meeting was taken before me, in the cause, at the time and place, as stated in the caption hereto, at Page 1 hereof; that the foregoing typewritten transcription, consisting of pages number 1 to 45, inclusive, is a true record of my stenographic notes of all proceedings had at the public meeting.

IN WITNESS WHEREOF, I have hereunto subscribed my name, this the 20th day of July, 1998.

Mary E. Burnham

Mary E. Burnham, Notary Public,
State of New York
County of St. Lawrence
My Commission expires 6/15/99