

FINAL REPORT

BORDEN CHEMICAL FACILITY PHASE II REPORT

Prepared for
City of Kent
220 Fourth Avenue South
Kent, Washington 98032-5895

November 2000

URS

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1.1 BACKGROUND

URS was retained by the City of Kent to conduct an Phase II Environmental Site Assessment (ESA) of the Borden Chemical Facility (Borden) in Kent, Washington (the Property, which is shown on Figure 1). This project was performed in accordance with our Consultant Services Contract, dated August 15, 2000.

We understand that the City of Kent is considering purchasing the Property from Borden. Because of the potential acquisition, the City of Kent requested an evaluation of the current environmental condition of the Property. The current layout of the Property is depicted on Figure 2.

1.2 OBJECTIVE

The objectives of this ESA are to evaluate the environmental condition of the Property and also to estimate costs to remedy recognized environmental conditions. The extent of research to identify potential environmental conditions is limited by the scope of services.

The scope of services conducted for this assessment consisted of the following tasks:

- **Site Reconnaissance** – A site reconnaissance was conducted by Mr. Norm Nielsen and Mr. Brian Nichols of URS on August 25, 2000. Surface conditions and current activities on the Property and adjoining properties were observed. An inventory of potential contaminant sources on the Property and adjoining properties was completed on the basis of visual observations.
- **Records Review and Interviews** – During the records review, reasonably ascertainable information was obtained from public agencies (federal, state, and local) to assess whether current and past property usage within the study area may have created a potential for contamination of the Property. Our study area for the records review is based on the American Society for Testing and Materials (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process E-1527* and includes the following:
 - The Property and adjoining properties (Figure 2) for registered underground storage tanks (USTs) and Resource Conservation and Recovery Act (RCRA) generators.
 - 1/2-mile radius for leaking USTs; landfill sites; Non-Corrective Action RCRA treatment, storage, and disposal facilities; and Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) sites.
 - 1-mile radius for Corrective Action RCRA treatment, storage, and disposal facilities and state and federal superfund sites.

We also used aerial photographs, fire insurance maps, and previous site investigation reports to characterize past activities and events on and around the subject properties. Private data sources included URS geologic, hydrogeologic, and hazardous waste project experience.

- **Groundwater Sampling and Analyses** – URS personnel sampled six onsite monitoring wells on September 19, and 21, 2000. The groundwater samples were submitted to OnSite Environmental in Redmond, Washington for chemical analyses.
- **Soil Sampling and Analyses** – On September 21, URS personnel observed the digging of four test pits in two areas identified as the locations of former settling ponds that were subsequently filled in and landscaped (Figure 2). URS personnel collected one soil sample in each of the four test pits (four samples total) and submitted these to OnSite Environmental for chemical analyses.
- **Evaluation, Analysis and Report** – Information collected during the above activities was evaluated. This investigation report addresses our findings and presents our conclusions and recommendations.

3.1 LOCATION

The Property is located in the northeast quarter of Section 24, Township 22 North, Range 4 East, in King County, Washington, (Figure 1) approximately 3/4 mile northeast of the Green River. The specific address is 421 1st Avenue North, Kent, Washington, 98035. The Property occupies approximately 12 acres and is bounded on the north by James Street, on the east by 1st Avenue, on the south by railroad tracks, and on the west by 4th Avenue. According to the U.S. Geological Survey (USGS) 7.5-minute topographic map of the Renton Quadrangle, the Property is relatively flat and at an elevation of approximately 35 feet above mean sea level.

3.2 SITE IMPROVEMENTS

The Property has been used to manufacture and distribute Phenol-Formaldehyde (PF) and Urea-Formaldehyde (UF) resins used for plywood manufacturing since 1956. Over that time, 49 aboveground storage tanks (ASTs) have been present onsite, containing industrial quantities of chemicals such as formaldehyde, phenol, methanol, petroleum products, hydrochloric acid (HCl), sodium hydroxide (NaOH), and potassium hydroxide (KOH). Approximately 30 tanks remain onsite (see Table 1). There are six buildings onsite that occupy approximately 40,000 square feet (ft²). One of the buildings houses a natural gas-fired boiler, which is used in the manufacturing process. Heating is accomplished using a number of heat-pumps located onsite. The Property's wastewater collection and recycling system consists of a mixing tank, a large treatment tank, several smaller settlement tanks, and a sludge drying pond. The system occupies approximately 30,000 ft². The Property is serviced by the City of Kent municipal water system, and all non-recycled wastewater and stormwater is discharged directly into the King County Department of Natural Resources (KCDNR) Industrial Waste water system. The Property is located immediately west of the Burlington Northern Santa Fe (BNSF) Railway corridor. A rail spur cutting across 1st Avenue North from the BNSF main line services the Property along its southern border.

3.3 ENVIRONMENTAL SETTING

3.3.1 Regional Geologic Conditions

The Property is relatively flat, with elevations around 35 feet above mean sea level (msl). The area is urban commercial and industrial land, located approximately 3/4 mile northeast of the Green River, on the eastern side of the Kent Valley near downtown Kent, Washington. The Kent Valley is located in the southeastern portion of the Puget Lowland, an elongated topographic and structural depression bordered by the Cascade Mountains to the east and the Olympic Mountains to the west. The Puget Lowland has been repeatedly occupied by a lobe of the Cordilleran ice sheet, one of two continental glaciers which developed during the recent ice ages of the Quaternary period. The Cordilleran ice sheet advanced and retreated from British Columbia, Canada between about 13,000 and 20,000 years ago. The advancing ice sheet filled the Puget Lowlands with as much as 3,000 to 5,000 feet of ice at least four different times during this period. This resulted in a thick, complex sequence of glacial and interglacial sediments.

Geologic mapping of the Borden facility by EMCON Northwest, Inc. (EMCON, 1992) indicates that the site is underlain by recent alluvial sediments consisting of interbedded fine sands and

silts to a depth of at least 50 feet. These sediments are typical of those found throughout the Kent Valley. EMCON identified four major geologic units in the upper 50 feet of the water table aquifer. These sediments exhibit gradational boundaries and tend to interfinger both laterally and vertically over relatively short distances, therefore lacking uniformity across the site. The four geologic units encountered by EMCON are listed below in descending order.

- **A:** Layer A is the uppermost unit, averaging 10 feet in thickness. It is predominantly composed of moist to saturated silty fine sand overlain by a thin layer of fill.
- **B:** Layer B is located directly beneath Layer A over the majority of the Property. This unit averages 10 feet in thickness. Layer B is composed of fine to medium fine sand with areas of silt, and is very saturated and loose.
- **C:** Layer C is located beneath Layer B over the majority of the Property, and under Layer A in some areas. Layer C is composed of a sandy silt interbedded with areas of the fine sands found in Layer B. This unit ranges from 5 to 10 feet in thickness.
- **D:** Layer D is approximately 20 feet in thickness and composed of interbedded fine and silty sands similar to Layer A. However, Layer D is more dense and contains thin interbeds of gravelly fine sand.

3.3.2 Groundwater

According to their 1992 report, EMCON took water level measurements from 10 monitoring wells and 14 drive points at various locations on the Property. These data indicate that the water table varies seasonally from 4 to 9 feet below ground surface (bgs) in the alluvial sands and silts underlying the Property. EMCON also generated groundwater level contour maps showing shallow groundwater flowing to the north-northeast. The base of the alluvial aquifer was not encountered during onsite drilling activities down to 50 feet bgs.

Permeability testing performed in the shallow aquifer sediments yielded moderate hydraulic conductivity values ranging from 2×10^{-4} to 3×10^{-2} centimeters per second. The interbedded and gradational nature of the four geologic units underlying the Property most likely contribute to the lack of correlation between units.

4.1 HISTORICAL REVIEW

Identification of historical uses of the Property are based on review of historical aerial photographs, Sanborn Fire Insurance (SFI) Maps, and the previously mentioned EMCON report (1992). Aerial photographs reviewed at Walker and Associates of Seattle, Washington, are described below:

- 1936 (black and white photograph; unknown scale): The Borden Chemical facility is not yet present. The majority of the land presently occupied by the Property has been cleared and is being used for agricultural purposes. Stands of trees remain in the east central portion of the Property, as well as along the railroad spur at its southern boundary. Land in the northeast corner of the Property, as well as land directly to the southeast and southwest, have been cleared and contain residences, barns, and warehouses possibly used for industrial purposes. The BNSF rail line is present east of the Property, and the surrounding area is being used for a mixture of residential, agricultural, and industrial purposes. There are no identifiable ASTs or liquid-carrying railcars visible. There appears to be some spillage and/or stockpiling of materials in the rail yard approximately 1/4 mile southeast of the Property. This material does not appear to be liquid. Two possible ponds can be seen in this photograph. One, located in a clearing in the eastern central portion of the Property, is irregularly shaped and less than 50 feet across. The other pond, located approximately 1/2 mile south of the Property along 1st Avenue North, is composed of two oval-shaped chambers. The contents of either pond are unknown.
- 1960 (black and white photograph; unknown scale): The Borden facility is present onsite. The residence and barn formerly located directly northeast are gone, and the central portion of the Property has been cleared for construction of the Borden plant. Buildings onsite include the Protein Plant, Methanol Unloading Facility, and several other structures. Five large tanks are visible onsite, including the methanol tanks in the southeastern corner. The former Truck Wash Lagoon is visible. There does not appear to be any more agricultural activity on the Property, although there are still fields located to the north and northwest. The remaining surrounding area has continued to develop as an industrial area. Liquid-carrying rail cars are present on the tracks in the vicinity, although there is no visible evidence of spillage or tanks on adjacent properties.
- 1968 (black and white photograph; unknown scale): The Property and surrounding area have continued to develop, with less agricultural and residential land visible in the immediate vicinity of the Property. The majority of the structures currently onsite are present in this photograph, with the exception of the wastewater collection and recycling system. The former Truck Wash Lagoon has increased in size. The area of the former southwest settlement pond has been cleared. There appear to be four ASTs on the land directly adjacent to the southeastern corner of the Property. Two gas stations are located approximately 1/2 mile east of the Property, on the north and south sides of James Street.
- 1974 (black and white photograph; unknown scale): The treatment tank, settling tanks, sludge drying pad, and dry resin pond are now in place at the Borden facility. The Truck Wash Lagoon has decreased in size, as the southern half appears to have been filled in. The area of the southwest settlement pond has been replanted and is overgrown. Otherwise, the Property appears much the same as in the 1968 photograph.

- 1980 (black and white photograph; scale: 1 inch = 1,000 feet): The only visible additions since 1974 are the laboratory, located in the west central portion, and the playfields, located in the northern 1/3 of the Property. The surrounding area has continued to develop, although the rail yard has diminished somewhat. There are fewer warehouses, vehicles, and storage along the tracks.
- 1990 (color photograph; scale: 1 inch = 1,000 feet): None of the three ponds formerly located onsite are still present. All have been filled in and replanted with grass. The northern half of the Property, southwest corner, and area east of the office have been landscaped. In general, the Property appears as it does presently. The land directly adjacent to the southeastern corner of the Property is being used as a storage/staging area. There are a large number of vehicles and storage containers, including transloading containers, drums, and, possibly, small ASTs, onsite; this area does not appear to be paved.
- 1997 (color photograph; no scale): The Property and surrounding area appear generally the same as in the 1990 photograph. The storage area directly adjacent to the southeastern corner of the Property and the gas stations 1/2 mile east of the Property along James Street are still present. There are no visible signs of hazardous materials spillage or excavation in the immediate vicinity of the Property.

5.1 SITE RECONNAISSANCE

Mr. Norm Nielsen and Mr. Brian Nichols of URS conducted a site reconnaissance and interviews with Borden personnel on August 25, 2000. The reconnaissance consisted of a site walk-through guided by Mr. Al Bunger, Mr. Frank Luco, and Ms. Diane Strayer of Borden, and Ms. Jacki Skaught of the City of Kent. URS personnel observed the areas around buildings and building interiors where possible. No samples were collected during the site walk and not every room or enclosure in the buildings was accessed. Observed features that are related to potential environmental conditions are described below. A site map showing the locations of buildings and features that are potential sources of environmental impacts is attached (Figure 2).

The Borden facility in Kent, Washington, is used to manufacture Phenol-Formaldehyde (PF) and Urea-Formaldehyde (UF) resins. Prior to December 1999, formaldehyde was generated onsite from methanol. At that time, most other hazardous materials used onsite were shipped in by rail and offloaded into ASTs via underground pipelines. Currently, all materials used in the resin manufacturing process are shipped in by tanker truck. Resin components are pumped from their respective ASTs to the resin plant through overhead pipelines and mixed to produce the PF and UF resins. Heat is introduced into the manufacturing process by a natural gas-fired boiler. All process water from the PF resin manufacturing process is routed to the resin sump and then to a mix tank, where the pH of the water (containing NaOH) is neutralized with HCl. From the mix tank, process water is pumped into settling tanks. Borden recycles as much of the water in the settling tanks as possible back into the manufacturing process. Process water that is not fit for recycling is discharged into the KCDNR Industrial Waste Sewer under Permit No. 7129. Resin that settles out of the process water is consolidated and spread out on the concrete drying pad adjacent to the settling tanks. Once dry, the resin is stockpiled at the northern end of the pad and periodically transported offsite for disposal by a contracted waste management service.

5.2 INTERVIEWS

5.2.1 Plant Superintendent

Al Bunger, the Borden Plant Superintendent, has been employed at the Property for a number of years. Mr. Bunger stated that no USTs have ever been located onsite. He stated that the current volume of methanol stored onsite is minimal; two of the large former methanol ASTs in the southwest corner of the Property are empty, while the third is only partially full.

Mr. Bunger stated that the Property has recently been inspected by the Puget Sound Clean Air Agency for the facility's air permit. No violations were recorded and their permit was issued. Borden has also been inspected for polychlorinated biphenyls (PCBs). No PCB-containing electrical equipment was identified, and Mr. Bunger could not recall any fires or leakage from any transformers. A 1995 asbestos survey identified several areas of non-friable asbestos-containing material (ACM) throughout the plant. Mr. Bunger stated that Borden policy has always been to clearly mark ACM hazards, and that all new ACM identified by the 1995 survey has since been marked. No lead surveys have been conducted on the Property, although Mr. Bunger stated that lead-based paint most likely exists.

Mr. Bunger had no recollection of the Truck Wash Lagoon ever having been a developed pond. He believed the area to have been a wash area for vehicles that required routine cleaning. The

area was not designated for washing hazardous materials off of trucks. Mr. Bunger could not recall any complaints filed by any of Borden's neighbors during his tenure at the plant.

In a subsequent phone conversation on October 19, 2000, Mr. Bunger stated that to his knowledge no chlorinated solvents are being used at the Borden facility.

5.2.2 Environment, Safety and Health Vice President

Diane Strayer, the Borden Environment, Safety and Health Vice President, stated that the methanol pipeline leading from the former offloading area to the resin plant was found to be damaged in the late 1980s. Soil and groundwater were affected with methanol, formaldehyde, and phenol. Methanol and formaldehyde were detected above MTCA Method B levels at greater than 10,000 and 5 parts per million, respectively. Phenol was also detected, although below MTCA B levels. This discovery led to the EMCON and Washington State Department of Ecology (Ecology) site investigations described in Section 7 of this report. Ms. Strayer stated that approximately 35 feet of pipeline were excavated and removed. Very little affected soil was removed from the Property and the decision was made to remediate the Property by groundwater extraction.

Ms. Strayer also stated that Borden employees receive annual Hazard Communication and "Worker Right-to-Know" training in accordance with OSHA regulation 29 CFR 1910.1200.

In a subsequent phone conversation on October 17, 2000, Ms. Strayer stated that to her knowledge no chlorinated solvents are being used at the facility.

5.2.3 Chief Mechanic

Frank Luco, the Borden Plant Chief Mechanic, stated that there used to be an underground pipeline leading from the methanol ASTs in the southwest corner of the Property to the resin plant. He could not recall any investigations in that area, nor confirm whether the pipeline is still in place.

Mr. Luco could recall only one chemical spill that occurred approximately 5 to 10 years ago. Phenol was spilled from a tanker truck on to pavement approximately five blocks south of the Property on 4th Avenue. The source of the leak was determined to be a faulty valve on the tanker. The fire department responded and used adsorbent to contain and cleanup the spill. Mr. Luco could not recall any hazardous materials spills on the Property itself.

Mr. Luco stated that the boiler was switched over to natural gas approximately 15 years ago. Prior to that time, the boiler was heated using bunker fuel, which was held in a 15,000-gallon AST adjacent to the boiler. The AST was pumped out, cleaned, and closed in place.

Mr. Luco stated that facility employees use very limited quantities of non-chlorinated solvents onsite for minor cleaning. Waste liquids are held onsite and periodically transported offsite for disposal by a contracted waste management service.

5.2.4 Former Plant Manager

Mr. Rico Yingling stated in a phone conversation on September 1, 2000, that he worked at the Property approximately 11 years as both plant engineer and plant manager. Mr. Yingling left the facility in 1999 for other employment. Mr. Yingling stated that to his knowledge the only environmental issue at the Property is methanol contamination in groundwater in the loading

SECTION FIVE

Site Reconnaissance and Interviews

area. Groundwater movement is very slow, and the recovery system (MW-10) pumps only a little water per day into a tote. Mr. Yingling also stated that the finished resin products at the Property are nearly inert; however, the production chemicals are not. Mr. Yingling stated that there is a slight possibility for contamination under the concrete spill-containment area in the manufacturing area due to leaks through cracks in the concrete.

6.1 REGULATORY RECORDS

The purpose of our records review was to assess the potential presence of hazardous substance contamination on the Property as a result of activities conducted on properties within the study area defined in the Scope of Services section of this report. Many of the state and federal database listings were searched by VISTA, an independent information service. Wastewater discharge records were reviewed by a URS employee at the offices of the KCDNR. Records from the City of Kent Departments of Fire & Life Safety and Fire Prevention were discussed over the telephone with representatives from those departments. Each list searched by VISTA is referenced in the attached report.

The following is a brief summary of results of the records review. Only those sites pertinent to a Phase II investigation are discussed. The VISTA report is presented in Appendix A.

As is typical of a long-term industrial/commercial area, numerous mapped sites were found in VISTA's search of available government records of the Property and adjoining properties within the ASTM E 1527-97 search radii for the following databases:

- United States Environmental Protection Agency (EPA) Databases
 - Comprehensive Environmental Response Compensation and Liability Information System list (CERCLIS)
 - National Priorities List (NPL)
 - Resource Conservation and Recovery Act (RCRA) Corrective Action Report (CORRACTS)
 - RCRA Information System (RCRIS) for treatment, storage and disposal (TSD) Facilities
 - RCRIS small quantity generators (SQG) and large quantity generators (LQG)
 - RCRIS Facilities with Violations (VIOL)
 - RCRIS Hazardous Waste Transporters (TRANS)
 - Toxic Substances Control Act (TSCA) Chemicals in Commerce Information System (CICIS)
 - Facility Index System (FINDS)
 - National Pollution Discharge Elimination System (NPDES)
 - Emergency Response Notification System (ERNS)
 - No Further Remedial Action Planned Sites (NFRAP)
 - Toxic Chemical Release Inventory System (TRIS)
- United States Geological Survey (USGS) Databases
 - USGS Solid Waste Landfill Sites (SWLF)

- USGS Ground Water Site Inventory (GWSI)
- Washington State Department of Ecology Databases
 - Confirmed and Suspected Contaminated Sites (CSCSL) List
 - Underground Storage Tank (UST) List
 - Leaking Underground Storage Tank (LUST) Sites Report
 - Washington Solid Waste Facility List (LF)
 - Washington Toxics Cleanup Program (TOXICS)
 - Aerometric Information Retrieval System (AIRS)

6.1.1 The Property

The Borden Chemical Facility is listed on nine of the regulatory databases searched by VISTA. Borden generates less than 100 kilograms per month of non-acutely hazardous waste and is considered a conditionally exempt SQG under RCRA. The Property is not classified as a RCRA hazardous waste transporter or TSD facility. The Property is listed on the FINDS and CICIS databases as a generator of formaldehyde, phenol, urea, and other solvent-containing materials. The TRIS database lists the Property's combined annual discharge of formaldehyde, phenol, and methanol to air and the King County industrial sewer system as 2,279, 334, and 9,400 pounds, respectively. Borden is listed as a CSCSL facility for the facility's pipeline leak in the late 1980s. Phenolic compounds, halogenated, and non-halogenated solvents were released and they contaminated air, soil, and groundwater. Two reports (1988 and 1992) listed on the Washington TOXICS database were filed for groundwater and soil contamination onsite. The former pond sites on the Property were assessed by EPA in 1985 and 1988, after which a NFRAP notice was filed. Borden is not considered a NPL facility.

City of Kent Department of Fire Prevention

Fire Marshal Bill Johnson of the City of Kent Department of Fire Prevention was contacted to obtain records of USTs, hazardous material inventories, fires, and/or other hazardous materials incidents on the Property. Marshal Johnson reported that the Borden facility is within his inspection area and that he has been a member of the hazardous materials incident response team for a number of years. He could not recall any USTs onsite; all onsite tanks are aboveground. Marshal Johnson also had no recollection of any leaking tanks or significant spills onsite. He faxed a copy of the hazardous materials inventory he maintains for the facility to URS.

City of Kent Department of Fire & Life Safety

Ms. Denise Johnson of the City of Kent Department of Fire & Life Safety (DFLS) was contacted to search for records of any hazardous materials spills, fires, and/or other incidents the DFLS may have responded to at the Property. Ms. Johnson reported that four fires have occurred on the Property since 1993:

- July 15, 1996: An electrical fire occurred in the electrical room, producing thick smoke but minimal flame. The fire was contained to one breaker panel and ceased when power was removed from the system.
- June 14, 1997: A fire started when lubricating and/or fuel oil leaked onto a hot burner unit. Borden employees were able to extinguish the fire by the time the DFLS arrived onsite.
- (Date Unknown): An additional fire was started on the Property by a homeless man attempting to keep warm. The fire occurred outside the manufacturing area, was fueled with non-hazardous materials, and was easily extinguished.

King County Department of Natural Resources Industrial Waste Division

A records search at the Industrial Waste Division on August 29, 2000, revealed that there has been only one reported violation of their industrial wastewater discharge permit. This violation was for methylene chloride in a sample collected on September 18, 1997. The reported daily maximum mass-limit for methylene chloride concentration was 439 micrograms per liter ($\mu\text{g/L}$) on that date; the permitted wastewater discharge limit was 170 $\mu\text{g/L}$. A post-violation inspection and sampling by the King County Water Pollution Control Division resulted in no further enforcement action (January 8, 1998, letter from Jim Sifford to Borden Chemical Company). Methylene chloride is a common laboratory contaminant (it is used to extract organic chemicals from samples prior to analyses). This one-time permit violation was probably due to laboratory error as there have been no subsequent permit violations.

Notable in the most recent (June 1, 2000) wastewater analyses on file at the KCDNR Waste Division are elevated concentrations of phenol (62,400 $\mu\text{g/L}$), bromofluorobenzene (256 $\mu\text{g/L}$), 1,2-dichloroethane (254 $\mu\text{g/L}$), toluene (255 $\mu\text{g/L}$), and various phenolic compounds (e.g., 2,4,6-tribromophenol [910 $\mu\text{g/L}$]). Metals and cyanide concentrations in the discharge are low. The presence of bromofluorobenzene and 1,2-dichloroethane in discharges to the sanitary sewer was inexplicable given that the facility reportedly does not use chlorinated solvents. Therefore, URS contacted the KCDNR Waste Division laboratory on November 2, 2000, to ask if the bromofluorobenzene and 1,2-dichloroethane reported in the June 1, 2000, wastewater analyses may have been laboratory surrogate compounds (i.e., chemicals introduced into the water sample by the laboratory as quality control checks). URS was informed that the laboratory uses toluene, bromofluorobenzene, and 1,2-dichloroethane as surrogates and these compounds are routinely reported with other compounds that are in fact in the wastewater. Thus the presence of toluene, bromofluorobenzene, and 1,2-dichloroethane in the wastewater analyses does not indicate use of these chemicals at the Borden facility.

6.1.2 Nearby and Adjacent Properties

Groundwater flow in the vicinity of the Property is generally to the northeast and north (EMCON, 1992, and URS data presented in Figure 3). Therefore, properties located southwest of the Property can be considered upgradient of the Property with respect to groundwater flow. The following is a discussion of sites listed on one or more of the various regulatory databases searched by VISTA.

Upgradient Properties Within 1/8 Mile

Within 1/8 mile of the Property are five upgradient sites listed in the VISTA database:

- Northwest Metal Products formerly located directly southwest of the Property at 401 North 4th Avenue
- The King County Regional Justice Center located immediately west of the Property across North 4th Avenue
- Recreational Distribution Systems located south of the Property at 325 North 1st Avenue
- The King County Library located south of the property at the intersection of Smith Street and 2nd Avenue
- Washington Cedar Supply at 223 West Smith Street

Northwest Metal Products was located southwest of the Property. An independent assessment of Northwest Metal Products listed on the CSCSL database reports the site to be contaminated with halogenated organic compounds, EPA priority pollutants, metals, cyanide, and petroleum hydrocarbons. The site is also listed as a leaking underground storage tank (LUST) site for a 1992 release to groundwater from a 35-year-old steel UST onsite. Cleanup started in 1995 and the tank has been removed. Two other USTs onsite are reported as awaiting closure.

The King County Regional Justice Center is listed on the CSCSL as being contaminated with halogenated organic compounds, petroleum, and dioxins. The media contaminated and status of remediation are not specified.

Recreational Distribution Systems is listed in the state UST database as having two USTs, both temporarily out of service; one tank holds 2001 gallons and the second 1100 gallons. The contents of neither tank is listed by VISTA.

The King County Library is listed in the state LUST database as having contaminated groundwater in 1989 that was cleaned up in 1995; the contents of the LUST are not stated.

Washington Cedar Supply is listed in the state LUST database as having a LUST which affected soil; the contents of the tank are not reported. The LUST was removed and the leak reported as having been cleaned up.

Upgradient Properties 1/8 to 1/4 Miles

VISTA identified one site upgradient of the Property within 1/8 to 1/4 mile distance, SeaTac Sweeping Services Noll Manufacturing located at 715 Smith Street. This site is listed on the CSCSL as having petroleum contamination and awaiting assessment.

Upgradient Properties 1/4 to 1/2 Miles

VISTA lists four sites between 1/4 and 1/2 mile upgradient of the Property:

- Pozzi Former Truck Stop
- Clint Pozzi
- Sandwich property

- Blue Banner Foods

The Pozzi Former Truck Stop was located at the intersection of West Harrison and 6th Avenue; soil contaminated by an unspecified substance is listed in the state LUST database. The Clint Pozzi property is located at 705 Meeker Street; this property is listed in the state UST database as having had one UST removed. The Sandwick property is located at 623 West Meeker Street; this property is listed in the state LUST database as having a LUST with subsequent soil cleanup having been completed. Blue Banner Foods is located at 800 Meeker Street; this property is listed in the state UST database as having a 1,000-gallon UST pending closure.

Down- or Cross-Gradient Properties

There are three properties located approximately within 1/8 mile downgradient of the Property:

- Tom's Auto & Truck
- Town and Country Auto Sales
- An unnamed site at 514 Railroad Avenue

Tom's Auto & Truck and Town and Country Auto both had 1,000- to 2,000-gallon steel USTs that are out of service or have been removed. The site on Railroad Avenue is listed on the ERNS database for a 1990 spill of a white crystalline substance. No further information is given.

There are 15 properties located between 1/8 and 1/4 mile downgradient of the Property. All but two sites are listed as having USTs or LUSTs. The other two sites are listed in the Washington Toxics database, but the reason for the listing is not given.

7.1 PREVIOUS SITE INVESTIGATIONS

URS reviewed a hydrogeologic investigation report prepared by EMCON Northwest, Inc., a site assessment report prepared by Ecology, and an annual groundwater monitoring letter report prepared by IT Corporation (2000). The objective of this review was to identify potential environmental concerns. Our analysis of each report is summarized below.

7.1.1 EMCON Northwest, Inc.

Summary Report Hydrogeologic Investigations, Borden Packaging & Industrial Products Facility, Kent, Washington, Volume I (1992). These investigations were conducted to assess onsite soil and groundwater in known disposal and manufacturing areas around the Property. EMCON's conclusions were as follows:

- The Property is underlain by four interbedded geologic units to a depth of 50 feet. Groundwater flow is generally to the northeast (see Sections 3.3.1 and 3.3.2).
- Approximately 2 to 4 feet of fill material consisting of dry resin chips intermixed with gravelly sand was discovered at the former Truck Wash Lagoon area. This material was underlain by 2 to 6 feet of saturated gelatinous resin mixed with fill material and straw.
- Approximately 0.5 foot of dry resin chips and yellow precipitate was discovered at the former southwest settlement pond site overlain by 1.5 to 2.5 feet of fill material consisting of fine sand, gravel, and wood chips.
- Approximately 1 foot of dry resin chips intermixed with coarse, gravelly sand was discovered at the former dry resin pond site. This material was underlain by 0.5 foot of gravelly sand fill material.
- Concentrations of phenol in groundwater and soil were generally at or below detection levels.
- Ammonia concentrations in groundwater were localized and restricted to Borden property.
- Nitrate soil concentrations observed in resins buried in the three former pond areas ranged from 300 to 5,000 milligrams per kilogram (mg/kg), with the highest concentrations observed in buried resins in the southwest settlement pond area. Nitrate concentrations in the native soils underlying buried resins in the three former pond areas ranged from 150 to 1,400 mg/kg. The MTCA Method B formula value for nitrate in soil cleanup (for protection of groundwater) is 2,560 mg/kg. Groundwater concentrations were generally below 1 milligram per liter (mg/L), but consistently exceeded 100 mg/L just north of the dry resin pond. The MTCA Method B formula value for cleanup of nitrate in groundwater is 25.6 mg/L; this concentration is protective of human health for a drinking water exposure pathway.
- Elevated formaldehyde concentrations detected prior to 1988 were believed to have been the result of laboratory error. Groundwater data generated after 1988 show formaldehyde concentrations ranging from 30 to 40 µg/L in two monitoring wells near the former Truck Wash Lagoon and the western boundary of the Borden Playfields, and from less than 20 to 30 µg/L in temporary wells located in the former production and rail offloading areas. One temporary well located directly at the former methanol unloading area revealed a

concentration of 1,800 µg/L. Formaldehyde levels in soil sampled in the production area ranged from less than 0.4 mg/kg to 63 mg/kg.

Included in the EMCON report are two priority pollutant laboratory analyses for soil samples collected in two test pits in the former Truck Wash Lagoon area. The analytical data indicate no chemicals present in concentrations exceeding MTCA Method A residential soil cleanup levels; in fact, very few chemicals were detected in concentrations exceeding the laboratory's reporting limits.

Soil samples collected in other areas of the Property were analyzed only for nitrate, ammonia, phenol, and formaldehyde. This is noteworthy given that EMCON reported 1 foot of dry resin chips intermixed with coarse gravelly sand in the dry resin pond area. EMCON reported a half foot of dry resin chips and yellow precipitate in the southwest settlement pond area.

7.1.2 Washington State Department of Ecology

Site Hazard Assessment, Borden Packaging & Industrial Products, Kent, Washington (1992). Ecology prepared a follow-up report to the hydrogeologic investigations discussed above. A summary of the information provided in the Ecology report follows.

- When Borden submitted the EMCON report to Ecology, their cover letter indicated that they planned to remediate the methanol and formaldehyde contamination in the vicinity of the former rail offloading area by extraction.
- Ecology conducted their site investigation shortly after receiving the EMCON report from Borden. The odor of formaldehyde was apparent during Ecology's site reconnaissance, and subsequent air monitoring determined the formaldehyde concentration in air to exceed 5 parts per million.
- Results from a soil grab sample analyzed for volatile organic compounds (VOCs) revealed acetone and methylene chloride at concentrations of 28 and 19 parts per billion, respectively. However, these levels were well below MTCA Method B screening levels and are considered to be probable results of laboratory contamination.
- Ecology ranked the Borden facility as a "1" (on a scale of 1 to 5, with 1 representing the highest potential for contamination). Their decision was based on the following factors: the large quantities of hazardous materials onsite; the toxicity and relative mobility of the materials stored and released to the environment; the proximity of the site to populated areas; the shallow groundwater beneath the site; the widespread usage of groundwater for drinking in the Kent area; a documented release to groundwater and air; the proximity of the Property to Spring Brook Creek, a fishery resource tributary to the Green River; and the fact that the secondary containment surrounding the ASTs onsite is not large enough to contain the volume of all of the tanks should a catastrophe occur.

7.1.3 2000 Annual Groundwater Monitoring Letter Report

2000 Annual Groundwater Monitoring, Borden Facility, Kent, Washington (2000). This letter report was prepared by IT Corporation and is dated March 3, 2000. Borden Chemical submitted this report to Ecology on March 15, 2000. The letter report is a listing of groundwater analyses for samples collected from the nine monitoring wells on the site. The data listed date back to October, 1987, and include only specific conductance, nitrate, ammonia, and methanol. The data

SECTION SEVEN

Previous Investigations

indicate that nitrate concentrations in well MW-7 have been greater than the MTCA Method B cleanup level of 25.6 mg/L in all years sampled but have declined steadily. The nitrate concentration in well MW-7 was 38.9 mg/L on February 17, 2000.

Methanol concentrations in well MW-10 located near the former offloading area line exceeded the MTCA Method B cleanup level of 4,000 µg/L in all years sampled. The letter report mentions a dedicated pump in well MW-10 that pumps continuously into a 300-gallon chemical tote. Methanol concentrations in well MW-10 have declined from 89,000 to 2,200 mg/L between 1994 and 2000.

Field procedures described in this section followed URS' standard operating procedures in order to provide: (1) consistency and thoroughness of sample collection and data-generation activities and (2) scientifically valid data that meet established objectives of known and acceptable quality as defined by the EPA.

8.1 GROUNDWATER SAMPLING

Prior to well sampling, the depth to water in the well was measured from the top of the well casing using a decontaminated water level indicator. Six of the seven selected wells were sampled using a battery-powered peristaltic pump and disposable tubing. The seventh well, MW-10, could not be sampled due to low well yield.

Sampling equipment was washed with a solution of tap water and Liquinox and rinsed with distilled water prior to sampling at each location.

The intake of the peristaltic pump was set opposite the well screen. The well was then purged until readings of pH, temperature, conductivity, and dissolved oxygen had stabilized within plus or minus 10 percent. Purge water was contained in a plastic bucket. Following well purging, the samples were collected in laboratory-prepared bottles. Each sample bottle was clearly labeled with the project name, sample location, and collection date and time. The sample bottles were placed in an ice chest and chilled, then transported to the laboratory under standard chain-of-custody procedures.

8.2 SOIL SAMPLING

Applied Professional Services (APS), of Issaquah, Washington, was contracted to locate underground utilities in the former dry resin pond and southwest settlement pond areas. In addition, a representative from Kent Public Utilities was onsite to confirm the locations of sewer and water connections to the Property.

Pacific Industrial Resources (PIR) of Kent, Washington, was contracted to provide a track-mounted mini-excavator to advance each of four test pits. Two test pits (TP-1 and TP-2) were dug in the former dry resin pond, immediately east of the Sludge Drying Pad (Figure 2). Two test pits (TP-3 and TP-4) were dug in the southwest settlement pond, west of the Protein Plant (Figure 2).

Kathryn Pineo of URS supervised the test pit excavations in both former pond areas, and logged and photographed the lithology encountered in each test pit noting the soil type and thickness, unusual colors, odors, or other indicators of potential contamination. These observations are summarized on test pit logs included in Appendix B. The resin layer was observed between 1 and 1-1/2 feet below grade in each test pit. Each test pit was advanced a total of 3 to 3-1/2 feet below grade. The soil in each test pit area was soft and damp.

Prior to excavating a test pit, the equipment operator cleaned the backhoe bucket with a broom. The stainless steel trowel and mixing bowl were washed with a solution of tap water and Liquinox and rinsed with distilled water prior to collecting each sample.

One soil sample was collected in each of the four test pits. The sample was collected from each test pit in the horizon immediately below the resin layer reported by EMCON (1992), 1-1/2 to

2 feet below grade. Samples were collected using a stainless steel trowel and bowl. Soil was mixed thoroughly before being placed into jars.

Soil samples were collected in clean glass jars supplied by the laboratory. Samples were clearly labeled with the project name, sample location, and collection date and time. The sample jars were placed in an ice chest and chilled. The soil samples were transported to the laboratory under standard chain-of-custody procedures.

Following the completion of excavation and sampling at each location, the test pit was backfilled and compacted using the excavator bucket. Attempts were made to restore the grass cover as well as possible.

The four soil samples were submitted to OnSite Environmental, Inc. of Redmond, Washington, for analyses of VOCs, including halogenated volatile organic compounds (HVOCs) and semi-volatile organic compounds (SVOCs); PCBs; and the RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver).

A chain of custody was maintained from the time the sample containers were obtained from the laboratory until they were returned filled with sample materials and analyzed. Recorded sample information included date and time of sample collection, sample designation, analyses to be performed, preservatives used, and special instructions as appropriate. All chain of custody forms are included in Appendix C.

9.1 GROUNDWATER FLOW DIRECTION

Groundwater elevation data measured on September 19, and 21, 2000, are summarized in Table 2. The groundwater elevation data are plotted and contoured on Figure 3. The groundwater flow direction in late September 2000 was to the northeast and north, the same flow direction that was reported by EMCON (1992). There appears to be a small groundwater mound in the area of the former dry resin pond.

9.2 GROUNDWATER QUALITY

Groundwater analytical data are summarized in Tables 3 through 5. Laboratory certificates are presented in Appendix C. Also included in Appendix C is a quality assurance review memorandum. All of the groundwater data are acceptable for use.

Review of the groundwater analytical data indicates that total arsenic in wells MW-1 and MW-4 exceeds the current and proposed MTCA Method A groundwater cleanup level of 5.0 µg/L. The arsenic concentration in well MW-1 (20 µg/L) is significantly higher than the MTCA cleanup level. There is no apparent onsite source for the elevated arsenic concentrations observed in wells MW-1 and MW-4 as Borden Chemicals does not use metals in its process; the arsenic concentrations observed may have originated from the upgradient Northwest Metal Products – a site of known metals contamination (see Section 1.1.2).

Concentrations of other analytes in detected in the groundwater samples are less than current and proposed MTCA Method A cleanup levels and MTCA Method B formula values for groundwater cleanup.

9.3 SOIL QUALITY

Soil quality data are summarized in Tables 6 through 9. Laboratory certificates are presented in Appendix C. As indicated in the quality assurance review memorandum in Appendix C, all of the groundwater data are acceptable for use.

No analytes detected in the four soil samples exceeded the MTCA Method A (current and proposed) cleanup levels. Nor did any analytes detected exceed the MTCA Method B formula values for protection of groundwater.

Recognized environmental conditions at the site include:

- Methanol contamination in soil and groundwater in the vicinity of the former offloading area
- Nitrate concentrations in the groundwater of monitoring well MW-7 downgradient of the sludge drying pad and the former dry resin pond exceed the MTCA Method B formula value cleanup level
- Arsenic concentrations in the groundwater of monitoring wells MW-1 and MW-4 north of the former Truck Wash Lagoon exceed the MTCA Method A groundwater cleanup level
- Nitrate concentrations in resins buried in the former southwest settlement pond exceed the MTCA Method B formula value soil cleanup level
- Several areas of non-friable asbestos-containing material throughout the plant
- Lead-based paint on buildings and structures

Another issue at the Property is the potential for soil and groundwater contamination beneath the concrete spill-containment area in the manufacturing area due to leaks through cracks in the concrete. Leaks could occur to the silty sediments of the 10-foot-thick Layer A; however, migration of contaminants to groundwater would be limited by the low hydraulic conductivity of this horizon. Investigating this potential contamination source prior to demolition work at the site would be difficult because of the numerous ASTs and extensive piping in the area. An appropriate time to investigate this area will be during site demolition when the ASTs and piping are removed.

Some cleanup will be required at the Property, but the cleanup will be manageable. Methanol-contaminated groundwater in the vicinity of well MW-10 appears to be contained by the low-volume pumping system already in place (this is termed "plume control"). Methanol has not been detected in other site monitoring wells in 13 years of groundwater monitoring at the Property. Methanol concentrations in well MW-10 have decreased from 89,000 to 2,000 mg/L in 6 years, probably through biological degradation. However, complete biological degradation will take several more years, as the MTCA Method B formula value for the cleanup of methanol in groundwater is 4 mg/L. The MTCA Method B formula value of 4 mg/L is for protection of human health by a drinking water exposure pathway. The nearest drinking water well reported by VISTA is located 0.3 miles to the southeast of the Property, far beyond the impacted area and hydraulically crossgradient of the Property. The pumping system at well MW-10 should be maintained to control methanol migration in groundwater until biodegradation reduces methanol concentrations to consistently less than 4 mg/L. Our estimated costs for this groundwater treatment is presented in Table 10; supporting details are presented in Appendix D. For our estimated cost, we assumed 10 more years of groundwater extraction with annual groundwater monitoring and reporting.

The elevated arsenic concentrations observed in monitoring wells MW-1 and MW-4 appear to originate from an offsite source, most likely from the Northwest Metal Products site formerly located to the southwest. As there is no groundwater use in the immediate vicinity of the Property and the probable source is offsite, URS recommends no cleanup of arsenic in groundwater. However, we recommend continued monitoring for arsenic in groundwater as discussed below.

~~URS recommends that the buried resins be removed from the southwest settlement pond, old Truck Wash Lagoon, and dry resin pond areas and these areas be backfilled with clean fill.~~ We recommend this work because the resins have elevated nitrate concentrations and contribute to nitrate contamination of groundwater. In particular, EMCON (1992) reported gelatinous resin mixed with straw 4 to 10 feet bgs in the old Truck Wash Lagoon area. Building on these areas may prove difficult as the soil is not well compacted and may be unstable. Excavation of all three of these areas will be necessary for ultimate redevelopment of the Property. In Table 10 we have estimated the cost of excavating each area, disposing the soil, and backfilling with clean fill. Supporting details of our cost estimates are presented in Appendix D.

It is our understanding that the Property will be redeveloped into residential use. Residential use warrants a higher level of environmental protection than industrial use because of the potential for children and full-time residents to be exposed to contaminants in soil and water. Therefore, URS recommends that annual groundwater monitoring at the Property be continued for at least 5 years following redevelopment. The purpose of the annual groundwater monitoring is to evaluate concentration trends, particularly for methanol, metals, and nitrate. Any monitoring wells potentially affected by redevelopment should be decommissioned per regulations in 173-160-381 of the Washington Administrative Code. Any decommissioned well should be replaced with an equivalent well at or near the same location following redevelopment. Monitoring well decommissioning, replacement, and monitoring costs are estimated in Table 10 with supporting details included in Appendix D. For our cost estimates, we have assumed that six wells will be decommissioned and replaced, and that six wells will be monitored once per year over 5 years for methanol, nitrates, and metals.

SECTION ELEVEN

Conceptual Cleanup Plan and Estimated Costs

It is URS' understanding that the cost of cleaning up asbestos-containing materials and lead-based paint at the Property will be borne by Borden Chemical. In addition, we understand that Borden will conduct demolition and dismantling of the structures, including foundations, and any cleanup of contaminated soils that may be present beneath. Therefore, there is no estimated cost to the City of Kent for cleaning up these materials.

We have performed our services for this project in accordance with our Agreement, and with ASTM Practice E 1527-97 for ESA investigations; no guarantees are either expressed or implied.

The records search was limited to information that is reasonably available from public sources. This information is changing continually and is frequently incomplete. Unless we have actual knowledge to the contrary, information obtained from interviews or provided to us has been assumed to be correct and complete. We do not assume any liability for information that has been misrepresented to us or for items not visible, accessible, or present on the Property at the time of the site visit.

There is no investigation thorough enough to preclude the presence of materials on the Property which presently, or in the future, may be considered hazardous. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable may, in the future, become subject to different regulatory standards and require remediation.

Where records indicate that prior remedial work or tank removals have occurred, there is a risk that the work may not have been performed correctly or completely. In these cases, if the regulatory agency has approved the closure of the tank or other work done, we have assumed that the work was done correctly and completely.

Opinions and judgments expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions. Unless site conditions change, this document and the information contained herein are valid for a period of 180 days according to the ASTM Practice, and have been prepared solely for the use of the City of Kent. No third party shall have the right to rely on our opinions rendered in connection with the services or in this document without our written consent and the third party's agreement to be bound to the same conditions and limitations as the client.

The qualifications of the Project Manager and of the other environmental professionals involved in this ESA meet the URS corporate requirements for performing ESAs. Resumes of these environmental professionals are provided in Appendix E.

EMCON Northwest, Inc. 1992. *Summary Report Hydrogeologic Investigations, Borden Packaging and Industrial Products Facility, Kent, Washington, Volumes I and II.*

IT Corporation. 2000. *2000 Annual Groundwater Monitoring, Borden Facility, Kent, Washington.*

Washington State Department of Ecology. 1992. *Site hazard Assessment, Borden Packaging and Industrial Products, Kent, Washington.*

Personal Communications

Mr. Al Bunger. October 19, 2000. Phone conversation with Norm Nielson of URS.

Ms. Diane Strayer. October 17, 2000. Phone conversation with Norm Nielson of URS.

Mr. Jim Sifford of King County. January 8, 1998. Letter to Borden Chemical Company.

Table 1
TANK INVENTORY
BORDEN PROPERTY

Tank No.	Size (gal)	Material/Use	Still Present?
1	3,000	Defoamer/Pale Oil	No
2	3,000	Defoamer/Pale Oil	No
3	10,000	18% HCl	No
4	10,000	75% Phosphoric acid (empty)	No
5	15,000	Cresylic acid CA77	No
6	5,000	50% NaOH	No
A1	8,000	Mixed Amines (empty)	Yes
B1	15,000	Fuel Oil (empty)	Yes
B2	1,000	Diesel	Yes
C1-C2	25,000	100% Phenol	Yes
D1	10,000	45% KOH	No
D2	10,000	Cascaphen PR-511	No
D3	10,000	Alphaset 9020	No
E1	12,000	Ethanol	No
F1-F9	15-20,000	Formaldehyde	Yes
F10-F12	20,000	Formaldehyde solution	Yes
M1	50,000	Methanol (empty)	Yes
M2	50,000	Methanol (empty)	Yes
M3	100,000	Methanol	Yes
P1-P7	20,000	Phenol-Formaldehyde Resin	Yes
P8	20,000	Spill Recovery	Yes
R1	12,000	Urea Formaldehyde Reactor	Yes
R2	12,000	Phenolic Resin Reactor	Yes
R3	10,000	Formaldehyde Blending	Yes
U1	20,000	Urea-Formaldehyde Resin	Yes
U6	20,000	Casco-Resin (Formaldehyde solution)	No
U2-U3	20,000	Polyamide Resin	Yes
U4	20,000	Polyamide Resin	No
W1-W3	20,000	Recycle Water	Yes

Table 2
GROUNDWATER ELEVATION DATA
SEPTEMBER 19 AND 21, 2000

Well Number	Measuring Point Elevation (Ft. AMSL)	Depth to Water (Ft.)	Water Level Elevation (Ft. AMSL)
MW-1	37.50	8.43	29.07
MW-3	38.59	6.04	32.55
MW-4	37.09	8.25	28.84
MW-5	39.54	8.60	30.94
MW-6	39.49	5.30	34.19
MW-7	37.93	7.53	30.40

Notes:

AMSL = Above Mean Sea Level

Table 3
ANALYTICAL RESULTS FOR GROUNDWATER
VOLATILE ORGANIC COMPOUNDS

Sample ID	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MTCA A		MTCA B
Sample Date	9/21/00	9/19/00	9/21/00	9/19/00	9/21/00	9/19/00	Current	Proposed	Formula
Analyte (ug/L)									
Dichlorodifluoromethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Chloromethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Vinyl Chloride	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2	0.2	
Bromomethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Chloroethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Trichlorofluoromethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,1-Dichloroethene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Acetone	10	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	800
Carbon Disulfide	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Methylene Chloride	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5	5	
(trans) 1,2-Dichloroethene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,1-Dichloroethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Vinyl Acetate	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--	--	
2,2-Dichloropropane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
(cis) 1,2-Dichloroethene	1.3	0.20 U	1.0	0.20 U	0.20 U	0.20 U	--	--	80
2-Butanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
Chloroform	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,1,1-Trichloroethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	200	200	
Carbon Tetrachloride	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,1-Dichloropropene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Benzene	2.2	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	5	5	1.5
1,2-Dichloroethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	5	5	
Trichloroethene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,2-Dichloropropane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Dibromomethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Bromodichloromethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
2-Chloroethyl Vinyl Ether	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
(cis) 1,3-Dichloropropene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Toluene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	40	1,000	
(trans) 1,3-Dichloropropene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,1,2-Trichloroethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Tetrachloroethene	0.20 U	0.40 U	0.20 U	0.40 U	0.20 U	0.40 U	--	--	
1,3-Dichloropropane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Methyl Isobutyl Ketone	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--	--	
Dibromochloromethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,2-Dibromoethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Chlorobenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,1,1,2-Tetrachloroethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Ethylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	30	700	

Table 3
ANALYTICAL RESULTS FOR GROUNDWATER
VOLATILE ORGANIC COMPOUNDS

Sample ID	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MTCA A		MTCA B
Sample Date	9/21/00	9/19/00	9/21/00	9/19/00	9/21/00	9/19/00	Current	Proposed	Formula
Analyte (ug/L)									
m,p-Xylene	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	20	1,000	
o-Xylene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	20	1,000	
Styrene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Bromoform	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--	--	
Isopropylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Bromobenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,1,2,2-Tetrachloroethane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,2,3-Trichloropropane	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
n-Propylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
2-Chlorotoluene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
4-Chlorotoluene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,3,5-Trimethylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
tert-Butylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,2,4-Trimethylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
sec-Butylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,3-Dichlorobenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
p-Isopropyltoluene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,4-Dichlorobenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,2-Dichlorobenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
n-Butylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
1,2-Dibromo-3-chloropropane	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
1,2,4-Trichlorobenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Hexachlorobutadiene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	
Naphthalene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--	--	
1,2,3-Trichlorobenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--	--	

Notes:

ug/L = micrograms per liter

U = not detected above laboratory practical quantitation limit (PQL)

Volatiles analyzed by EPA 8260B

-- = No MTCA A cleanup level for this analyte

MTCA B Formula Values for groundwater cleanup are listed only for detected analytes

Table 4
ANALYTICAL RESULTS FOR GROUNDWATER
SEMI-VOLATILE ORGANIC COMPOUNDS

Sample ID	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MTCA A		MTCA B
Sample Date	9/21/00	9/19/00	9/21/00	9/19/00	9/21/00	9/19/00	Current	Proposed	Formula
Analyte (ug/L)									
Aniline	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
bis(2-Chloroethyl)ether	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Phenol	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
2-Chlorophenol	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
1,3-Dichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
1,4-Dichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
1,2-Dichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Benzyl alcohol	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
bis(2-chloroisopropyl)ether	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
2-Methylphenol	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Hexachloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
N-Nitroso-di-n-propylamine	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
4-Methylphenol	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Nitrobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Isophorone	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
2-Nitrophenol	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
2,4-Dimethylphenol	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
bis(2-Chloroethoxy)methane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
2,4-Dichlorophenol	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
Benzoic acid	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
1,2,4-Trichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Naphthalene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	160	
4-Chloroaniline	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Hexachlorobutadiene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
4-Chloro-3-methylphenol	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
2-Methylnaphthalene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Hexachlorocyclopentadiene	13 U	13 U	13 U	13 U	13 U	13 U	--	--	
2,4,6-Trichlorophenol	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
2,4,5-Trichlorophenol	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
2-Chloronaphthalene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
2-Nitroaniline	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Acenaphthylene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Dimethylphthalate	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
2,6-Dinitrotoluene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Acenaphthene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
3-Nitroaniline	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
2,4-Dinitrophenol	13 U	13 U	13 U	13 U	13 U	13 U	--	--	
Dibenzofuran	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	

Table 4
ANALYTICAL RESULTS FOR GROUNDWATER
SEMI-VOLATILE ORGANIC COMPOUNDS

Sample ID	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MTCA A		MTCA B
Sample Date	9/21/00	9/19/00	9/21/00	9/19/00	9/21/00	9/19/00	Current	Proposed	Formula
Analyte (ug/L)									
2,4-Dinitrotoluene	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
4-Nitrophenol	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
Fluorene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
4-Chlorophenyl-phenylether	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Diethylphthalate	0.50 U	0.50 U	0.50 U	1.1	0.50 U	0.50 U	--	--	
4-Nitroaniline	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
4,6-Dinitro-2-methylphenol	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
n-Nitrosodiphenylamine	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
4-Bromophenyl-phenylether	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Hexachlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Pentachlorophenol	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
Phenanthrene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Anthracene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Carbazole	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	
Di-n-butylphthalate	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Fluoranthene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Benzidine	13 U	13 U	13 U	13 U	13 U	13 U	--	--	
Pyrene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Butylbenzylphthalate	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
3,3'-Dichlorobenzidine	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Benzo[a]anthracene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Chrysene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
bis(2-Ethylhexyl)phthalate	5.5	4.2	2.5 U	2.5 U	2.5 U	2.5 U	--	--	6.25
Di-n-octylphthalate	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Benzo[b]fluoranthene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Benzo[k]fluoranthene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Benzo[a]pyrene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Indeno[1,2,3-cd]pyrene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Dibenz[a,h]anthracene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	
Benzo[g,h,i]perylene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--	--	

Notes:

ug/L = micrograms per liter

U = not detected above laboratory practical quantitation limit (PQL)

Semi-volatiles analyzed by EPA 8270C

-- = No MTCA A cleanup level for this analyte

MTCA B Formula Values for groundwater cleanup are listed only for detected analytes

Table 5
ANALYTICAL RESULTS FOR GROUNDWATER
TOTAL METALS

Sample ID	MW-1	MW-3	MW-4	MW-5	MW-6	MW-7	MTCA A		MTCA B
Sample Date	9/21/00	9/19/00	9/21/00	9/19/00	9/21/00	9/19/00	Current	Proposed	Formula
Analyte (ug/L)									
Arsenic	20	3.3 U	5.4	3.3 U	3.6	3.3 U	5	5	4.8
Barium	85	56 U	56 U	56 U	56 U	56 U	--	--	1,120
Cadmium	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	5	5	
Chromium	11 U	11 U	11 U	11 U	11 U	11 U	50	50	
Lead	1.4	1.1 U	1.1 U	1.4	1.1 U	1.1 U	5	5	--
Mercury	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2	2	
Selenium	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	--	--	
Silver	11 U	11 U	11 U	11 U	11 U	11 U	--	--	

Notes:

ug/L = micrograms per liter

U = not detected above laboratory practical quantitation limit (PQL)

Total metals analyzed by EPA 200.8/7421A/7470A

-- = No MTCA A cleanup level for this analyte

MTCA B Formula Values for groundwater cleanup are listed only for detected analytes

Table 6
ANALYTICAL RESULTS FOR SOIL
VOLATILE ORGANIC COMPOUNDS

Sample ID	TP-1	TP-2	TP-3	TP-4	MTCA A	
Sample Depth (feet below grade)	1.5	1.5	1.5	1.5		
Sample Date	9/21/00	9/21/00	9/21/00	9/21/00	Current	Proposed
Analyte (mg/Kg)						
Dichlorodifluoromethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Chloromethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Vinyl Chloride	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Bromomethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Chloroethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Trichlorofluoromethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,1-Dichloroethene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Acetone	0.32 U	0.3 U	0.32 U	0.31 U	--	--
Carbon Disulfide	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Methylene Chloride	0.32 U	0.3 U	0.32 U	0.31 U	0.5	0.02
(trans) 1,2-Dichloroethene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,1-Dichloroethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Vinyl Acetate	0.32 U	0.3 U	0.32 U	0.31 U	--	--
2,2-Dichloropropane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
(cis) 1,2-Dichloroethene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
2-Butanone	0.32 U	0.3 U	0.32 U	0.31 U	--	--
Chloroform	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,1,1-Trichloroethane	0.063 U	0.061 U	0.063 U	0.063 U	20	1
Carbon Tetrachloride	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,1-Dichloropropene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Benzene	0.063 U	0.061 U	0.063 U	0.063 U	0.5	0.1
1,2-Dichloroethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Trichloroethene	0.063 U	0.061 U	0.063 U	0.063 U	0.5	0.03
1,2-Dichloropropane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Dibromomethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Bromodichloromethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
2-Chloroethyl Vinyl Ether	0.32 U	0.3 U	0.32 U	0.31 U	--	--
(cis) 1,3-Dichloropropene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Toluene	0.063 U	0.061 U	0.063 U	0.063 U	40	7
(trans) 1,3-Dichloropropene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,1,2-Trichloroethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Tetrachloroethene	0.063 U	0.061 U	0.063 U	0.063 U	0.5	0.05
1,3-Dichloropropane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Methyl Isobutyl Ketone	0.32 U	0.3 U	0.32 U	0.31 U	--	--
Dibromochloromethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,2-Dibromoethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Chlorobenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--

Table 6
ANALYTICAL RESULTS FOR SOIL
VOLATILE ORGANIC COMPOUNDS

Sample ID	TP-1	TP-2	TP-3	TP-4	MTCA A	
Sample Depth (feet below grade)	1.5	1.5	1.5	1.5		
Sample Date	9/21/00	9/21/00	9/21/00	9/21/00	Current	Proposed
Analyte (mg/Kg)						
1,1,1,2-Tetrachloroethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Ethylbenzene	0.063 U	0.061 U	0.063 U	0.063 U	20	6
m,p-Xylene	0.13 U	0.12 U	0.13 U	0.13 U	20	9
o-Xylene	0.063 U	0.061 U	0.063 U	0.063 U		
Styrene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Bromoform	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Isopropylbenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Bromobenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,1,2,2-Tetrachloroethane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,2,3-Trichloropropane	0.063 U	0.061 U	0.063 U	0.063 U	--	--
n-Propylbenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
2-Chlorotoluene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
4-Chlorotoluene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,3,5-Trimethylbenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
tert-Butylbenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,2,4-Trimethylbenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
sec-Butylbenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,3-Dichlorobenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
p-Isopropyltoluene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,4-Dichlorobenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,2-Dichlorobenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
n-Butylbenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,2-Dibromo-3-chloropropane	0.32 U	0.3 U	0.32 U	0.31 U	--	--
1,2,4-Trichlorobenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
Hexachlorobutadiene	0.32 U	0.3 U	0.32 U	0.31 U	--	--
Naphthalene	0.063 U	0.061 U	0.063 U	0.063 U	--	--
1,2,3-Trichlorobenzene	0.063 U	0.061 U	0.063 U	0.063 U	--	--

Notes:

mg/Kg = milligrams per kilogram

U = not detected above laboratory practical quantitation limit (PQL)

Volatiles analyzed by EPA 8260B

-- = No MTCA A cleanup level for this analyte

Table 7
ANALYTICAL RESULTS FOR SOIL
SEMI-VOLATILE ORGANIC COMPOUNDS

Sample ID	TP-1	TP-2	TP-3	TP-4	MTCA A		MTCA B
Sample Depth (feet below grade)	1.5	1.5	1.5	1.5			
Sample Date	9/21/00	9/21/00	9/21/00	9/21/00	Current	Proposed	Formula
Analyte (mg/Kg)							
Aniline	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
bis(2-Chloroethyl)ether	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Phenol	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
2-Chlorophenol	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
1,3-Dichlorobenzene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
1,4-Dichlorobenzene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
1,2-Dichlorobenzene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Benzyl alcohol	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
bis(2-chloroisopropyl)ether	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
2-Methylphenol	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Hexachloroethane	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
N-Nitroso-di-n-propylamine	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
4-Methylphenol	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Nitrobenzene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Isophorone	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
2-Nitrophenol	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
2,4-Dimethylphenol	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
bis(2-Chloroethoxy)methane	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
2,4-Dichlorophenol	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
Benzoic acid	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
1,2,4-Trichlorobenzene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Naphthalene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
4-Chloroaniline	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Hexachlorobutadiene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
4-Chloro-3-methylphenol	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
2-Methylnaphthalene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Hexachlorocyclopentadiene	3.2 U	3.0 U	3.2 U	1.0 U	--	--	
2,4,6-Trichlorophenol	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
2,4,5-Trichlorophenol	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
2-Chloronaphthalene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
2-Nitroaniline	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Acenaphthylene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Dimethylphthalate	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
2,6-Dinitrotoluene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Acenaphthene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
3-Nitroaniline	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
2,4-Dinitrophenol	3.2 U	3.0 U	3.2 U	1.0 U	--	--	

Table 7
ANALYTICAL RESULTS FOR SOIL
SEMI-VOLATILE ORGANIC COMPOUNDS

Sample ID	TP-1	TP-2	TP-3	TP-4	MTCA A		MTCA B
Sample Depth (feet below grade)	1.5	1.5	1.5	1.5			
Sample Date	9/21/00	9/21/00	9/21/00	9/21/00	Current	Proposed	Formula
Analyte (mg/Kg)							
Dibenzofuran	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
2,4-Dinitrotoluene	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
4-Nitrophenol	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
Fluorene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
4-Chlorophenyl-phenylether	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Diethylphthalate	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
4-Nitroaniline	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
4,6-Dinitro-2-methylphenol	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
n-Nitrosodiphenylamine	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
4-Bromophenyl-phenylether	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Hexachlorobenzene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Pentachlorophenol	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
Phenanthrene	0.12 J	10 J	0.13 U	0.042 U	--	--	--
Anthracene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Carbazole	1.3 U	1.2 U	1.3 U	0.42 U	--	--	
Di-n-butylphthalate	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Fluoranthene	0.091 J	0.078 J	0.13 U	0.042 U	--	--	64
Benzidine	3.2 U	3.0 U	3.2 U	1.0 U	--	--	
Pyrene	0.067 J	0.10 J	0.13 U	0.042 U	--	--	48
Butylbenzylphthalate	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
3,3'-Dichlorobenzidine	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
bis(2-Ethylhexyl)phthalate	0.63 U	10 B	0.63 U	0.21 U	--	--	
Di-n-octylphthalate	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Benzo[g,h,i]perylene	0.13 U	0.12 U	0.13 U	0.042 U	--	--	
Benzo[a]anthracene	0.13 U	0.12 U	0.13 U	0.042 U	Sum < 1.0	Sum < 2.0	
Chrysene	0.13 U	0.12 U	0.13 U	0.042 U			
Benzo[b]fluoranthene	0.13 U	0.12 U	0.13 U	0.042 U			
Benzo[k]fluoranthene	0.13 U	0.12 U	0.13 U	0.042 U			
Benzo[a]pyrene	0.13 U	0.12 U	0.13 U	0.042 U			
Indeno[1,2,3-cd]pyrene	0.13 U	0.12 U	0.13 U	0.042 U			
Dibenz[a,h]anthracene	0.13 U	0.12 U	0.13 U	0.042 U			

Notes:

mg/Kg = milligrams per kilogram

U = not detected above laboratory practical quantitation limit (PQL)

J = The value reported was below the practical quantitation limit. The value is an estimate.

B = The analyte indicated was also found in the blank sample.

Semi-volatiles analyzed by EPA 8270C

-- = No MTCA A cleanup level for this analyte

MTCA B Formula Values for protection of groundwater are listed only for detected analytes

Table 8
ANALYTICAL RESULTS FOR SOIL
TOTAL METALS

Sample ID	TP-1	TP-2	TP-3	TP-4	MTCA A		MTCA B
Sample Depth (feet below grade)	1.5	1.5	1.5	1.5			
Sample Date	9/21/00	9/21/00	9/21/00	9/21/00	Current	Proposed	Formula
Analyte (mg/Kg)							
Arsenic	13 U	12 U	13 U	13 U	20	20	
Barium	76	77	56	62	--	--	112
Cadmium	0.63 U	0.61 U	0.63 U	0.63 U	2	1	
Chromium	12	9.9	21	18	100	Cr III: 2,000	1,600
						Cr VI: 19	8
Lead	67	73	46	10	250	1,000	--
Mercury	0.32 U	0.30 U	0.32 U	0.31 U	1	2	
Selenium	13 U	12 U	13 U	13 U	--	--	
Silver	0.63 U	0.61 U	0.63 U	0.63 U	--	--	

Notes:

mg/Kg = milligrams per kilogram

U = not detected above laboratory practical quantitation limit (PQL)

Total metals analyzed by EPA 200.8/7421A/7470A

-- = No MTCA A cleanup level for this analyte

MTCA B Formula Values for protection of groundwater are listed only for detected analytes

Table 9
ANALYTICAL RESULTS FOR SOIL
PCBs

Sample ID	TP-1	TP-2	TP-3	TP-4	MTCA A	
Sample Depth (feet below grade)	1.5	1.5	1.5	1.5		
Sample Date	9/21/00	9/21/00	9/21/00	9/21/00	Current	Proposed
Analyte (mg/Kg)						
Aroclor 1016	0.063 U	0.061 U	0.063 U	0.063 U	Sum < 1	Sum < 10
Aroclor 1221	0.063 U	0.061 U	0.063 U	0.063 U		
Aroclor 1232	0.063 U	0.061 U	0.063 U	0.063 U		
Aroclor 1242	0.063 U	0.061 U	0.063 U	0.063 U		
Aroclor 1248	0.063 U	0.061 U	0.063 U	0.063 U		
Aroclor 1254	0.29	0.061 U	0.063 U	0.063 U		
Aroclor 1260	0.063 U	0.061 U	0.063 U	0.063 U		

Notes:

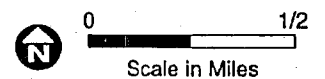
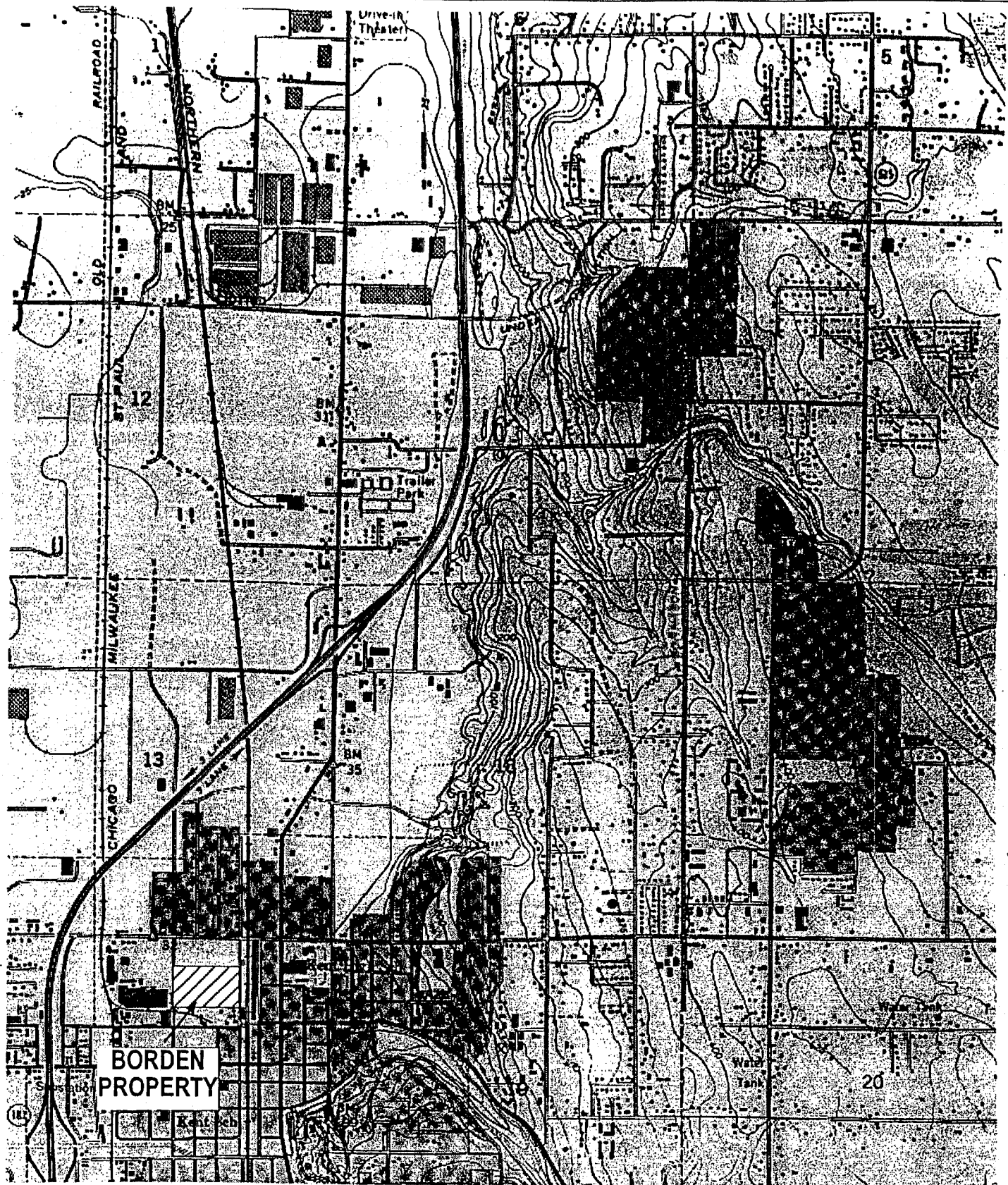
mg/Kg = milligrams per kilogram

U = not detected above laboratory practical quantitation limit (PQL)

PCBs analyzed by EPA Method 8082

Table 10
Cleanup Cost Estimates
Borden Chemical Site Remediation

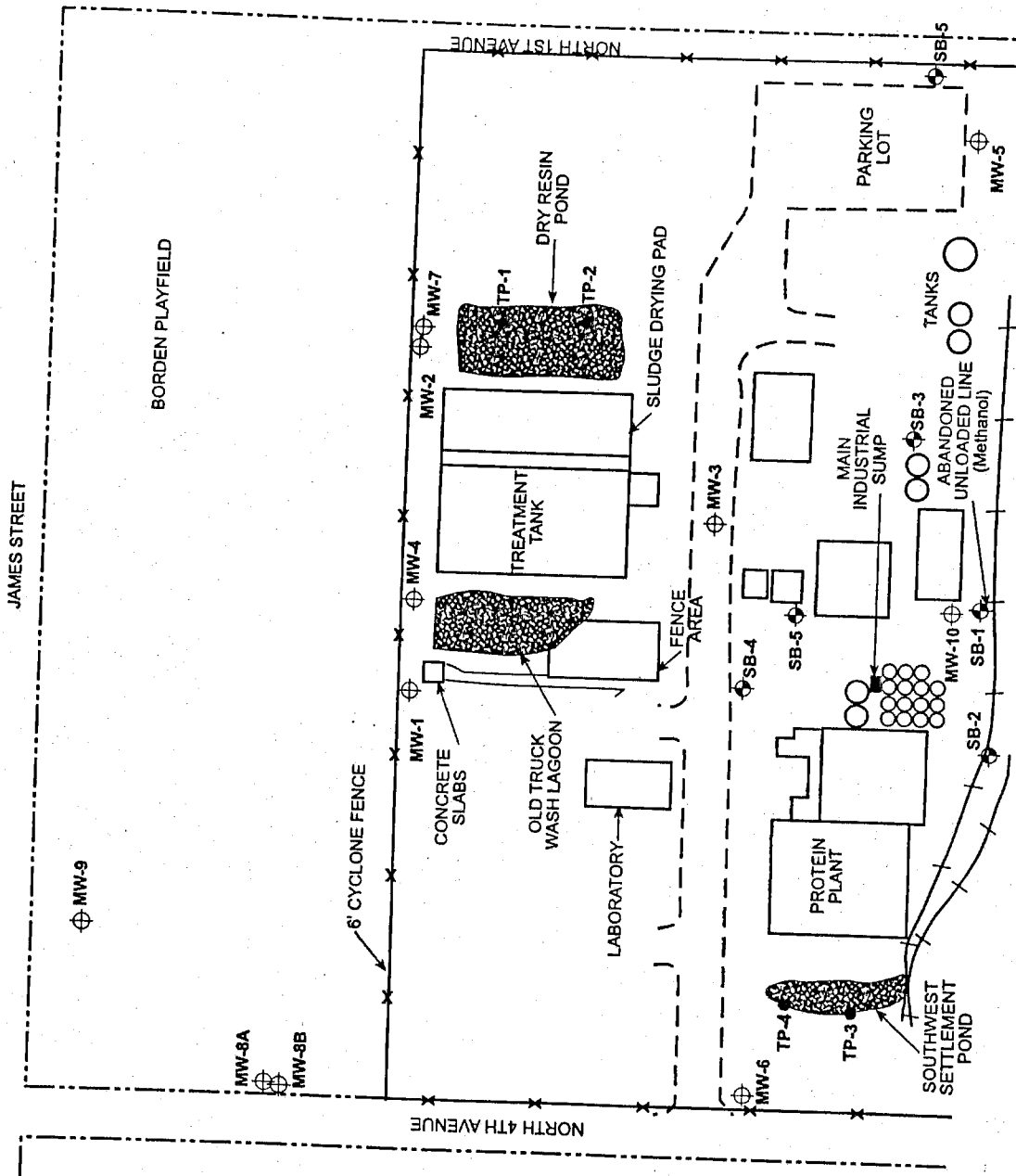
Recommended Activities	Cost Estimate
Pump-and-Treat Methanol-Contaminated Groundwater In MW-10 (10 Years)	\$48,800
Sample Groundwater In 6 Wells (5 Years)	\$28,300
Decommission and Replace 6 Monitoring Wells	\$11,800
Excavate, Dispose, and Backfill Soil In Southwest Settlement Pond Area	\$19,700
Excavate, Dispose, and Backfill Soil In Old Truck Wash Lagoon Area	\$167,400
Excavate, Dispose, and Backfill Soil In Dry Resin Pond Area	\$61,800
Total Estimate for Recommended Activities	\$337,800



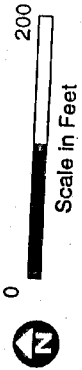
City of Kent	Project No. 5409900118
URS	

Facility Location

Figure
1



- KEY**
- ⊕ Monitoring Wells
 - ▨ Approximate Disposal Area
 - ⊕ Soil Boring
 - TP-4 ● Test Pit Location



Source: EMCON Northwest, 1992

City of Kent	Project No. 5409900118
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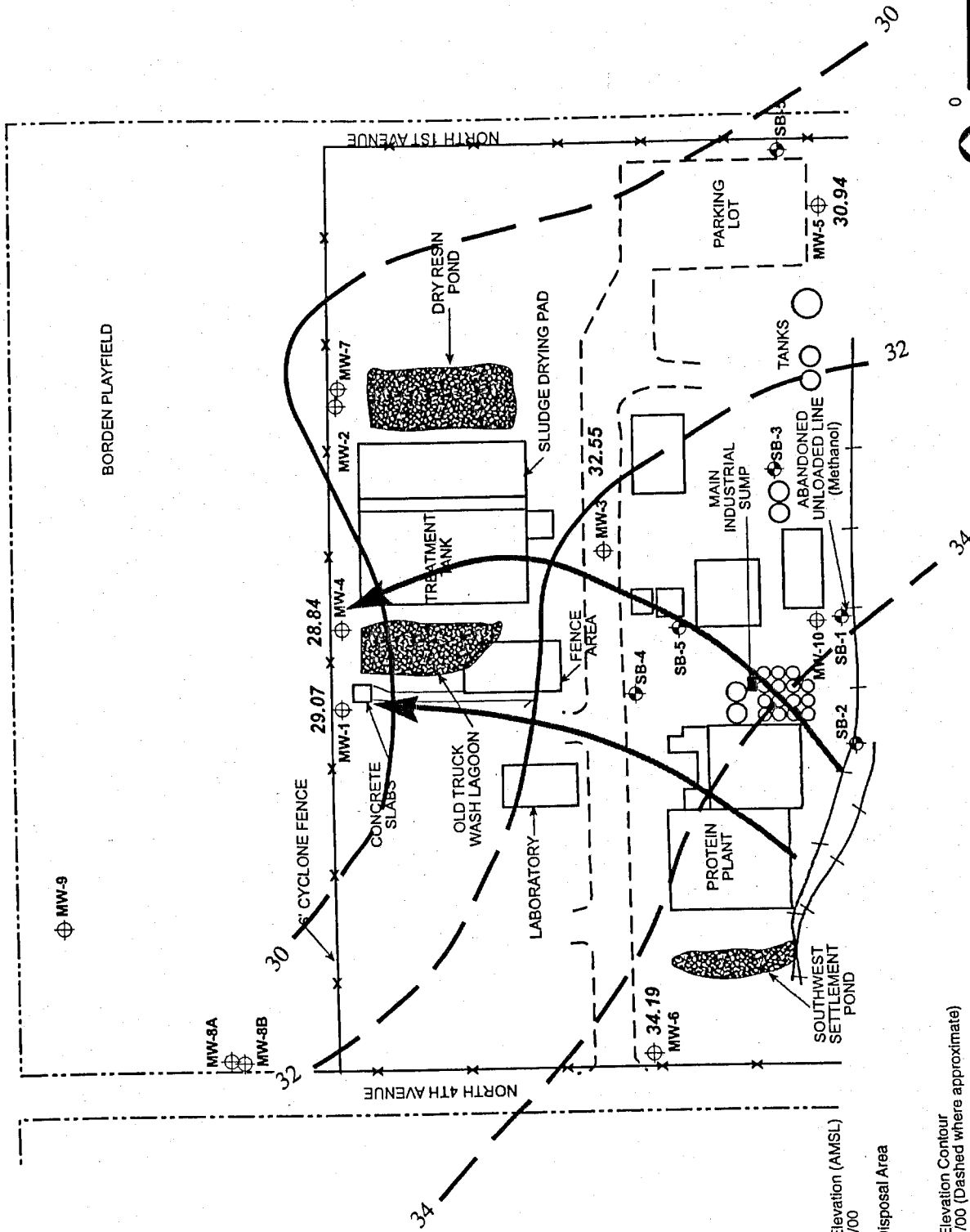
URS

99/Misc. Jobs/Kent 9/00

Site Plan and Explorations Borden Facility, Kent, Washington

JAMES STREET

BORDEN PLAYFIELD



- KEY**
- 34.19 ⊕ Groundwater Elevation (AMSL) 9/19/00 & 9/21/00
 - 34 — Groundwater Elevation Contour 9/19/00 & 9/21/00 (Dashed where approximate)
 - ➔ Groundwater Flow Direction (Dashed where approximate)
 - ⊕ Soil Boring
 - ⬤ Approximate Disposal Area

Source: EMCON Northwest, 1992

City of Kent
Project No. 5409900118

URS

99/Misc. Jobs/Kent 10/00

Potentiometric Surface
Borden Facility, Kent, Washington