# Appendix C
# Horizon BEA Dated March 2001

HORIZON ENVIRONMENTAL

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March 30, 2001

Michigan Department of Environmental Quality
Environmental Response Division
Saginaw Bay District Office
503 North Euclid Avenue
Suite 1
Bay City, Michigan 48706-2965

**RE: DISCLOSURE OF BASELINE ENVIRONMENTAL ASSSESSMENT FOR PROPERTY LOCATED AT 112 NORTH WATER STREET, BAY CITY, MICHIGAN**

Attention:

Enclosed is a baseline environmental assessment (BEA) completed for the former Industrial Brownhoist Property located at 112 North Water Street in Bay City, Michigan. This BEA is being submitted to the MDEQ per the Part 201 BEA disclosure requirements.

If you have any questions, please feel free to contact me at (616) 554-3210.

Sincerely,

HORIZON ENVIRONMENTAL

William J. Farrell

William J. Farrell
Senior Project Toxicologist

BEA Disclosure Review Form

BEA #: B200100381BC Category: S

Site Address: 206 S. Water St. & 202 Saginaw St.
Bay City, Mich

Petitioner's Name: Port Fisher LLC

Acute Hazard: Yes + No _____

Comments: (including type of hazard, media, and contaminant)

PNA & metals contamination in soil that exceeds direct contact criteria
PNA & metals contamination in soil that exceeds GSI criteria

Migration Off-site: Unknown _____ Probable X Not Likely _____

Comments: (including contaminant and media)

potential migration into the Saginaw River. ~~area~~ Known media impacted is soil.

Abandoned Containers: Yes X No _____ - no form submitted

Comments: (including number and type)

numerous containers (55 gallon drums & ASTs)

Reviewer's Name: Ann M. Persson Date: 4-2-2001

# BASELINE ENVIRONMENTAL ASSESSMENT

## Conducted Pursuant to Section 20126(1)(c) of Public Act 451 of 1994, as amended

*for the*

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SAGINAW - BAY

**Former I.B. Industrial Property**
**112 North Water Street**
**Bay City, Michigan**

*Prepared for:*

Port Fisher LLC
301 North Water Street
Bay City, Michigan

*Prepared by:*

Horizon Environmental Corporation
4595 Broadmoor S.E., Suite 200
Grand Rapids, Michigan 49512

February 21, 2001

BAY 0108

HORIZON ENVIRONMENTAL

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
**ENVIRONMENTAL RESPONSE DIVISION**

| For DEQ Use Only |
|---|
| BEA Disclosure # B200100381BC |

# DISCLOSURE OF A BASELINE ENVIRONMENTAL ASSESSMENT
## (FORM EQP4446(REV.3/99))

*(Under the authority of Part 201, 1994 Act 451, as amended, and the Rules promulgated thereunder)*

***DO NOT use this form for requesting a Baseline Environmental Assessment ("BEA") adequacy determination, OR if the property is not a facility, OR if the BEA was complete before the effective date of the BEA rules.*** *Please answer the following questions as completely as possible.*

*Name and address of submitter: (individual or legal entity):*

Port Fisher LLC
301 N. Water Street
Bay City, MI 48708

*Status relative to the property:*

| | Former | Current | Prospective |
|---|---|---|---|
| Owner: | ☐ | ☑ | ☐ |
| Operator: | ☐ | ☐ | ☐ |

*Address/Location of property where BEA was conducted:*
Former Industrial Brownhoist Prop.
206 S. Water Street
202 Saginaw Street
Bay City, MI 48708

County: Bay County

**Provide the property tax identification number(s) or, if applicable, the ward and item number(s) for the property identified in the BEA.** Required pursuant to Rule 907.
9-13-152-001 206 S. Water Street 9-13-151-001 202 Saginaw Street

Contact person Mr. Dave Ives Telephone # (517) 892-6191

If the address of the person seeking liability protection above is different from the address that should be used to correspond with the contact person, please provide the contact person's address:

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*Check the appropriate response to each of the following questions.*

1. **Is it known that the source of contamination at the property is primarily from any of the following?**

| | YES | NO |
|---|---|---|
| • **A leaking underground storage tank (UST) regulated under Part 213, 1994 PA 451, as amended.** | ☐ | ☑ |
| • **A licensed landfill or solid waste management facility.** | ☐ | ☑ |
| • **A licensed hazardous waste treatment, storage, or disposal facility.** | ☐ | ☑ |
| • **Oil and gas development related activities.** | ☐ | ☑ |

The source of the release that resulted in this property becoming a "facility" will determine which DEQ division will maintain a file regarding this BEA.

2. **Based on the Part 201 Rules, this BEA is a:**

Category N ☐
Category D ☐
Category S ☑

3. **Is the property at which the BEA was conducted a "facility"* as defined by Section 20101?** If the answer to this question is NO, do not submit the BEA to the DEQ.

YES ☑ NO ☐

4. **Was the BEA conducted* prior to or within 45 days after the date of purchase*, occupancy, or foreclosure of the property, whichever is earliest, and completed* not more than 15 days after the date required by Section 20126(1)(c) or Rule 299.5903(8)?** If the answer to either portion of this question is no, you are ineligible for an exemption from liability based on the BEA.

YES ☑ NO ☐

5. **Is the BEA being disclosed to the DEQ no later than 8 months after the earliest of the date of purchase, occupancy, or foreclosure?** All disclosures pursuant to Rule 919(3) must be submitted to the DEQ no later than 8 months after the earliest of the date of purchase, occupancy, or foreclosure.

YES ☑ NO ☐

6. **Are any USTs or abandoned or discarded containers identified in the BEA?** If yes, this information must be provided on Form EQP4476.

YES ☐ NO ☑

7. **Does this BEA rely on an isolation zone or an engineering control that requires an affidavit pursuant to Rule 299.5909(3) or 299.5909(4)?** If yes, a completed affidavit, Form EQP4479, must be attached or the BEA will not be considered complete.

YES ☐ NO ☑

With my signature below, I certify that the enclosed BEA and all related materials are complete and accurate to the best of my knowledge and belief. I understand that intentionally submitting false information to the DEQ is a felony and may result in fines up to $25,000 for each violation.

Signature of Submitter: James W. Fisher 3-22-01
(Person legally authorized to bind the person seeking liability protection) Date

Name (Typed or Printed) James W. Fisher

Title Manager

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6 1992 ADL Report
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## 1.0 IDENTIFICATION OF AUTHOR AND DATE BEA WAS CONDUCTED AND DATE BEA WAS COMPLETED

The person primarily responsible for the data assembly, interpretation, and technical conclusions in the preparation of this BEA is William J. Farrell, of Horizon Environmental Corp.

This BEA was conducted on February 9, 2001 and completed on February 21, 2001.

## 2.0 INTRODUCTION

This report presents a Baseline Environmental Assessment (BEA) for the former Industrial Brownhoist property located at 112 North Water Street, Bay City, Michigan ("the IB Property"). This BEA report has been prepared for Port Fisher LLC (Port Fisher), which became the title holder to the IB Property on December 28, 2000. This BEA is intended to document environmental conditions at the point in time when Port Fisher took title to the IB Property and also describe the methods by which existing contamination at the IB Property will be distinguished from any possible future contamination.

The IB Property has a history of industrial use including a foundry operation, hardware store, and a heavy crane manufacturing operation. Numerous investigations conducted at the IB Property have identified various chemicals including benzene, toluene, ethylbenzene, and xylene (BTEX), polynuclear aromatic hydrocarbons (PNAs), and heavy metals in soil and ground. These constituents have been detected in soil and ground water at concentrations exceeding Part 201 generic residential criteria. As such, the IB Property meets the Part 201 regulatory definition of a facility.

A Category A (no significant hazardous substance use) BEA was completed on behalf of the previous IB Property titleholder, I.B. Industrial Park, Inc., in January 1996. At that time, the IB Property was being leased by Stress-Con Industries, Inc. (Stress-Con) and Bay Track. Since it had a MDEQ-approved Category A BEA for the IB Property, I.B. Industrial Park, Inc. required certain provisions in the lease agreements including prohibition of the use of hazardous substances on the IB Property. When Port Fisher took ownership of the IB Property in December 2000, it was assigned I.B. Industrial Park, Inc.'s interest in those lease agreements. with the current lessees under the terms of the previous lease agreement. As such, Port Fisher intended to conduct a Category N BEA in order to protect Port Fisher against liability for existing contamination. As part of the BEA process, an Environmental Site Assessment (ESA) of the IB Property was performed in order to document site activities since completion of the January 1996 BEA. During the ESA, certain conditions were observed that indicated the significant use of hazardous substances by the current lessees Stress-Con and Bay Track. The use of hazardous substances by the lessees was in violation of certain provisions of their lease agreements. Subsequently, Port Fisher sent letters to Stress-Con and Bay Track notifying them that they are in violation of the lease agreements. Additionally, the letters

state that the lessees are to discontinue the use of hazardous substances and remove all hazardous substances from the IB Property. Copies of these letters are included as Attachment 1 to this BEA.

Port Fisher will not use hazardous substances on the IB Property. However, based on information obtained during completion of the ESA, certain hazardous substances are currently being used on the IB Property by lessees Stress-Con and Bay Track at the time of completion of this BEA. Stress-Con manufactures pre-stressed and pre-cast concrete supports for bridges. The Stress Con operations include the use of various hazardous substances including form oils, diesel fuel, and other petroleum-related compounds. The hazardous substances used by Stress-Con contain the same constituents that have been detected in soil and ground water at the IB Property. Since the same hazardous substances that cause the IB Property to be a facility are currently being used at the IB Property, this BEA has been prepared in accordance with the requirements for a Category S BEA. This Category S BEA has been prepared pursuant to: 1) the requirements of Section 201261(1)(c) of Part 201, as amended; 2) the administrative rules governing preparation of BEAs, which became effective on March 11, 1999; and, 3) guidance presented in the March 11, 1999 *Instructions for Preparing and Disclosing Baseline Environmental Assessments and Section 7a Compliance Analyses*.

The remainder of this section contains background information on the IB Property. Section 3.0 presents a description of the IB Property and the intended hazardous substance and land use. Section 4.0 provides a description of the known contamination and environmental conditions at the IB Property. Section 5.0 provides an evaluation of the likelihood of other contamination not identified during previous investigations conducted at the IB Property. Section 6.0 presents the conclusions of this BEA. The results of historical investigations conducted at the IB Property are also included as attachments to this BEA.

## 2.1 BACKGROUND

Port Fisher took title to the property on December 28, 2000. Prior to December 28, 2000, I.B. Industrial Park, Inc. owned the IB Property. I.B. Industrial Park, Inc. purchased the IB Property in the fall of 1995 from the Woodmen of the World Life Insurance Society. The Woodmen of the World Life Insurance Society owned the IB Property from 1965 through 1995.

The IB Property has a history of industrial use. In the late 1800's a hardware store which manufactured saddles and leather equipment occupied the IB Property. In the early 1900's, the Industrial Works Company took over occupancy of the IB Property. The Industrial Works Company manufactured cranes and related equipment. Historical insurance maps also indicate that portions of the IB Property were occupied by a manufactured gas operation. Specifically, a tar well, gas holder and above ground oil tank were once located on portions of the IB Property according information provided on historical insurance maps. The tar well was located under what is presently building 41. In mid 1920's, the Industrial Works Company became Industrial Brownhoist. The crane

manufacturing operations were conducted on the IB Property until approximately 1983 when operations were moved to North Carolina.

In addition to Industrial Brownhoist, the IB Property has also been leased to various other companies over the past thirty years including the Pennsylvania Coal & Coke Corporation, American Steel & Pump Corporation, the American Hoist & Derrick Company, Bay Track Incorporated, and Stress-Con. The Pennsylvania Coal & Coke Corporation operated a foundry on the northwest portion of the IB Property. The foundry operations were shut down in the early 1960's.

Historical records also indicate that petroleum product was stored in above ground storage tanks at various locations across the IB Property. Above ground storage tanks located near the river were used to fuel the forges throughout the IB Property. Additionally, foundry sand was reportedly used as fill at low areas on the IB Property.

## 2.2 TITLE CONVEYANCE

Transfer of title of the IB Property from I.B. Industrial Park, Inc. to Port Fisher occurred December 28, 2000.

# 3.0 PROPERTY DESCRIPTION AND INTENDED HAZARDOUS SUBSTANCE/LAND USE

## 3.1 PROPERTY DESCRIPTION

The IB Property occupies approximately 31 acres and is located west of Water Street between 10th and 13th Streets in Bangor Township, Bay City, Bay County, Michigan (see site location map Figure 1). The IB Property is located within Sections 21 and 28 of Township 14 North, Range 5 East (Bay City Quadrangle Map). A complete legal description of the IB Property is included as Attachment 2.

The IB Property is fenced along the northern, southern, and eastern boundaries. The IB Property is accessed through a gate along the north fence line and a gate at the southern fence line along South Water Street. The site is served by city power and sewer utilities. There are several buried water and sewer lines that run throughout the property. The main waterline enters and leaves the property along the eastern side and traverses north-south along the west side of Building 41 in the old vacated Water Street right-of-way. The sewer system parallels the water system. An old City of Bay City storm sewer, which formerly discharged to the Saginaw River, crosses the property in an east-west direction underneath Building 42. The City of Bay City installed a bulkhead on this sewer line and the storm water has been redirected to the City of Bay City Wastewater Treatment Plant.

## 3.2 INTENDED LAND USE

Currently, there are several buildings located on the property. Figure 2 presents a site map showing the buildings. For the most part, these buildings are occupied by Stress-Con with the exception of the northwest corner of Building 42, which is occupied by Bay Track Technologies. Bay Track Technologies repairs railroad tracks; however, the company leases space in Building 42 only for the storage of equipment.

Stress-Con conducts pre-cast manufacturing operations primarily in Buildings 41 and 42. The Boom Shop building shown on Figure 2 is used by Stress-Con primarily for the storage of equipment and materials. Directly adjacent to the Boom Shop Building to the south is the maintenance shop. Stress-Con uses this building to conduct maintenance related activities on trucks and equipment.

## 3.3 HAZARDOUS SUBSTANCE USE

### 3.3.1 PAST HAZARDOUS SUBSTANCE USE

The IB Property has a history of significant industrial use including a foundry operation and crane and heavy equipment manufacturer. The current site occupant, Stress-Con uses hazardous substances such as form oils in the manufacture of pre-cast concrete. The results of historical investigations have identified numerous hazardous substances including BTEX, PNAs, and heavy metals in soil and ground water at the IB Property.

### 3.3.2 INTENDED HAZARDOUS SUBSTANCE USE

Stress-Con, the current site occupant, will continue to operate at the IB Property. Stress-Con manages and uses petroleum-based materials including form oils, gasoline and diesel fuels, kerosene, and truck/equipment maintenance-related substances such as antifreeze and motor oils. During a site visit conducted by a Horizon representative on January 25, 2001 various hazardous substances were observed being managed by Stress-Con at the IB Property. Specifically, two above ground storage tanks (ASTs) used to store gasoline and diesel fuel were observed near the southeast gate (see Figure 2). The ASTs rest on elevated steel stilts and a photograph of the ASTs is shown in Attachment 3.

Several drums of form oil and waste oil and a drum of kerosene were observed in Building 42 (see photograph in Attachment 3). Two ASTs are also located at the location of the former powerhouse building shown on Figure 2. The ASTs are used to store diesel fuel.

The Boom Shop shown on Figure 2 is used to store equipment and materials for Stress-Con's operations. During the site visit, six, 200-gallon totes used for storage of form oil were observed in this building. Additionally, several 55-gallon drums of antifreeze, hydraulic oil, and diesel fuel were stored in this building.

Stress-Con performs truck/equipment maintenance activities in the maintenance shop shown on Figure 2. During the January 2001 site walk-over, twelve drums of waste oil and twelve drums of unused motor oil were observed in this building. Additionally, a mineral spirits parts washer and two, 250-gallon ASTs containing hydraulic oil were also observed in this building.

## 4.0 SITE ENVIRONMENTAL CONDITIONS/KNOWN CONTAMINATION

Numerous investigations have been conducted at the IB Property since 1989. The following sections provide a brief overview of each of the investigations conducted at the IB Property. Copies of the investigative reports are included as attachments to this document.

### 4.1 1989 Through 1995 Investigations

In 1989 MWR performed an investigation that included a site reconnaissance, aerial photograph review, the collection of soil and ground water samples, a soil gas survey, an asbestos survey, and an inventory of polychlorinated biphenyl (PCB) containing transformers. During the investigation a total of sixteen borings and seven monitor wells were installed. Soil and ground water samples were analyzed for metals and volatile organic compounds (VOCs). No volatile organic compounds were detected in soil or ground water samples above Part 201 generic residential criteria. Lead was detected in soil at one location at a concentration (1,580 mg/kg) exceeding its Part 201 generic residential ground water impact and direct human contact soil criteria. No inorganic constituents were detected in ground water above their respective Part 201 generic residential ground water criteria.

The results of the soil gas survey indicated high concentrations of VOCs in soil gas vapors near the northeast and southwest corners of Building 41. The PCB survey indicated the presence of 31 PCB containing transformers across the IB Property. Soil samples were collected from locations in the vicinity of nine transformers. The results of this investigation are summarized in the report presented in Attachment 4.

Subsequent to this investigation, PCB-containing transformers and associated contaminated soils were removed from seven areas around the IB Property. A report describing the PCB removal work is presented in Attachment 5 to this document.

In January 1992 Arthur D. Little (ADL) performed a preliminary environmental assessment which consisted of a records review, interviews, and a site visit. The assessment was performed in support of the United States Environmental Protection Agency's (U.S. EPA) potential purchase of the property for the development of the proposed Center for Ecological Research and Training (CERT). The preliminary assessment report identified 25 areas of the site that needed further investigation with respect to soil and ground water contamination, the presence of potential USTs, PCB-

containing materials, asbestos, and potential off-site liability issues. The 1992 ADL preliminary assessment report is included as Attachment 6 to this document.

From 1992 through 1995 Roy F. Weston (Weston) conducted Phase I and Phase II investigations in order to investigate the environmental concerns identified during the 1992 ADL preliminary environmental assessment. The Weston Phase I investigation included a geophysical survey to identify potential USTs and an investigation of buildings to determine the absence/presence of hazardous materials and whether site conditions that could contribute to releases of hazardous materials (e.g., cracks in building floors) existed at the site.

The Phase I work also included the installation of fifty soil borings across the site ranging in depths from 6 to 60 feet below the ground surface (bgs). The locations for the soil borings were selected based on the 25 areas of concern identified in the 1992 ADL preliminary assessment. A total of 119 soil samples were analyzed for VOCs, polynuclear aromatic hydrocarbons (PNAs), PCBs, semi-volatile organic compounds (SVOCs), Michigan 10 metals, and cyanide. Additionally, a total of fourteen temporary monitor wells were installed. The Phase II assessment conducted in 1995 included the installation of 12 additional soil borings, nine of which were converted to monitoring wells. The results of the Phase I and Phase II investigations are summarized in the 1993 report titled *Site Summary Report Center for Ecological Research and Training* included as Attachment 7 to this document. Additionally, the analytical results for investigative samples collected by Roy F. Weston in 1995 are presented in Attachment 8.

In July 1993 ETG conducted an investigation at two locations (the southeast and northeast corners of Building 42) where the presence of USTs were suspected. Approximately 153 cubic yards of material were removed while attempting to locate a suspected heating oil UST near the northeast corner of Building 42 and 168 cubic yards of soil was removed while attempting to locate a gasoline UST near the southeast corner of Building 42. The USTs were not identified at either location during this investigation.

ETG also performed a pre-remedial action plan assessment in 1995 in conjunction with Weston's Phase II investigation. The ETG investigation included the installation of 14 soil borings and 19 shallow and 4 deep monitor wells. Soil and ground water samples were analyzed for VOCs, PNAs, and metals. During this investigation, free phase oil was identified in a monitor well installed near the northwest corner of Building 42. In addition, oil droplets were identified in a monitor well installed just inside Building 42. Oil droplets were also identified in a monitor well located just northeast of the Boom Shop. The analytical results for the ETG 1995 investigation are presented in Attachment 9.

In November 1995 ETG installed three monitor wells downgradient and sidegradient of the coal tar pit located beneath the northeast portion of Building 41. In addition, the free product area identified near the northwest corner of Building 42 was excavated and a collection system installed. The results of the ETG 1995 investigation of the coal tar pit are presented in Attachment 10.

### 4.1.1 Summary of 1989 through 1995 Investigations

Attachment 11 presents tables prepared by Roy F. Weston summarizing the analytical results for soil and ground water samples collected at locations where exceedances of Part 201 generic residential criteria were observed. The locations for the samples are presented on a figure also included in Attachment 11. The Weston and ETG investigations included the installation of a total of 111 soil borings and the installation of 56 monitor wells. As shown on the table, the results of the investigations identified widespread PNA, BTEX, and heavy metals contamination in soils across the IB Property. Many of these constituents are present at concentrations exceeding Part 201 generic residential cleanup criteria. The presence of these constituents is attributed to the pre-1996 historical site operations and the use of foundry sand as fill soils at the site.

## 4.2 2001 Investigation

The 1989 through 1995 investigations documented environmental impact associated with historical operations at the site. Since completion of these investigations in 1995, Stress-Con is the only company that operated on the IB Property and used hazardous substances. Therefore, on January 25, 2001, a representative from Horizon Environmental Corporation (Horizon) conducted a site reconnaissance to evaluate hazardous substance management and use by Stress-Con. The purpose of this investigation was to document hazardous substance use at the IB Property since 1995 and identify any potential areas at the IB Property where Stress-Con operations could potentially have caused releases to the environment. The scope of this investigation included a visual and physical reconnaissance inspection of the IB property; a reconnaissance of adjacent properties from public right-of-ways and the subject property; and a review of selected agency records and databases.

Horizon representative Keith Sikkema visited the site on January 25, 2001. Mr. Dave Ives, representing Port Fisher the current owner of the subject property, provided access to the IB Property. Mr. Ives stated that since 1995 PCB-containing transformers were removed from the IB Property. In addition, asbestos-containing materials were removed from buildings before they were demolished.

The site investigation included an inspection for indications of release of hazardous substances or other signs of recognized environmental conditions (RECs). Snow and ice covered the entire site preventing a visual inspection of the ground surface.

### 4.2.1 CURRENT USE OF THE SITE

Several piles of aggregate material are stored on the west side of the IB Property. The eastern portion of the IB Property and buildings are leased to one tenant, Stress-Con. Stress-Con constructs concrete beams and columns used in bridge construction. Forms are assembled in each of three buildings identified as Building 41, Building 42, and the Boom Shop (see Figure 2). Form oil, which is stored in drums or 215-gallon totes, is

applied to the inside surface of the forms. Steel cables and reinforcement bars are placed in the form before concrete is added. Construction of the forms and spacers involves cutting and welding steel.

The Storage Building is located along the IB Property's north boundary and is not used by Stress-Con. The only material in this building is some abandoned office furniture and wooden shelving.

A mechanical garage attached to the Boom Shop is used for servicing site vehicles. These services include repairs to hydraulic systems and changing motor oil. Drums containing antifreeze, new and used oil, two 250-gallon above ground tanks of hydraulic oil, and a parts wash sink containing mineral spirits are located in the mechanical garage.

The Sandblasting Building is adjacent to the Boom Shop. A large amount of sand covers the floor in this building.

### 4.2.2 SITE INSPECTION

The site investigation included a search for stained ground or floor surfaces and other signs of potential recognized environmental concerns (RECs).

#### 4.2.2.1 EXTERIOR INVESTIGATION

Above ground storage tanks containing gasoline, diesel fuel, and kerosene have been installed by Stress-Con and/or Bay Track and are located in several areas across the IB Property. The locations for these ASTs are shown on Figure 2. Diesel fuel on snow beneath one tank near the southeast corner of the property appears to have dripped during fueling operations. Oil and grease transported by melting snow or ice runoff has accumulated on ice near these above ground fuel tanks (see photograph in Attachment 3).

A small pile of oil filters and other metal debris mark the location of a burn pile in the vicinity of the former Power Plant (see Figure 2 for location and photograph in Attachment 3). The extent of the burn area could not be determined due to the presence of ice and snow. Two above ground diesel fuel tanks are located in the vicinity of the former Power Plant as well. No releases on to the ground or snow were observed near these two ASTs during the site visit.

Concrete forms, unused or discarded equipment and similar material are stored along the east side of Building #41 and near the northwest corner of Building #42. Due to the volume of these materials, an exact inventory of the contents was not possible. No containers of hazardous substances or petroleum products were visible in these areas during the site visit. Due to snow and ice cover, the condition of ground surface in the vicinity of these storage areas could not be described.

The presence of diesel fuel on snow beneath an above ground tank and accumulated oil and grease near the south entrance to the subject property are RECs. In addition, the

presence of a burn pile containing oil filters and other metal debris in the vicinity of the former Power Plant are RECs. Although no additional RECs were identified in exterior areas their presence cannot be ruled out due to the presence of snow and ice cover.

#### 4.2.2.2 INTERIOR INVESTIGATION

Building 41

A large piece of electrical equipment is located above the floor in the northwest corner of this building. A sticker on a frame supporting the equipment identifies the equipment as containing PCBs. However, all PCB-containing materials were removed from the site in 1995. The presence of this equipment is a REC. A dry-type transformer, which does not contain PCBs, is located beneath this PCB-containing equipment.

The northern part of Building 41 contains vacant offices, a break room and loading dock and other areas that are used for storage. Numerous drums containing waste oil are located in the loading dock. Oil spilled while filling these drums covers some of the floor beneath these drums. Nine-inch floor tile is located in a break room. Much of the tile is broken and separated from the floor.

Maintenance Shop

Approximately one dozen waste oil drums are located in the northeast corner of the Maintenance Shop. According to a shop employee, approximately two or three drums of waste oil are generated in a month. Waste oil is pumped from the drums by an oil recycler. Spilled oil and oil dry is visible on the floor in the waste oil storage area. The presence of waste oil on the floor is a REC. The floor beneath drums of new oil, hydraulic oil tanks, and the parts wash sink did not exhibit signs of releases.

Building #42

Several waste oil drums are located in the north end of this building. Waste oil is visible on the floor beneath these drums. The presence of waste oil on the floor is a REC.

### 4.2.3 February 2001 Site Sampling

Based on observations and RECs identified during the January 25, 2001 site reconnaissance, a limited soil investigation was conducted in order to determine if site con had changed since the January 1996 BEA. On February 1, 2001 Horizon collected a total of 11 soil samples from areas of concern identified during the reconnaissance of Stress-Con operations. The locations for the soil samples are shown on Figure 2. As shown on Figure 2, soil samples were collected from the following locations.

- Two surface soil samples (sample #'s SS-8 and SS-11) were collected from an area of oil and grease-stained soils near the gasoline and diesel ASTs at the front entrance to the site.

- Three soil samples (SS-4, SS-5, and SS-7) were collected from soils directly beneath the concrete floor in Building 41. The soil samples were collected from locations where hazardous materials were stored in the building and where other conditions that could contribute to releases (e.g., staining/cracks in the concrete floor) were observed. Concrete cores were cut through the floor and samples were collected from soils immediately beneath the floor.

- One surface soil sample (SS-10) was collected from beneath a pile of discarded oil filters near the former power house building location.

- One surface soil sample (SS-9) was collected near two diesel fuel ASTs located near the former power house building.

- Three soil samples (SS-1, SS-2, and SS-3) were collected from soils directly beneath the concrete floor in the maintenance building. The soil samples were collected from locations where hazardous materials were stored in the building and where other conditions that could contribute to releases (e.g., staining/cracks in the concrete floor) were observed. Concrete cores were cut through the floor and samples were collected from soils immediately beneath the floor.

- One soil sample (SS-6) was collected from soils directly beneath the concrete floor in Building 42. The sample was collected in an area where waste-oil drums were stored.

The soil samples were submitted for laboratory analyses for petroleum-related constituents associated with the hazardous materials used by Stress-Con (i.e., gasoline, diesel fuel, petroleum distillate-based form oils, kerosene, and waste oils). Specifically, the soil samples were analyzed for BTEX compounds, trimethylbenzenes, methyl tert-butyl ether (MTBE), 1,2-dibromomethane, 1,2-dichloroethane, polynuclear aromatic hydrocarbons (PNAs), cadmium, chromium, and lead.

The analytical results for the soil samples are presented on Table 1. Table 1 also presents the Part 201 generic residential soil criteria for the ground water protection, direct contact, and ground water/surface water interface protection pathways. Additionally, the Part 201 generic industrial soil criteria for the direct human contact and soil volatilization to ambient air pathways are also presented on the table. As shown on the table, no constituents were detected above their respective generic residential soil criteria for all pathways evaluated in samples SS-1, SS-2, SS-3, SS-4, SS-6, and SS-10.

Benzo(a)pyrene was detected in soil samples SS-5 at concentration (2,100 mg/kg) slightly exceeding its residential direct human contact soil criterion. Several other PNAs were also detected in this sample at concentrations below their respective generic residential soil criteria. Soil sample SS-5 was collected from beneath the concrete floor in building 41. The soils beneath the concrete floor at this location did not appear visibly stained.

Lead was detected in soil sample SS-7 at a concentration (4,800 mg/kg) exceeding its generic residential and industrial direct human contact soil criteria. In addition, several PNAs were detected in this soil sample at concentrations below their respective generic residential soil criteria. Soil sample SS-7 was collected from beneath the concrete floor in Building 41. Soils at this location were not visibly impacted and there were no visual indications that residual oils on the concrete floor had migrated through the concrete to the underlying soils. It is also noted that soil sample SS-7 was collected from the approximate location where a coal tar pit was previously identified.

Phenanthrene was detected in soil sample SS-8 at a concentration exceeding its Part 201 generic GSI protection soil criteria. Additionally, soil sample SS-8 contained elevated levels of other PNAs and petroleum-related volatile constituents including BTEX, 2-methylnaphthalene, and trimethylbenzenes. The concentrations of these constituents in soil sample SS-8 were below their respective generic residential soil criteria. Soil sample SS-8 was collected from an area of visibly impacted surface soils near the diesel and gasoline ASTs at the front entrance of the property. The surface soils appeared to have been impacted as a result of use of the ASTs. The presence of other petroleum-related constituents including BTEX and trimethylbenzenes in this sample also indicates that the surface soil impact in this area is the result of use of the petroleum fuel ASTs. As such, the impacted surface soils near these ASTs is likely to be attributable to releases from Stress-Con operations.

Benz(a)pyrene was detected in soil sample SS-9 at a concentration exceeding its Part 201 residential direct human contact soil criteria. Additionally, other PNAs were detected n this soil sample at concentrations below their respective generic residential soil criteria. Soil sample SS-9 was collected from surface soils near the diesel fuel ASTs located at the former power house building. However, petroleum-related volatile constituents (i.e., BTEX, trimethylbenzenes) were not detected in this sample.

Phenanthrene was detected in soil sample SS-11 at a concentration exceeding its soil volatilization to ambient air criteria. Soil sample SS-11 was collected from visibly impacted surface soils located near the 2 ASTs at the front entrance. A sheen was noted on water which had pooled on these visibly impacted soils. The visibly impacted soils in the area of soil sample SS-11 is likely to be attributable to releases from Stress-Con operations.

## 5.0 LIKELIHOOD OF OTHER CONTAMINATION

Although numerous soil and ground water samples have been collected from borings and monitoring wells on the IB Property, the potential exists for impact in areas not investigated. The widespread use of foundry sand as fill soils has likely resulted in site-wide impact with heavy metals and PNAs. Additionally, previous investigations identified black oily material in soils east of the Boom Shop and near the northwest corner of Building 42. The extent of these oily materials in soil and ground water was not investigated. Similarly, a limited investigation was conducted in the area of a former

coal tar pit located under Building 41. However, the extent of impact associated with the coal tar pit was not investigated.

## 6.0 CONCLUSIONS

The results of historical investigations conducted from 1989 through 1995 at the IB Property have identified widespread impact associated with historical operations. This impact includes the presence of elevated levels of heavy metals, BTEX compounds, and PNAs in soil and ground water across the IB Property.

On December 28, 2000 Port Fisher took title to the IB Property. At that time, Stress-Con and Bay Track operations on the IB Property included the use of hazardous substances. Stress-Con and Bay Track are the only companies to operate on the IB Property and use hazardous substances since 1995. Therefore, in order to determine if their operations had contributed to impact at the IB Property, a limited investigation was performed in January 2001. The investigation included the collection of soil samples from locations identified as potentially being impacted by such operations. The results of the investigations identified impact likely associated with their operations in the following areas.

- Visibly impacted surface soils were identified near a gasoline AST and a diesel fuel AST located at the south entrance to the IB Property. The soils likely have been impacted as a result of use of the ASTs by Stress-Con. The analytical result for a surface soil sample collected at this location identified PNAs and petroleum-related volatile constituents in the visibly impacted soils.

- Soils visibly impacted with oil and grease were also identified directly southwest of the diesel and gasoline ASTs. A small sheen was observed on water pooled on these soils. The analytical results for a surface soil sample collected from these visibly impacted soils identified PNAs and petroleum-related volatile constituents in these soils.

Although the current site owner Port Fisher will not use hazardous substances on the IB Property, at the time of preparation of this BEA operations by the site tenants, Stress-Con and Bay Track, included the use of hazardous substances. Some of the hazardous substances used are the same hazardous substances that cause the IB Property to be characterized as a "facility" under Part 201. As such, Port Fisher has prepared this Category S BEA outlining the methods that Port Fisher will rely upon to distinguish existing contamination from any future contamination. The methods described in this BEA to distinguish existing from future contamination rely on site characterization data to distinguish any future contamination from existing contamination. Specifically, the significant amount of site characterization data generated to date has reasonably defined the areas of impact at the IB Property. Furthermore, the information and site characterization data obtained during the January 2001 ESA has reasonably defined environmental impacts since the January 1996 BEA. As such, this site characterization data provides a baseline as to environmental conditions at the IB Property at the time this

BEA was completed and is adequate for use in distinguishing any future contamination from existing contamination. Additionally, the nature of the operations by Stress-Con are such that releases of oils and other materials can be easily characterized and distinguished based on visual inspection.

## 7.0 REFERENCES

Baseline Environmental Assessment Conducted Pursuant to Section 20126(1)(c) of 1994 PA 451, Part 201, as amended and Proposed Use Plan/Proposed Response Activities Relative to Section 20129(a) of 1994 PA 451, Part 201 as amended. Prepared for I.B. Industrial Park, Inc. Prepared by Roy F. Weston, Inc. December 1995

**I.B. Industrial Park, Inc.**
301 N. Water Street
Bay City, MI 48708

**CERTIFIED MAIL / RETURN RECEIPT REQUESTED**

Bay Track
P.O. Box 1714
Bay City, MI 48706

Dear LeRoy,

During the course of an Environmental Site Assessment on the premises covered by Bay Track's lease at 301 North Water Street, Bay City, Michigan, 48708, (the "Premises" and the "Lease"), certain conditions were observed which indicate that Bay Track has violated several provisions of the Lease. Specifically, the following conditions were observed:

1) Use of hazardous substances including gasoline, diesel fuel, and equipment maintenance related oils.
2) oil drums were located in the basement of Building 42.
3) Two ASTs storing diesel fuel with no secondary containment were observed near the north entrance off of Saginaw Street.

Violations of lease provisions include but are not limited to Subsections 4.01, 4.02, 4.02, and 4.04 of Article IV in that: 1) the Premises have been used in a manner which has created a nuisance; 2) the use of the Premises not been in compliance with applicable laws and requirements; 3) hazardous substances have been used or generated and disposed of on the premises; and 4) these actions and conditions have jeopardized and conflicted with the Baseline Environmental Assessment and Due Care Requirements established in the Baseline Environmental Assessment document attached to and incorporated into the Lease.

Under the provisions of the Lease, Bay Track is obligated to indemnify and hold IB Industrial Park, Inc. and its assigns harmless with respect to the use , storage, generation or disposal of hazardous substances on the Premises. Any costs incurred related to the above-described conditions shall be subject to indemnification by Bay Track. Additionally, Bay Track is obligated to take immediate actions to return the Premises to the condition existing at the time the releases commenced. Bay Track's obligations include, but are not limited to, the following actions: 1) removing all hazardous substances from onsite including the discontinuation of petroleum related fuel use on site and removal of all above-ground storage tanks and other containers; 2) conducting all future equipment maintenance off site; and 3) removing drums and all discarded oil filters from the premises. Under the Lease, you are required to take such actions within ten (10) days of the date of this notice.

Very truly yours,

David E Ives

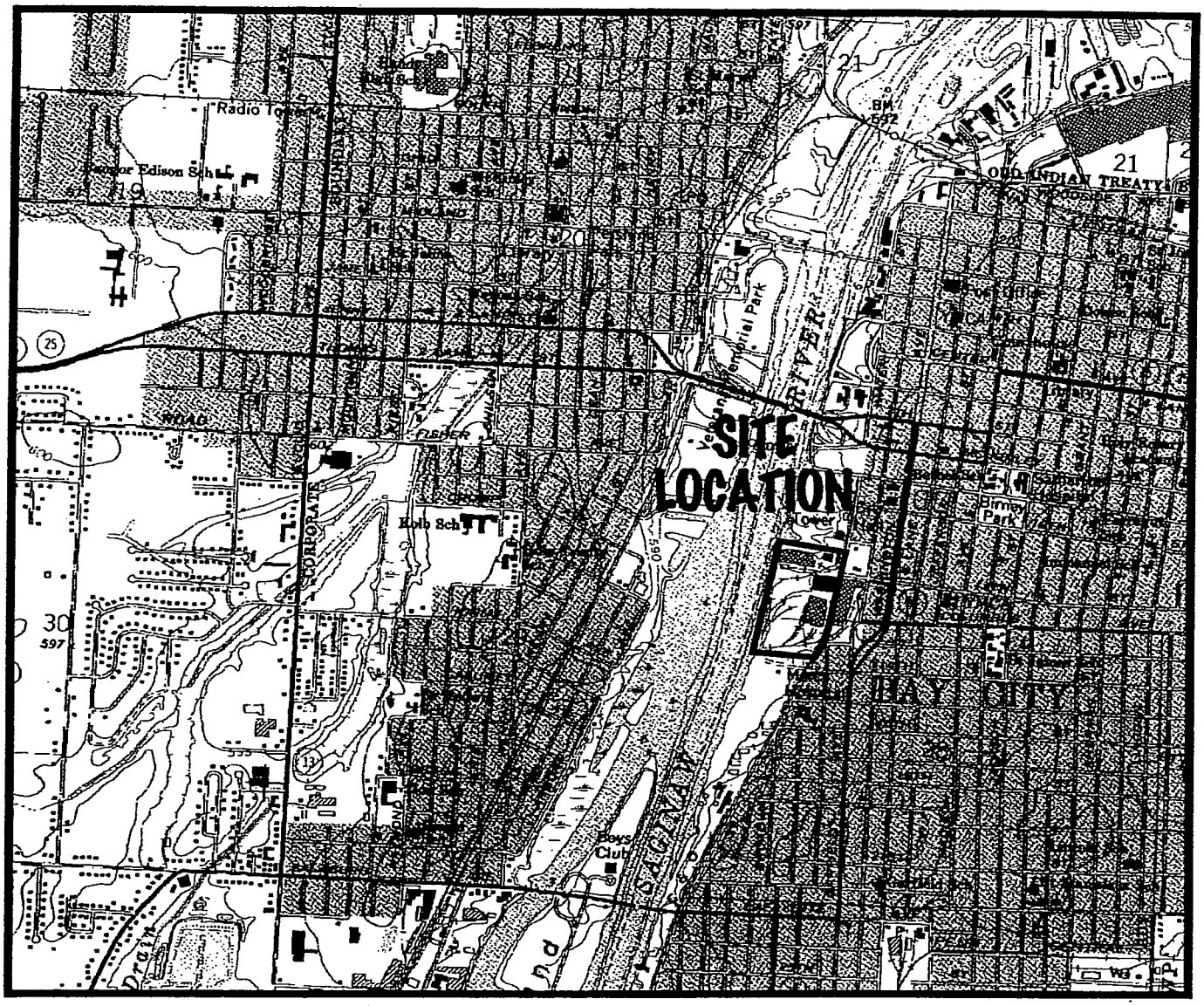
CC: Scott Steiner, Roades, McKee, Boer, Goodrich, & Titta
Allen Reilly, Horizon Environmental

*ATTACHMENT 2*

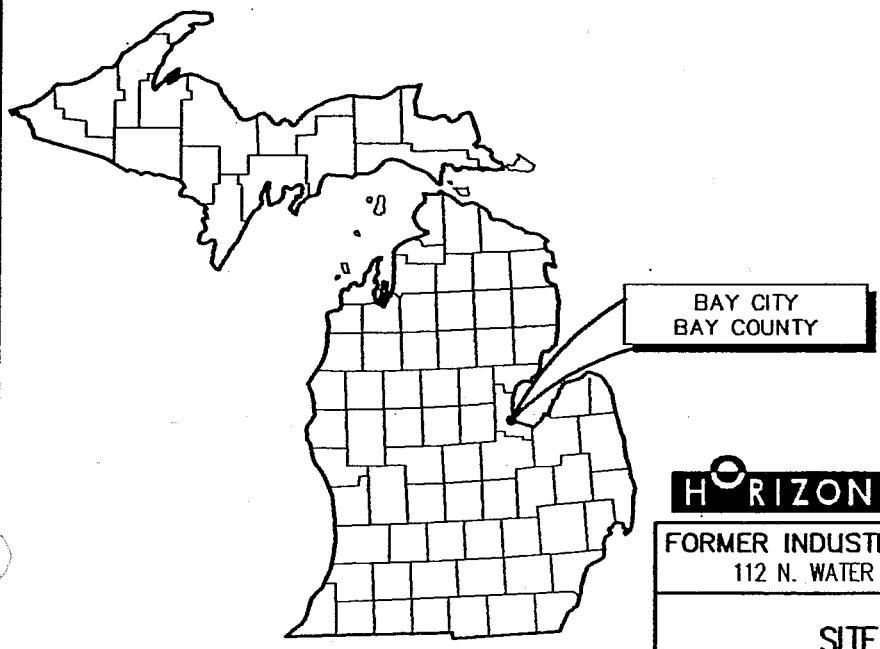
---

*SITE LEGAL DESCRIPTION*

0108-SLM/MAR2601




TAKEN FROM 7.5 MINUTE SERIES TOPOGRAPHIC MAP
BAY CITY QUADRANGLE PHOTOREVISED 1981
SCALE = 1:24,000




NORTH

HORIZON ENVIRONMENTAL

FORMER INDUSTRIAL BROWNHOIST PROPERTY
112 N. WATER STREET - BAY CITY, MICHIGAN

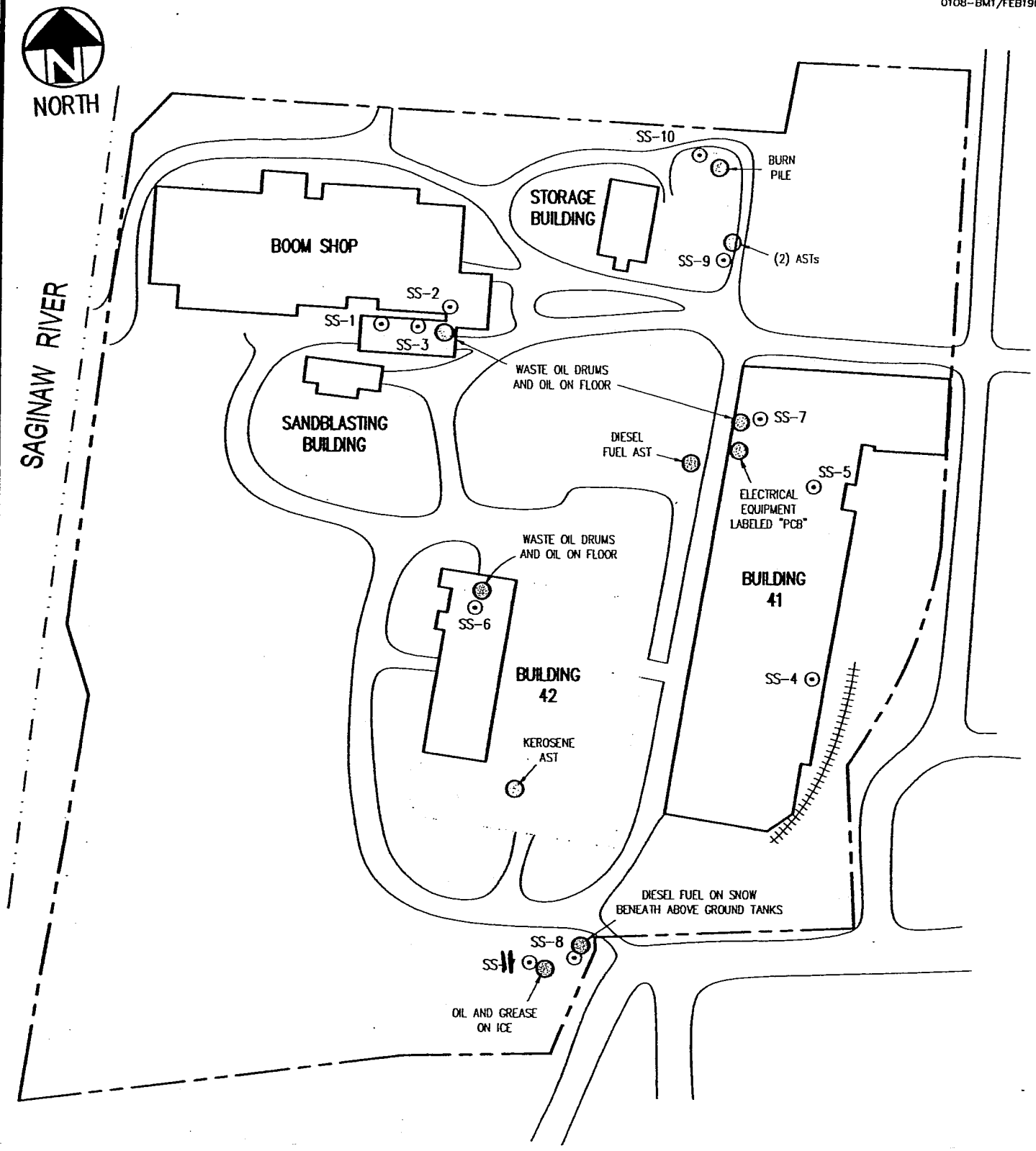
SITE LOCATION MAP

PROJECT NUMBER:
BAY-0108

FIGURE:
1

MARCH, 2001

0108-BM1/FEB1901




HORIZON ENVIRONMENTAL

PROJECT NUMBER: BAY-0108

FORMER INDUSTRIAL BROWNHOIST PROPERTY
112 N. WATER STREET – BAY CITY, MICHIGAN

FIGURE: 2

SITE MAP

FEBRUARY, 2001

# Table 1
## Summary of Analytical Results for Soil
## Bay Aggregate
## Bay City, Michigan

| Sample Location:<br>Sample Identification:<br>Sampled By:<br>Analyzed By:<br>Sampled Date:<br>Sampled Depth (ft): | | Statewide Default Background Levels or *TMDL* | Residential Drinking Water Protection Criteria | Groundwater Surface Water Interface Protection Criteria | Residential Direct Contact Criteria | Industrial and Commercial II Direct Contact Criteria | Industrial Finite VSIC for 2M Source Thickness Criteria | SS-1<br>0102031-01A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-2<br>0102031-02A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-3<br>0102031-03A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-4<br>0102031-04A<br>Horizon<br>Bio-Chem<br>2/1//01 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Inorganics*** | Units | | | | | | | | | | |
| Cadmium {B} | ug/Kg | 1200 | 6000 | {G,X} | 5.5E+5 | 4.1E+6 | NLV | <50 | <50 | **370** | **66** |
| Chromium [1] | ug/Kg | 18000 (total) | 30000 | 3300 | 2.5E+6 | 1.7E+7 | NLV | **3500** | **2200** | **9300** | **9900** |
| Lead | ug/Kg | 21000 | 7.0E+5 | {G,M,X} | 4.0E+5 | 9.0E+5 (draft) | NLV | **1500** | **1500** | **94000** | **12000** |
| ***Semi-Voolatiles*** | Units | | | | | | | | | | |
| Acenaphthene | ug/Kg | *330* | 3.0E+5 | 4400 | 4.1E+7 | 2.0E+8 | 9.7E+7 | <330 | <330 | <330 | <330 |
| Acenaphthylene | ug/Kg | *330* | 5900 | ID | 1.6E+6 | 8.0E+6 | 2.7E+6 | <330 | <330 | <330 | <330 |
| Anthracene | ug/Kg | *330* | 41000 | ID | 2.3E+8 | 1.0E+9 {D} | 1.6E+9 | <330 | <330 | <330 | <330 |
| Benzo(a)anthracene {Q} | ug/Kg | *330* | NLL | NLL | 20000 | 1.0E+5 | NLV | <330 | <330 | **660** | <330 |
| Benzo(a)pyrene {Q} | ug/Kg | *330* | NLL | NLL | 2000 | 10000 | NLV | <330 | <330 | **850** | <330 |
| Benzo(b)fluoranthene {Q} | ug/Kg | *330* | NLL | NLL | 20000 | 1.0E+5 | NLV | <330 | <330 | **840** | <330 |
| Benzo(g,h,i)perylene | ug/Kg | *330* | NLL | NLL | 2.5E+6 | 9.1E+6 | NLV | <330 | <330 | <330 | <330 |
| Benzo(k)fluoranthene {Q} | ug/Kg | *330* | NLL | NLL | 2.0E+5 | 1.0E+6 | NLV | <330 | <330 | **980** | <330 |
| Chrysene {Q} | ug/Kg | *330* | NLL | NLL | 2.0E+6 | 1.0E+7 | ID | <330 | <330 | **900** | <330 |
| Dibenzo(a,h)anthracene {Q} | ug/Kg | *330* | NLL | NLL | 2000 | 10000 | NLV | <330 | <330 | <330 | <330 |
| Fluoranthene | ug/Kg | *330* | 7.3E+5 | 5500 | 4.6E+7 | 1.8E+8 | 8.8E+8 | <330 | <330 | **920** | <330 |
| Fluorene | ug/Kg | *330* | 3.9E+5 | 5300 | 2.7E+7 | 1.3E+8 | 1.5E+8 | <330 | <330 | <330 | <330 |
| Indeno(1,2,3-cd)pyrene {Q} | ug/Kg | *330* | NLL | NLL | 20000 | 1.0E+5 | NLV | <330 | <330 | <330 | <330 |
| Naphthalene | ug/Kg | *330* | 35000 | 870 | 1.6E+7 | 8.0E+7 | 3.5E+5 | <330 | <330 | <330 | <330 |
| Phenanthrene | ug/Kg | *330* | 56000 | 2300 | 1.6E+6 | 8.0E+6 | 37000 | <330 | <330 | <330 | <330 |
| Pyrene | ug/Kg | *330* | 4.8E+5 | ID | 2.9E+7 | 1.1E+8 | 7.7E+8 | <330 | <330 | **1000** | <330 |
| ***Volatiles*** | Units | | | | | | | | | | |
| Benzene {I} | ug/Kg | *50* | 100 | 4000 {X} | 1.8E+5 | 4.0E+5 {C} | 2.3E+5 | <50 | <50 | <50 | <50 |
| Toluene {I} | ug/Kg | *100* | 16000 | 2800 | 2.5E+5 {C} | 2.5E+5 {C} | 3.6E+7 | <50 | <50 | <50 | <50 |
| Ethylbenzene {I} | ug/Kg | *50* | 1500 | 360 | 1.4E+5 {C} | 1.4E+5 {C} | 3.0E+7 | <50 | <50 | <50 | <50 |
| Xylenes (o-) | ug/Kg | *150* | 5600 | 700 | 1.5E+5 {C} | 1.5E+5 {C} | 1.3E+8 | <50 | <50 | <50 | <50 |
| Xylenes (m-/p-) | ug/Kg | *150* | 5600 | 700 | 1.5E+5 {C} | 1.5E+5 {C} | 1.3E+8 | <100 | <100 | <100 | <100 |
| Methyl-tert-butyl ether (MTBE) | ug/Kg | *250* | 800 | 15000 {X} | 1.8E+6 | 5.9E+6 {C} | 8.9E+7 | <250 | <250 | <250 | <250 |
| 1,2-Dichloroethane {I} | ug/Kg | *50* | 100 | 7200 {X} | 91000 | 6.4E+5 | 74000 | <50 | <50 | <50 | <50 |
| Ethylene dibromide | ug/Kg | *250* | 10 {M} | 20 | 92 | 660 | 9800 | <50 | <50 | <50 | <50 |

# Table 1
## Summary of Analytical Results for Soil
## Bay Aggregate
## Bay City, Michigan

| Sample Location:<br>Sample Identification:<br>Sampled By:<br>Analyzed By:<br>Sampled Date:<br>Sampled Depth (ft): | | Statewide Default Background Levels or *TMDL* | Residential Drinking Water Protection Criteria | Groundwater Surface Water Interface Protection Criteria | Residential Direct Contact Criteria | Industrial and Commercial II Direct Contact Criteria | Industrial Finite VSIC for 2M Source Thickness Criteria | SS-1<br>0102031-01A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-2<br>0102031-02A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-3<br>0102031-03A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-4<br>0102031-04A<br>Horizon<br>Bio-Chem<br>2/1//01 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Volatiles Cont.*** | Units | | | | | | | | | | |
| 2-Methylnaphthalene | ug/Kg | *330* | 57000 | ID | 8.1E+6 | 4.0E+7 | ID | <250 | <250 | <250 | <250 |
| 1,2,4-Trimethylbenzene {I} | ug/Kg | *100* | 2100 | ID | 1.1E+5 {C} | 1.1E+5 {C} | 6.0E+8 | <50 | <50 | <50 | <50 |
| 1,3,5-Trimethylbenzene {I} | ug/Kg | *100* | 1800 | ID | 94000 {C} | 94000 {C} | 4.6E+8 | <50 | <50 | <50 | <50 |

Footnotes:

Criteria from MDEQ-ERD Operational Memo#18, June 7, 2000.

{B} Background, as defined in Rule 299.5701 ( c ), may be substituted if higher than the calculated cleanup criteria.

{C} Value presented is a screening level based on the chemical-specific generic Csat.

{D} Calculated criterion exceeds 100%, hence it is reduced to 100%.

{G} GSI criterion is p H or water hardness dependent.

{I} Hazardous substance may exhibit the characteristic of ignitability as defined in 40 CFR 261.21.

{M} Calculated criterion is below the analytical TDL, therefore the criterion defaults to the TDL.

{Q} Criteria for carcinogenic PAHs were developed using RPPs to benzo(a)pyrene

{X} GSI shown is not protective for surface water that is used as a drinking water source.

ID = Inadequate data to develop criterion

"---" Not Analyzed.

IP = Development of generic GSI value in process.

NLL = Hazardous substance is not likely to leach under most soil conditions

NLV = Hazardous substance is not likely to volatilize under most conditions

[1] The Criteria indicated is Hexavalent Chromium criteria, however the results are total Chromium.

Shaded values exceed Residential Drinking Water Protection Criteria.

Boxed values exceed Groundwater Surface Water Interface Protection Criteria.

Underlined values exceed Residential Direct Contact Criteria.

*Italic values exceed Industrial Direct Contact Criteria*

# Table 1
## Summary of Analytical Results for Soil
## Bay Aggregate
## Bay City, Michigan

| Sample Location:<br>Sample Identification:<br>Sampled By:<br>Analyzed By:<br>Sampled Date:<br>Sampled Depth (ft): | | Statewide Default Background Levels or *TMDL* | Residential Drinking Water Protection Criteria | Groundwater Surface Water Interface Protection Criteria | Residential Direct Contact Criteria | Industrial and Commercial II Direct Contact Criteria | Industrial Finite VSIC for 2M Source Thickness Criteria | SS-5<br>0102031-05A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-6<br>0102031-06A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-7<br>0102031-07A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-8<br>0102031-08A<br>Horizon<br>Bio-Chem<br>2/1//01 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Inorganics*** | Units | | | | | | | | | | |
| Cadmium {B} | ug/Kg | 1200 | 6000 | {G,X} | 5.5E+5 | 4.1E+6 | NLV | **140** | **560** | **370** | --- |
| Chromium [1] | ug/Kg | 18000 (total) | 30000 | 3300 | 2.5E+6 | 1.7E+7 | NLV | **10000** | **13000** | **11000** | --- |
| Lead | ug/Kg | 21000 | 7.0E+5 | {G,M,X} | 4.0E+5 | 9.0E+5 (draft) | NLV | **340000** | **140000** | **1800000** | --- |
| ***Semi-Voolatiles*** | Units | | | | | | | | | | |
| Acenaphthene | ug/Kg | *330* | 3.0E+5 | 4400 | 4.1E+7 | 2.0E+8 | 9.7E+7 | <950 | <330 | <330 | **860** |
| Acenaphthylene | ug/Kg | *330* | 5900 | ID | 1.6E+6 | 8.0E+6 | 2.7E+6 | **1200** | <330 | <330 | <330 |
| Anthracene | ug/Kg | *330* | 41000 | ID | 2.3E+8 | 1.0E+9 {D} | 1.6E+9 | <950 | **410** | <330 | **670** |
| Benzo(a)anthracene {Q} | ug/Kg | *330* | NLL | NLL | 20000 | 1.0E+5 | NLV | <950 | **2000** | **470** | **770** |
| Benzo(a)pyrene {Q} | ug/Kg | *330* | NLL | NLL | 2000 | 10000 | NLV | **2100** | **1500** | <330 | **610** |
| Benzo(b)fluoranthene {Q} | ug/Kg | *330* | NLL | NLL | 20000 | 1.0E+5 | NLV | **2200** | **1700** | <330 | **930** |
| Benzo(g,h,i)perylene | ug/Kg | *330* | NLL | NLL | 2.5E+6 | 9.1E+6 | NLV | **3200** | **1100** | <330 | **430** |
| Benzo(k)fluoranthene {Q} | ug/Kg | *330* | NLL | NLL | 2.0E+5 | 1.0E+6 | NLV | **1400** | **2100** | **390** | **1100** |
| Chrysene {Q} | ug/Kg | *330* | NLL | NLL | 2.0E+6 | 1.0E+7 | ID | **1100** | **1600** | <330 | **660** |
| Dibenzo(a,h)anthracene {Q} | ug/Kg | *330* | NLL | NLL | 2000 | 10000 | NLV | <950 | <330 | <330 | <330 |
| Fluoranthene | ug/Kg | *330* | 7.3E+5 | 5500 | 4.6E+7 | 1.8E+8 | 8.8E+8 | **1800** | **2400** | **750** | **900** |
| Fluorene | ug/Kg | *330* | 3.9E+5 | 5300 | 2.7E+7 | 1.3E+8 | 1.5E+8 | <950 | <330 | <330 | **1000** |
| Indeno(1,2,3-cd)pyrene {Q} | ug/Kg | *330* | NLL | NLL | 20000 | 1.0E+5 | NLV | <950 | **1100** | <330 | **470** |
| Naphthalene | ug/Kg | *330* | 35000 | 870 | 1.6E+7 | 8.0E+7 | 3.5E+5 | <950 | <330 | <330 | <330 |
| Phenanthrene | ug/Kg | *330* | 56000 | 2300 | 1.6E+6 | 8.0E+6 | 37000 | **1200** | **2100** | **670** | **7300** |
| Pyrene | ug/Kg | *330* | 4.8E+5 | ID | 2.9E+7 | 1.1E+8 | 7.7E+8 | **1800** | **2100** | **630** | **1700** |
| ***Volatiles*** | Units | | | | | | | | | | |
| Benzene {I} | ug/Kg | *50* | 100 | 4000 {X} | 1.8E+5 | 4.0E+5 {C} | 2.3E+5 | <50 | <50 | <50 | **95** |
| Toluene {I} | ug/Kg | *100* | 16000 | 2800 | 2.5E+5 {C} | 2.5E+5 {C} | 3.6E+7 | <50 | <50 | <50 | **150** |
| Ethylbenzene {I} | ug/Kg | *50* | 1500 | 360 | 1.4E+5 {C} | 1.4E+5 {C} | 3.0E+7 | <50 | <50 | <50 | **100** |
| Xylenes (o-) | ug/Kg | *150* | 5600 | 700 | 1.5E+5 {C} | 1.5E+5 {C} | 1.3E+8 | <50 | <50 | <50 | **190** |
| Xylenes (m-/p-) | ug/Kg | *150* | 5600 | 700 | 1.5E+5 {C} | 1.5E+5 {C} | 1.3E+8 | <100 | <100 | <100 | **420** |
| Methyl-tert-butyl ether (MTBE) | ug/Kg | *250* | 800 | 15000 {X} | 1.8E+6 | 5.9E+6 {C} | 8.9E+7 | <250 | <250 | <250 | <250 |
| 1,2-Dichloroethane {I} | ug/Kg | *50* | 100 | 7200 {X} | 91000 | 6.4E+5 | 74000 | <50 | <50 | <50 | <50 |
| Ethylene dibromide | ug/Kg | *250* | 10 {M} | 20 | 92 | 660 | 9800 | <50 | <50 | <50 | <50 |

# Table 1
## Summary of Analytical Results for Soil
## Bay Aggregate
## Bay City, Michigan

| Sample Location:<br>Sample Identification:<br>Sampled By:<br>Analyzed By:<br>Sampled Date:<br>Sampled Depth (ft): | | Statewide Default Background Levels or *TMDL* | Residential Drinking Water Protection Criteria | Groundwater Surface Water Interface Protection Criteria | Residential Direct Contact Criteria | Industrial and Commercial II Direct Contact Criteria | Industrial Finite VSIC for 2M Source Thickness Criteria | SS-5<br>0102031-05A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-6<br>0102031-06A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-7<br>0102031-07A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-8<br>0102031-08A<br>Horizon<br>Bio-Chem<br>2/1//01 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Volatiles Cont.*** | Units | | | | | | | | | | |
| 2-Methylnaphthalene | ug/Kg | *330* | 57000 | ID | 8.1E+6 | 4.0E+7 | ID | <250 | <250 | <250 | **7300** |
| 1,2,4-Trimethylbenzene {I} | ug/Kg | *100* | 2100 | ID | 1.1E+5 {C} | 1.1E+5 {C} | 6.0E+8 | <50 | <50 | <50 | **1100** |
| 1,3,5-Trimethylbenzene {I} | ug/Kg | *100* | 1800 | ID | 94000 {C} | 94000 {C} | 4.6E+8 | <50 | <50 | <50 | **340** |

Footnotes:

Criteria from MDEQ-ERD Operational Memo#18, June 7, 2000.

{B} Background, as defined in Rule 299.5701 ( c ), may be substituted if higher than the calculated cleanup criteria.

{C} Value presented is a screening level based on the chemical-specific generic Csat.

{D} Calculated criterion exceeds 100%, hence it is reduced to 100%.

{G} GSI criterion is p H or water hardness dependent.

{I} Hazardous substance may exhibit the characteristic of ignitability as defined in 40 CFR 261.21.

{M} Calculated criterion is below the analytical TDL, therefore the criterion defaults to the TDL.

{Q} Criteria for carcinogenic PAHs were developed using RPPs to benzo(a)pyrene

{X} GSI shown is not protective for surface water that is used as a drinking water source.

ID = Inadequate data to develop criterion

"---" Not Analyzed.

IP = Development of generic GSI value in process.

NLL = Hazardous substance is not likely to leach under most soil conditions

NLV = Hazardous substance is not likely to volatilize under most conditions

[1] The Criteria indicated is Hexavalent Chromium criteria, however the results are total Chromium.

Shaded values exceed Residential Drinking Water Protection Criteria.

Boxed values exceed Groundwater Surface Water Interface Protection Criteria.

Underlined values exceed Residential Direct Contact Criteria.

*Italic values exceed Industrial Direct Contact Criteria*

# Table 1
## Summary of Analytical Results for Soil
## Bay Aggregate
## Bay City, Michigan

| Sample Location:<br>Sample Identification:<br>Sampled By:<br>Analyzed By:<br>Sampled Date:<br>Sampled Depth (ft): | | Statewide Default Background Levels or *TMDL* | Residential Drinking Water Protection Criteria | Groundwater Surface Water Interface Protection Criteria | Residential Direct Contact Criteria | Industrial and Commercial II Direct Contact Criteria | Industrial Finite VSIC for 2M Source Thickness Criteria | SS-9<br>0102031-09A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-10<br>0102031-10A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-11<br>0102031-11A<br>Horizon<br>Bio-Chem<br>2/1//01 |
|---|---|---|---|---|---|---|---|---|---|---|
| ***Inorganics*** | Units | | | | | | | | | |
| Cadmium {B} | ug/Kg | 1200 | 6000 | {G,X} | 5.5E+5 | 4.1E+6 | NLV | --- | 380 | --- |
| Chromium [1] | ug/Kg | 18000 (total) | 30000 | 3300 | 2.5E+6 | 1.7E+7 | NLV | --- | 11000 | --- |
| Lead | ug/Kg | 21000 | 7.0E+5 | {G,M,X} | 4.0E+5 | 9.0E+5 (draft) | NLV | --- | 87000 | --- |
| ***Semi-Voolatiles*** | Units | | | | | | | | | |
| Acenaphthene | ug/Kg | *330* | 3.0E+5 | 4400 | 4.1E+7 | 2.0E+8 | 9.7E+7 | <330 | <330 | 2800 |
| Acenaphthylene | ug/Kg | *330* | 5900 | ID | 1.6E+6 | 8.0E+6 | 2.7E+6 | 1100 | <330 | <2400 |
| Anthracene | ug/Kg | *330* | 41000 | ID | 2.3E+8 | 1.0E+9 {D} | 1.6E+9 | 650 | <330 | <2400 |
| Benzo(a)anthracene {Q} | ug/Kg | *330* | NLL | NLL | 20000 | 1.0E+5 | NLV | 3400 | 1500 | <2400 |
| Benzo(a)pyrene {Q} | ug/Kg | *330* | NLL | NLL | 2000 | 10000 | NLV | 2700 | 1100 | <2400 |
| Benzo(b)fluoranthene {Q} | ug/Kg | *330* | NLL | NLL | 20000 | 1.0E+5 | NLV | 3600 | 1100 | <2400 |
| Benzo(g,h,i)perylene | ug/Kg | *330* | NLL | NLL | 2.5E+6 | 9.1E+6 | NLV | 950 | 390 | <2400 |
| Benzo(k)fluoranthene {Q} | ug/Kg | *330* | NLL | NLL | 2.0E+5 | 1.0E+6 | NLV | 4000 | 1800 | <2400 |
| Chrysene {Q} | ug/Kg | *330* | NLL | NLL | 2.0E+6 | 1.0E+7 | ID | 2400 | 1000 | <2400 |
| Dibenzo(a,h)anthracene {Q} | ug/Kg | *330* | NLL | NLL | 2000 | 10000 | NLV | 330 | <330 | <2400 |
| Fluoranthene | ug/Kg | *330* | 7.3E+5 | 5500 | 4.6E+7 | 1.8E+8 | 8.8E+8 | 2900 | 1800 | <2400 |
| Fluorene | ug/Kg | *330* | 3.9E+5 | 5300 | 2.7E+7 | 1.3E+8 | 1.5E+8 | <330 | <330 | 4500 |
| Indeno(1,2,3-cd)pyrene {Q} | ug/Kg | *330* | NLL | NLL | 20000 | 1.0E+5 | NLV | 1200 | 440 | <2400 |
| Naphthalene | ug/Kg | *330* | 35000 | 870 | 1.6E+7 | 8.0E+7 | 3.5E+5 | <330 | <330 | 3100 |
| Phenanthrene | ug/Kg | *330* | 56000 | 2300 | 1.6E+6 | 8.0E+6 | 37000 | 1300 | 1400 | 20000 |
| Pyrene | ug/Kg | *330* | 4.8E+5 | ID | 2.9E+7 | 1.1E+8 | 7.7E+8 | 3000 | 1600 | 3300 |
| ***Volatiles*** | Units | | | | | | | | | |
| Benzene {I} | ug/Kg | *50* | 100 | 4000 {X} | 1.8E+5 | 4.0E+5 {C} | 2.3E+5 | <50 | <50 | <50 |
| Toluene {I} | ug/Kg | *100* | 16000 | 2800 | 2.5E+5 {C} | 2.5E+5 {C} | 3.6E+7 | <50 | <50 | <50 |
| Ethylbenzene {I} | ug/Kg | *50* | 1500 | 360 | 1.4E+5 {C} | 1.4E+5 {C} | 3.0E+7 | <50 | <50 | <50 |
| Xylenes (o-) | ug/Kg | *150* | 5600 | 700 | 1.5E+5 {C} | 1.5E+5 {C} | 1.3E+8 | <50 | <50 | <50 |
| Xylenes (m-/p-) | ug/Kg | *150* | 5600 | 700 | 1.5E+5 {C} | 1.5E+5 {C} | 1.3E+8 | <100 | <100 | <100 |
| Methyl-tert-butyl ether (MTBE) | ug/Kg | *250* | 800 | 15000 {X} | 1.8E+6 | 5.9E+6 {C} | 8.9E+7 | <250 | <250 | <250 |
| 1,2-Dichloroethane {I} | ug/Kg | *50* | 100 | 7200 {X} | 91000 | 6.4E+5 | 74000 | <50 | <50 | <50 |
| Ethylene dibromide | ug/Kg | *250* | 10 {M} | 20 | 92 | 660 | 9800 | <50 | <50 | <50 |

# Table 1
## Summary of Analytical Results for Soil
## Bay Aggregate
## Bay City, Michigan

| Sample Location:<br>Sample Identification:<br>Sampled By:<br>Analyzed By:<br>Sampled Date:<br>Sampled Depth (ft): | | Statewide Default Background Levels or *TMDL* | Residential Drinking Water Protection Criteria | Groundwater Surface Water Interface Protection Criteria | Residential Direct Contact Criteria | Industrial and Commercial II Direct Contact Criteria | Industrial Finite VSIC for 2M Source Thickness Criteria | SS-9<br>0102031-09A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-10<br>0102031-10A<br>Horizon<br>Bio-Chem<br>2/1//01 | SS-11<br>0102031-11A<br>Horizon<br>Bio-Chem<br>2/1//01 |
|---|---|---|---|---|---|---|---|---|---|---|
| ***Volatiles Cont.*** | Units | | | | | | | | | |
| 2-Methylnaphthalene | ug/Kg | *330* | 57000 | ID | 8.1E+6 | 4.0E+7 | ID | <250 | <250 | **2800** |
| 1,2,4-Trimethylbenzene {I} | ug/Kg | *100* | 2100 | ID | 1.1E+5 {C} | 1.1E+5 {C} | 6.0E+8 | <50 | <50 | **500** |
| 1,3,5-Trimethylbenzene {I} | ug/Kg | *100* | 1800 | ID | 94000 {C} | 94000 {C} | 4.6E+8 | <50 | <50 | **150** |

Footnotes:

Criteria from MDEQ-ERD Operational Memo#18, June 7, 2000.

{B} Background, as defined in Rule 299.5701 ( c ), may be substituted if higher than the calculated cleanup criteria.

{C} Value presented is a screening level based on the chemical-specific generic Csat.

{D} Calculated criterion exceeds 100%, hence it is reduced to 100%.

{G} GSI criterion is p H or water hardness dependent.

{I} Hazardous substance may exhibit the characteristic of ignitability as defined in 40 CFR 261.21.

{M} Calculated criterion is below the analytical TDL, therefore the criterion defaults to the TDL.

{Q} Criteria for carcinogenic PAHs were developed using RPPs to benzo(a)pyrene

{X} GSI shown is not protective for surface water that is used as a drinking water source.

ID = Inadequate data to develop criterion

"---" Not Analyzed.

IP = Development of generic GSI value in process.

NLL = Hazardous substance is not likely to leach under most soil conditions

NLV = Hazardous substance is not likely to volatilize under most conditions

[1] The Criteria indicated is Hexavalent Chromium criteria, however the results are total Chromium.

Shaded values exceed Residential Drinking Water Protection Criteria.

Boxed values exceed Groundwater Surface Water Interface Protection Criteria.

Underlined values exceed Residential Direct Contact Criteria.

*Italic values exceed Industrial Direct Contact Criteria*

*ATTACHMENT 1*

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*LEASE AGREEMENT VIOLATION LETTERS*

Table 2-1
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

| Sample Location: | IB-HA-06 | IB-HA-07 | IB-HA-08 | IB-HA-09 | IB-HA-10 | IB-HA-11 | IB-HA-12 | IB-HA-13 | IB-HA-14 | IB-HA-15 | IB-HA-16 | IB-HA-17 | Generic Residential | Generic Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth(ft): | 1.5-3.5 | 1.5-4.5 | 1.5-3 | 1.5-4.5 | 1.5-4.5 | 1.5-2 | 1.5-4.5 | 1.5-4.5 | 1.5-4.5 | 1.5-4.5 | 1.5-3.5 | 1.5-2 | Criteria* | Criteria* |
| Parameter | | | | | | | | | | | | | | |
| VOCs (ug/kg) | | | | | | | | | | | | | | |
| Acetone | NA | NA | NA | NA | NA | — | NA | NA | NA | NA | — | — | 15,000 | 74,000,000 |
| Benzene | NA | NA | NA | NA | NA | — | NA | NA | NA | NA | — | — | 100 | 850,000 |
| Ethylbenzene | NA | NA | NA | NA | NA | — | NA | NA | NA | NA | — | — | 1,500 | 72,000,000 |
| Methylene Chloride | NA | NA | NA | NA | NA | — | NA | NA | NA | NA | — | — | 100 | 3,300,000 |
| Xylenes (total) | NA | NA | NA | NA | NA | — | NA | NA | NA | NA | — | — | 5,600 | 1,000,000,000 |
| SVOCs (ug/kg) | | | | | | | | | | | | | | |
| Acenaphthylene | — | — | — | — | NA | NA | — | — | — | — | — | — | 520 | 16,000,000 |
| Benzo(a)pyrene | 2,300 | — | — | — | NA | NA | — | — | — | — | — | — | 1,400 | 21,000 |
| Dibenzo(a,h)anthracene | — | — | — | — | NA | NA | — | — | — | — | — | — | 1,400 | 21,000 |
| Fluoranthene | — | — | — | — | NA | NA | — | — | — | — | — | — | 18,000 | 540,000,000 |
| Naphthalene | — | — | — | — | NA | NA | — | — | — | — | — | — | 5,200 | 160,000,000 |
| Phenanthrene | 3,300 | 1,500 | 1,700 | 1,000 | NA | NA | — | — | — | — | — | — | 520 | 16,000,000 |
| Pyrene | — | — | — | — | NA | NA | — | — | — | — | — | — | 11,000 | 340,000,000 |
| Inorganics (mg/kg) | | | | | | | | | | | | | | |
| Antimony | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.50 | 1,600 |
| Arsenic | — | — | 9.6 | — | — | — | — | — | — | — | 9.2J | 34J | 5.8** | 83 |
| Barium | — | — | — | — | 160 | 96 | — | — | — | 78 | — | — | 75** | 320,000 |
| Beryllium | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.20 | 35 |
| Cadmium | 2.7J | 6.0J | 14J | 5.2J | 13J | 18J | 3.6J | 3.5J | 3.3J | 5.3J | 8.2J | 11J | 1.2** | 2,300 |
| Chromium | — | — | — | — | 37J | 45J | — | — | — | — | 24J | 75J | 18** | 22,000 |
| Copper | — | 70J | 70J | — | 360J | 270J | — | — | — | 180J | 82 | 170 | 32** | 170,000 |
| Lead | 33J | 66J | 130J | — | 82J | 150J | — | — | — | 96J | 70 | 290 | 21** | 400 |
| Nickel | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 20** | 340,000 |
| Mercury | — | — | — | — | 0.18 | — | — | — | — | — | 1.6J | — | 0.13** | 1,400 |
| Selenium | — | — | — | — | — | — | — | — | — | — | — | — | 1 | 23,000 |
| Silver | — | — | — | — | — | — | 1.5J | — | — | — | — | — | 1.0** | 21,000 |
| Zinc | — | 86J | 99J | — | 91J | 160J | — | — | — | 150J | 200J | 4,400J | 48 | 1,000,000 |
| Cyanide | NA | NA | NA | NA | NA | NA | — | NA | NA | NA | NA | NA | 4 | 99,000 |

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #8 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

# Table 2-1 (Continued)
## Soil Sample Analytical Results
## Above Residential or Industrial Cleanup Criteria
## Industrial Brownhoist
## Bay City, Michigan

| Sample Location: | IB-SB-01 | IB-SB-01 | IB-SB-02 | IB-SB-06 | IB-SB-07 | IB-SB-08 | IB-SB-09 | IB-SB-10 | IB-SB-11 | IB-SB-11 | IB-SB-12 | IB-SB-13 | Generic Residential | Generic Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth(ft): | 6-8 | 8-10 | 8-10 | 7-17 | 2-12 | 8-10 | 4-6 | 8-10 | 4-6 | 12-14 | 12-14 | 4-6 | Criteria* | Criteria* |
| Parameter | | | | | | | | | | | | | | |
| VOCs (ug/kg) | | | | | | | | | | | | | | |
| Acetone | — | — | — | NA | NA | — | — | — | — | — | — | — | 15,000 | 74,000,000 |
| Benzene | — | — | — | NA | NA | — | — | — | — | — | — | — | 100 | 850,000 |
| Ethylbenzene | — | — | — | NA | NA | — | — | — | — | — | — | — | 1,500 | 72,000,000 |
| Methylene Chloride | — | — | — | NA | NA | — | — | — | — | — | — | — | 100 | 3,300,000 |
| Xylenes (total) | — | — | — | NA | NA | — | — | — | — | — | — | — | 8,600 | 1,000,000,000 |
| SVOCs (ug/kg) | | | | | | | | | | | | | | |
| Acenaphthylene | — | — | 900 | — | — | — | — | — | — | — | — | — | 820 | 16,000,000 |
| Benzo(a)pyrene | — | — | 2,600 | — | — | — | — | — | — | — | — | — | 1,400 | 21,000 |
| Dibenzo(a,h)anthracene | — | — | — | — | — | — | — | — | — | — | — | — | 1,400 | 21,000 |
| Fluoranthene | — | — | — | — | — | — | — | — | — | — | — | — | 18,000 | 640,000,000 |
| Naphthalene | — | — | — | — | — | — | — | — | — | — | — | — | 6,200 | 160,000,000 |
| Phenanthrene | — | — | 4,900 | 800 | — | — | — | 600 | — | — | — | — | 820 | 16,000,000 |
| Pyrene | — | — | — | — | — | — | — | — | — | — | — | — | 11,000 | 340,000,000 |
| Inorganics (mg/kg) | | | | | | | | | | | | | | |
| Antimony | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.60 | 1,600 |
| Arsenic | — | — | — | — | — | — | — | 11 | 9.8 | — | 9.7 | — | 5.8** | 83 |
| Barium | — | — | — | — | — | — | — | — | — | — | 180 | — | 75** | 320,000 |
| Beryllium | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.20 | 35 |
| Cadmium | 2.7 | 3.4 | 4.0 | 16 | 7.8J | 12J | 10J | 11J | 13J | — | 12J | 6.0J | 1.2** | 2,300 |
| Chromium | — | — | — | 32 | 22J | — | — | — | — | — | — | — | 18** | 22,000 |
| Copper | — | — | — | 94 | 110J | 150J | 320J | 110J | 170J | — | 120J | — | 32** | 170,000 |
| Lead | — | — | — | 45 | 150J | 30J | 81J | 25J | 67J | 80J | 100J | — | 21** | 400 |
| Nickel | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 20** | 340,000 |
| Mercury | — | — | — | — | — | — | — | — | — | — | 0.31 | — | 0.13** | 1,400 |
| Selenium | — | — | — | — | — | — | — | — | — | — | — | — | 1 | 23,000 |
| Silver | — | — | — | — | — | — | — | — | — | — | — | — | 1.0** | 21,000 |
| Zinc | — | — | — | — | — | 54J | 83J | — | 56J | — | 120J | — | 46 | 1,000,000 |
| Cyanide | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 4 | 99,000 |

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 68 or 914, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

## Table 2-1 (Continued)
## Soil Sample Analytical Results
## Above Residential or Industrial Cleanup Criteria
## Industrial Brownhoist
## Bay City, Michigan

| Sample Location: | IB-SB-13 | IB-SB-14 | IB-SB-15 | IB-SB-15 | IB-SB-16 | IB-SB-16 | IB-SB-17 | IB-SB-18 | IB-SB-19 | IB-SB-19 | IB-SB-20 | IB-SB-21 | IB-SB-21 | IB-SB-22 | IB-SB-23 | Generic Residential | Generic Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth(ft): | 12-14 | 8-10 | 2-4 | 8-10 | 2-4 | 4-6 | 4-6 | 2-4 | 2-4 | 6-8 | 0-6 | 0-2 | 2-4 | 4-6 | 4-6 | Criteria* | Criteria* |
| Parameter | | | | | | | | | | | | | | | | | |
| **VOCs (ug/kg)** | | | | | | | | | | | | | | | | | |
| Acetone | — | — | — | — | — | — | NA | — | — | — | NA | — | — | — | — | 15,000 | 74,000,000 |
| Benzene | — | — | — | — | — | — | NA | — | — | — | NA | — | — | — | — | 100 | 850,000 |
| Ethylbenzene | — | — | 4,100 | — | — | — | NA | — | — | — | NA | — | — | — | — | 1,500 | 72,000,000 |
| Methylene Chloride | — | — | — | — | — | — | NA | — | — | — | NA | — | — | — | — | 100 | 3,300,000 |
| Xylenes (total) | — | — | 11,000 | — | — | — | NA | — | — | — | NA | — | — | — | — | 5,800 | 1,000,000,000 |
| **SVOCs (ug/kg)** | | | | | | | | | | | | | | | | | |
| Acenaphthylene | — | — | — | 1,200 | — | — | — | — | — | — | — | — | — | — | — | 620 | 16,000,000 |
| Benzo(a)pyrene | — | — | — | 6,400 | — | — | — | — | — | — | — | — | — | — | — | 1,400 | 21,000 |
| Dibenzo(a,h)anthracene | — | — | — | 3,800 | — | — | — | — | — | — | — | — | — | — | — | 1,400 | 21,000 |
| Fluoranthene | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 16,000 | 540,000,000 |
| Naphthalene | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 5,200 | 160,000,000 |
| Phenanthrene | — | 2,600 | — | 7,500 | — | — | — | — | — | — | — | — | — | — | — | 620 | 16,000,000 |
| Pyrene | — | — | — | 13,000 | — | — | — | — | — | — | — | — | — | — | — | 11,000 | 340,000,000 |
| **Inorganics (mg/kg)** | | | | | | | | | | | | | | | | | |
| Antimony | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.50 | 1,600 |
| Arsenic | — | — | — | 8.1 | — | — | — | — | — | — | — | — | — | — | — | 5.8** | 83 |
| Barium | — | — | — | 94 | — | — | — | — | — | — | — | — | — | — | — | 75** | 320,000 |
| Beryllium | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.20 | 35 |
| Cadmium | 4.8J | 6.2J | 2.9J | 3.2J | 3.6J | 3.6J | 4.0J | 3.2J | 3.3J | 3.6J | 2.9J | 3.2J | 2.9J | 2.6J | 2.6J | 1.2** | 2,300 |
| Chromium | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 16** | 22,000 |
| Copper | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 32** | 170,000 |
| Lead | — | — | — | 140J | — | — | — | — | — | — | — | — | — | — | — | 21** | 400 |
| Nickel | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 20** | 340,000 |
| Mercury | — | — | — | 0.15 | — | — | — | — | — | — | — | — | — | — | — | 0.13** | 1,400 |
| Selenium | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | 23,000 |
| Silver | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1.0** | 21,000 |
| Zinc | — | — | — | 260J | — | — | — | — | — | — | — | — | — | — | — | 48 | 1,000,000 |
| Cyanide | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | — | — | — | — | 4 | 99,000 |

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 68 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

| Sample Location: | IB-SB-24 | IB-SB-25 | IB-SB-25 | IB-SB-25 | IB-SB-26 | IB-SB-27 | IB-SB-27 | IB-SB-28 | IB-SB-28 | IB-SB-28 | IB-SB-29 | IB-SB-29 | Generic Residential | Generic Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth(ft): | 4-6 | 6-8 | 10-12 | 12-14 | 8-10 | 2-4 | 4-6 | 10-12 | 12-14 | 14-16 | 4-6 | 12-14 | Criteria* | Criteria* |
| Parameter | | | | | | | | | | | | | | |
| VOCs (ug/kg) | | | | | | | | | | | | | | |
| Acetone | — | — | — | — | NA | — | — | — | NA | — | — | NA | 16,000 | 74,000,000 |
| Benzene | — | — | — | — | NA | — | — | — | NA | — | — | NA | 100 | 850,000 |
| Ethylbenzene | — | — | — | — | NA | — | — | — | NA | — | — | NA | 1,500 | 72,000,000 |
| Methylene Chloride | — | — | — | — | NA | — | — | 200 | NA | — | — | NA | 100 | 3,300,000 |
| Xylenes (total) | — | — | — | — | NA | — | — | — | NA | — | — | NA | 5,600 | 1,000,000,000 |
| SVOCs (ug/kg) | | | | | | | | | | | | | | |
| Acenaphthylene | — | 800 | — | — | — | — | — | NA | — | — | — | — | 520 | 16,000,000 |
| Benzo(a)pyrene | — | 1,800 | — | — | — | — | — | NA | — | — | 10,000 | — | 1,400 | 21,000 |
| Dibenzo(a,h)anthracene | — | — | — | — | — | — | — | NA | — | — | 2,800 | — | 1,400 | 21,000 |
| Fluoranthene | — | — | — | — | — | — | — | NA | — | — | 34,000 | — | 18,000 | 540,000,000 |
| Naphthalene | — | — | — | — | — | — | — | NA | — | — | — | — | 5,200 | 160,000,000 |
| Phenanthrene | — | 1,800 | — | — | — | — | — | NA | 9,000 | — | 23,000 | 800 | 520 | 16,000,000 |
| Pyrene | — | — | — | — | — | — | — | NA | — | — | 26,000 | — | 11,000 | 340,000,000 |
| Inorganics (mg/kg) | | | | | | | | | | | | | | |
| Antimony | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.50 | 1,600 |
| Arsenic | — | NA | — | — | — | — | — | NA | 11J | — | 19 | 16 | 5.8** | 83 |
| Barium | — | NA | — | — | — | — | — | NA | — | — | — | — | 75** | 320,000 |
| Beryllium | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.20 | 35 |
| Cadmium | 2.4J | NA | 3.0J | 3.5J | 3.4J | 1.4J | 3.0J | NA | 1.4 | 1.8J | 11 | 5.3 | 1.2** | 2,300 |
| Chromium | — | NA | — | — | — | — | — | NA | — | — | 36 | — | 18** | 22,000 |
| Copper | — | NA | — | — | — | — | — | NA | — | — | 86 | 45 | 32** | 170,000 |
| Lead | — | NA | — | — | — | 25 | — | NA | 38 | — | 31 | 29 | 21** | 400 |
| Nickel | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 20** | 340,000 |
| Mercury | — | NA | — | — | — | — | — | NA | — | — | — | — | 0.13** | 1,400 |
| Selenium | — | NA | — | — | — | — | — | NA | — | — | — | — | 1 | 23,000 |
| Silver | — | NA | — | — | — | — | — | NA | — | — | — | — | 1.0** | 21,000 |
| Zinc | — | NA | — | — | — | — | — | NA | 64J | — | 86 | 53 | 48 | 1,000,000 |
| Cyanide | — | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 4 | 99,000 |

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #8 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

| Sample Location: | IB-SB-30 | IB-SB-31 | IB-SB-32 | IB-SB-33 | IB-SB-33 | IB-SB-34 | IB-SB-35 | IB-SB-36 | IB-SB-38 | IB-SB-43 | Generic Residential | Generic Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth(ft): | 12-14 | 10-12 | 8-10 | 6-8 | 12-14 | 4-6 | 6-8 | 10-12 | 2-8 | 4-6 | Criteria* | Criteria* |
| Parameter | | | | | | | | | | | | |
| VOCs (ug/kg) | | | | | | | | | | | | |
| Acetone | — | — | — | — | — | — | — | — | NA | — | 16,000 | 74,000,000 |
| Benzene | — | — | — | — | — | — | — | — | NA | — | 100 | 850,000 |
| Ethylbenzene | — | — | — | — | — | — | — | — | NA | — | 1,500 | 72,000,000 |
| Methylene Chloride | — | — | — | — | — | — | — | — | NA | — | 100 | 3,300,000 |
| Xylenes (total) | — | — | — | — | — | — | — | — | NA | — | 5,600 | 1,000,000,000 |
| SVOCs (ug/kg) | | | | | | | | | | | | |
| Acenaphthylene | — | — | — | — | 800 | — | — | — | — | — | 520 | 16,000,000 |
| Benzo(a)pyrene | — | — | — | — | 8,400 | 9,000 | — | — | — | — | 1,400 | 21,000 |
| Dibenzo(a,h)anthracene | — | — | — | — | — | — | — | — | — | — | 1,400 | 21,000 |
| Fluoranthene | — | — | — | — | — | 24,000 | — | — | — | — | 18,000 | 540,000,000 |
| Naphthalene | — | — | — | — | — | — | — | — | — | — | 5,200 | 160,000,000 |
| Phenanthrene | — | — | — | — | 14,000 | 24,000 | — | — | 800 | 1,000 | 520 | 16,000,000 |
| Pyrene | — | — | — | — | 17,000 | 20,000 | — | — | — | — | 11,000 | 340,000,000 |
| Inorganics (mg/kg) | | | | | | | | | | | | |
| Antimony | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.50 | 1,600 |
| Arsenic | — | 24 | 8.0 | — | 11 | 11 | — | — | NA | — | 5.8** | 83 |
| Barium | — | — | — | — | 140 | 87 | — | — | NA | — | 75** | 320,000 |
| Beryllium | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.20 | 36 |
| Cadmium | 1.4 | 1.7 | 1.8 | 2.6 | 8.7 | 9.8 | 2.0 | 4.9 | NA | 2.9 | 1.2** | 2,300 |
| Chromium | — | — | — | — | 33 | — | — | — | NA | — | 18** | 22,000 |
| Copper | — | — | — | — | 93 | 110 | — | 74 | NA | — | 32** | 170,000 |
| Lead | — | — | — | — | 180 | 110 | — | 42 | NA | 88 | 21** | 400 |
| Nickel | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 20** | 340,000 |
| Mercury | — | — | — | — | 0.3 | — | — | 0.3 | NA | — | 0.13** | 1,400 |
| Selenium | — | — | — | — | 1.8 | — | — | — | NA | — | 1 | 23,000 |
| Silver | — | — | — | — | — | — | — | — | NA | — | 1.0** | 21,000 |
| Zinc | — | — | — | 130 | 1900 | 150 | — | 120 | NA | — | 48 | 1,000,000 |
| Cyanide | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 4 | 99,000 |

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #9 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

## Table 2-1 (Continued)
## Soil Sample Analytical Results
## Above Residential or Industrial Cleanup Criteria
## Industrial Brownhoist
## Bay City, Michigan

| Sample Location: | IB-SB-44 | IB-SB-44 | IB-SB-45 | IB-SB-45 | IB-SB-46 | IB-SB-46 | IB-SB-47 | IB-SB-47 | IB-SB-48 | CS-SB-04 | CS-SB-06 | CS-SB-07 | CS-SB-07 | CS-SB-13 | Generic Residential | Generic Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth(ft): | 20-22 | 22-24 | 10-12 | 12-14 | 4-6 | 8-10 | 4-6 | 8-10 | 0-1 | 8-14 | 6-12 | 10-16 | 21-22 | 3-7 | Criteria* | Criteria* |
| Parameter | | | | | | | | | | | | | | | | |
| VOCs (ug/kg) | | | | | | | | | | | | | | | | |
| Acetone | — | — | — | NA | — | — | — | — | NA | — | — | NA | — | — | 15,000 | 74,000,000 |
| Benzene | 2,000 | 6,600 | — | NA | — | — | — | — | NA | — | — | NA | 14,000 | — | 100 | 860,000 |
| Ethylbenzene | — | — | — | NA | — | — | — | — | NA | — | — | NA | — | — | 1,500 | 72,000,000 |
| Methylene Chloride | — | — | — | NA | — | — | 290 | — | NA | 110 | — | NA | — | — | 100 | 3,300,000 |
| Xylenes (total) | 7,000 | — | — | NA | — | — | — | — | NA | — | — | NA | — | — | 6,600 | 1,000,000,000 |
| SVOCs (ug/kg) | | | | | | | | | | | | | | | | |
| Acenaphthylene | NA | — | — | — | — | — | — | — | — | — | — | — | — | — | 620 | 16,000,000 |
| Benzo(a)pyrene | NA | — | 2,800 | 4,800 | — | — | — | — | — | — | — | — | — | — | 1,400 | 21,000 |
| Dibenzo(a,h)anthracene | NA | — | — | — | — | — | — | — | — | — | — | — | — | — | 1,400 | 21,000 |
| Fluoranthene | NA | — | — | — | — | — | — | — | — | — | — | — | — | — | 16,000 | 640,000,000 |
| Naphthalene | NA | — | — | — | — | — | — | — | — | — | — | — | — | — | 6,200 | 160,000,000 |
| Phenanthrene | NA | — | 4,200 | 13,000 | 1,000 | 600 | 3,900 | 2,700 | 1,800 | — | — | 2,800 | — | — | 620 | 16,000,000 |
| Pyrene | NA | — | — | — | — | — | — | — | — | — | — | — | — | — | 11,000 | 340,000,000 |
| Inorganics (mg/kg) | | | | | | | | | | | | | | | | |
| Antimony | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.60 | 1,600 |
| Arsenic | NA | — | — | — | NA | NA | — | — | NA | 12 | 11 | NA | NA | NA | 5.8** | 83 |
| Barium | NA | — | — | — | NA | NA | 190 | — | NA | — | — | NA | NA | NA | 75** | 320,000 |
| Beryllium | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.20 | 35 |
| Cadmium | NA | 3.3 | 14 | 6.7 | NA | NA | 3.9 | — | NA | — | — | NA | NA | NA | 1.2** | 2,300 |
| Chromium | NA | — | 61 | — | NA | NA | — | — | NA | 61 | — | NA | NA | NA | 18** | 22,000 |
| Copper | NA | — | 170 | 1,600 | NA | NA | 720 | — | NA | 140 | 140 | NA | NA | NA | 32** | 170,000 |
| Lead | NA | — | 86 | 230 | NA | NA | 230 | — | NA | 65 | 69 | NA | NA | NA | 21** | 400 |
| Nickel | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 20** | 340,000 |
| Mercury | NA | — | 0.2 | 6.2 | NA | NA | 0.2 | — | NA | — | — | NA | NA | NA | 0.13** | 1,400 |
| Selenium | NA | — | — | — | NA | NA | 3.1J | — | NA | — | — | NA | NA | NA | 1 | 23,000 |
| Silver | NA | — | 1.6 | — | NA | NA | — | — | NA | 1.3 | — | NA | NA | NA | 1.0** | 21,000 |
| Zinc | NA | — | — | 57 | NA | NA | 140 | — | NA | 140 | 54 | NA | NA | NA | 48 | 1,000,000 |
| Cyanide | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | — | 4 | 99,000 |

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 69 or 614, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

| Sample Location: | CS-SB-14 | CS-SB-15 | CS-SB-22 | CS-SB-22 | CS-SB-25 | CS2-SB-18B | CS2-SB-19D | CS2-SB-19D | CS2-SB-20 | CS2-SB-21 | CS2-SB-22 | Generic Residential | Generic Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth(ft): | 5-7 | 5-7 | 5-9 | 9-11 | 5 | 25-27 | 17-19 | 27-29 | 25-27 | 15-17 | 9-11 | Criteria* | Criteria* |
| Parameter | | | | | | | | | | | | | |
| VOCs (ug/kg) | | | | | | | | | | | | | |
| Acetone | — | — | — | — | — | — | — | — | — | — | — | 15,000 | 74,000,000 |
| Benzene | — | — | — | 110 | — | — | — | — | — | — | — | 100 | 850,000 |
| Ethylbenzene | — | — | — | — | — | — | — | — | — | — | — | 1,500 | 72,000,000 |
| Methylene Chloride | — | — | — | — | — | — | — | — | — | — | 170 | 100 | 3,300,000 |
| Xylenes (total) | — | — | — | — | — | — | — | — | — | — | — | 5,600 | 1,000,000,000 |
| SVOCs (ug/kg) | | | | | | | | | | | | | |
| Acenaphthylene | — | 800 | — | — | 1,100 | — | — | — | — | — | — | 520 | 16,000,000 |
| Benzo(a)pyrene | — | 1,700 | 2,600 | — | 1,800 | — | — | — | — | 1,600 | — | 1,400 | 21,000 |
| Dibenzo(a,h)anthracene | — | — | — | — | — | — | — | — | — | — | — | 1,400 | 21,000 |
| Fluoranthene | — | — | — | — | — | — | — | — | — | — | — | 18,000 | 540,000,000 |
| Naphthalene | — | — | 7,400 | — | 29,000 | — | — | — | — | — | — | 5,200 | 160,000,000 |
| Phenanthrene | 1,100 | 5,700 | 4,400 | — | 12,000 | — | 730 | 1,200 | — | 2,300 | 3,000 | 520 | 16,000,000 |
| Pyrene | — | — | — | — | — | — | — | — | — | — | — | 11,000 | 340,000,000 |
| Inorganics (mg/kg) | | | | | | | | | | | | | |
| Antimony | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.50 | 1,600 |
| Arsenic | NA | NA | NA | NA | NA | 6.1 | 11 | 6.0 | 7.1 | 6.4 | 16J | 5.8** | 53 |
| Barium | NA | NA | NA | NA | NA | — | 76 | — | — | 390 | 350 | 75** | 320,000 |
| Beryllium | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.20 | 35 |
| Cadmium | NA | NA | NA | NA | NA | — | — | — | — | — | — | 1.2** | 2,300 |
| Chromium | NA | NA | NA | NA | NA | — | — | — | — | — | — | 18** | 22,000 |
| Copper | NA | NA | NA | NA | NA | — | 50 | — | — | 110 | 280 | 32** | 170,000 |
| Lead | NA | NA | NA | NA | NA | — | 51 | — | — | 430 | 200 | 21** | 400 |
| Nickel | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 20** | 340,000 |
| Mercury | NA | NA | NA | NA | NA | — | 0.4 | — | — | — | 43 | 0.13** | 1,400 |
| Selenium | NA | NA | NA | NA | NA | — | — | — | — | — | — | 1 | 23,000 |
| Silver | NA | NA | NA | NA | NA | — | — | — | — | — | — | 1.0** | 21,000 |
| Zinc | NA | NA | NA | NA | NA | — | 120 | — | — | 180 | 97 | 48 | 1,000,000 |
| Cyanide | — | NA | 6.2 | — | — | NA | NA | NA | NA | NA | NA | 4 | 99,000 |

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 99 or 914, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

# Table 2-1 (Continued)
## Soil Sample Analytical Results
## Above Residential or Industrial Cleanup Criteria
## Industrial Brownhoist
## Bay City, Michigan

| Sample Location: | CS2-SB-23B | CS2-SB-25 | CS2-SB-26 | CS2-SB-27 | MWR-SB-1 | MWR-SB-2 | MWR-SB-2 | MWR-SB-3 | MWR-SB-3 | MWR-SB-4 | MWR-SB-4 | MWR-SB-5 | Generic Residential | Generic Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth(ft): | 13-15 | 27-29 | 9-11 | 27-29 | 3-5 | 0-2 | 4-6 | 0-2 | 4-6 | 0-2 | 4-6 | 0-2 | Criteria* | Criteria* |
| Parameter | | | | | | | | | | | | | | |
| VOCs (ug/kg) | | | | | | | | | | | | | | |
| Acetone | — | — | — | — | NA | NA | NA | NA | NA | NA | NA | NA | 16,000 | 74,000,000 |
| Benzene | — | — | — | — | — | — | — | — | — | — | — | — | 100 | 850,000 |
| Ethylbenzene | — | — | — | — | — | — | — | — | — | — | — | — | 1,500 | 72,000,000 |
| Methylene Chloride | 130 | — | — | 120 | — | — | — | — | — | — | — | — | 100 | 3,300,000 |
| Xylenes (total) | — | — | — | — | — | — | — | — | — | — | — | — | 5,600 | 1,000,000,000 |
| SVOCs (ug/kg) | | | | | | | | | | | | | | |
| Acenaphthylene | — | — | — | — | NA | NA | NA | NA | NA | NA | NA | NA | 620 | 16,000,000 |
| Benzo(a)pyrene | — | — | — | — | NA | NA | NA | NA | NA | NA | NA | NA | 1,400 | 21,000 |
| Dibenzo(a,h)anthracene | — | — | — | — | NA | NA | NA | NA | NA | NA | NA | NA | 1,400 | 21,000 |
| Fluoranthene | — | — | — | — | NA | NA | NA | NA | NA | NA | NA | NA | 14,000 | 540,000,000 |
| Naphthalene | — | — | — | — | NA | NA | NA | NA | NA | NA | NA | NA | 5,200 | 160,000,000 |
| Phenanthrene | — | — | — | — | NA | NA | NA | NA | NA | NA | NA | NA | 620 | 16,000,000 |
| Pyrene | — | — | — | — | NA | NA | NA | NA | NA | NA | NA | NA | 11,000 | 340,000,000 |
| Inorganics (mg/kg) | | | | | | | | | | | | | | |
| Antimony | NA | NA | NA | NA | — | 0.7 | — | — | — | — | — | — | 0.50 | 1,600 |
| Arsenic | 52J | 7.6J | — | — | — | — | — | — | — | — | — | — | 6.8** | 83 |
| Barium | 730 | — | — | — | NA | NA | NA | NA | NA | NA | NA | NA | 75** | 320,000 |
| Beryllium | NA | NA | NA | NA | — | 0.4 | — | — | 0.5 | 0.4 | — | — | 0.20 | 35 |
| Cadmium | — | — | — | — | — | — | — | — | — | — | — | — | 1.2** | 2,300 |
| Chromium | — | — | 24 | — | — | — | — | — | — | — | — | — | 18** | 22,000 |
| Copper | — | — | 650 | — | — | 49.6 | 145 | 39.7 | 40.6 | 42.8 | — | 60.0 | 32** | 170,000 |
| Lead | — | — | 130 | — | 56.2 | 60.6 | 35.5 | 56.4 | 54.1 | 63.2 | — | 60.6 | 21** | 400 |
| Nickel | NA | NA | NA | NA | — | — | — | — | — | — | — | — | 20** | 340,000 |
| Mercury | — | 0.2 | 12 | 9.3 | — | — | — | — | — | — | — | — | 0.13** | 1,400 |
| Selenium | — | — | — | — | — | — | — | — | — | — | — | — | 1 | 23,000 |
| Silver | — | — | — | — | — | — | — | — | — | — | — | — | 1.0** | 21,000 |
| Zinc | 530 | — | 61 | — | 84.7 | 74.4 | 57.0 | 85.0 | 90.7 | 66.6 | 83.0 | 79.2 | 48 | 1,000,000 |
| Cyanide | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 4 | 99,000 |

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 08 or 014, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

## Table 2-1 (Continued)
## Soil Sample Analytical Results
## Above Residential or Industrial Cleanup Criteria
## Industrial Brownhoist
## Bay City, Michigan

| Sample Location: | MWR-SB-5 | MWR-SB-6 | MWR-SB-7 | MWR-SB-7 | MWR-SB-8 | MWR-SB-8 | MWR-SB-9 | MWR-SB-9 | MWR-SB-10 | MWR-SB-12 | MWR-SB-12 | Generic Residential | Generic Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth(ft): | 4-6 | 4-6 | 0-2 | 4-6 | 0-2 | 4-6 | 0-2 | 4-6 | 4-6 | 0-2 | 4-6 | Criteria* | Criteria* |
| Parameter | | | | | | | | | | | | | |
| **VOCs (ug/kg)** | | | | | | | | | | | | | |
| Acetone | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 16,000 | 74,000,000 |
| Benzene | — | — | — | — | — | — | — | — | — | — | — | 100 | 850,000 |
| Ethylbenzene | — | — | — | — | — | — | — | — | — | — | — | 1,500 | 72,000,000 |
| Methylene Chloride | — | — | — | — | — | — | — | — | — | — | — | 100 | 3,300,000 |
| Xylenes (total) | — | — | — | — | — | — | — | — | — | — | — | 6,600 | 1,000,000,000 |
| **SVOCs (ug/kg)** | | | | | | | | | | | | | |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 520 | 16,000,000 |
| Benzo(a)pyrene | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1,400 | 21,000 |
| Dibenzo(a,h)anthracene | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1,400 | 21,000 |
| Fluoranthene | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 16,000 | 540,000,000 |
| Naphthalene | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 5,200 | 160,000,000 |
| Phenanthrene | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 520 | 16,000,000 |
| Pyrene | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 11,000 | 340,000,000 |
| **Inorganics (mg/kg)** | | | | | | | | | | | | | |
| Antimony | — | — | 1.3 | 4.2 | — | — | — | — | 0.7 | 1.6 | — | 0.60 | 1,600 |
| Arsenic | — | — | — | — | — | — | — | — | — | — | — | 5.8** | 83 |
| Barium | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 75** | 320,000 |
| Beryllium | 0.7 | 1.0 | — | 0.4 | 0.7 | — | — | 1.5 | — | — | — | 0.20 | 35 |
| Cadmium | — | — | — | — | — | — | — | — | — | — | — | 1.2** | 2,300 |
| Chromium | — | 61.6 | 176 | 23.6 | 39.4 | — | — | 32.1 | — | 70.1 | — | 18** | 22,000 |
| Copper | — | 39.8 | 438 | 930 | 109 | 32.4 | 55.4 | 166 | 62.2 | 176 | 37.7 | 32** | 170,000 |
| Lead | 38.9 | 27.0 | 110 | 358 | 35.3 | — | — | 38.1 | 38.8 | 30.6 | — | 21** | 400 |
| Nickel | — | 27.5 | 126 | 56.6 | 24.6 | — | — | 31.6 | — | 106 | — | 20** | 340,000 |
| Mercury | — | — | — | — | — | — | — | — | — | — | — | 0.13** | 1,400 |
| Selenium | — | — | — | — | — | — | — | — | — | — | — | 1 | 23,000 |
| Silver | — | — | 1.2 | — | — | — | — | — | — | — | — | 1.0** | 21,000 |
| Zinc | 145 | 108 | 216 | 462 | 76.2 | — | — | 58.6 | — | — | — | 48 | 1,000,000 |
| Cyanide | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 4 | 99,000 |

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 68 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

## Table 2-1 (Continued)
## Soil Sample Analytical Results
## Above Residential or Industrial Cleanup Criteria
## Industrial Brownhoist
## Bay City, Michigan

| Sample Location: | MWR-SB-13 | MWR-SB-13 | MWR-SB-14 | MWR-SB-15 | MWR-SB-15 | MWR-SB-16 | Subsurface IS | Subsurface IN | ETG-SB-4 | Generic Residential | Generic Industrial |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Depth(ft): | 0-2 | 4-6 | 4-6 | 0-2 | 4-6 | 0-2 | | | 5-7 | Criteria* | Criteria* |
| Parameter | | | | | | | | | | | |
| VOCs (ug/kg) | | | | | | | | | | | |
| Acetone | NA | NA | NA | NA | NA | NA | NA | NA | — | 16,000 | 74,000,000 |
| Benzene | — | — | — | — | — | — | NA | NA | 470 | 100 | 860,000 |
| Ethylbenzene | — | — | — | — | — | — | NA | NA | — | 1,500 | 72,000,000 |
| Methylene Chloride | — | — | — | — | — | — | NA | NA | — | 100 | 3,300,000 |
| Xylenes (total) | — | — | — | — | — | — | NA | NA | — | 8,600 | 1,000,000,000 |
| SVOCs (ug/kg) | | | | | | | | | | | |
| Acenaphthylene | NA | NA | NA | NA | NA | NA | NA | NA | — | 520 | 16,000,000 |
| Benzo(a)pyrene | NA | NA | NA | NA | NA | NA | NA | NA | — | 1,400 | 21,000 |
| Dibenzo(a,h)anthracene | NA | NA | NA | NA | NA | NA | NA | NA | — | 1,400 | 21,000 |
| Fluoranthene | NA | NA | NA | NA | NA | NA | NA | NA | — | 18,000 | 540,000,000 |
| Naphthalene | NA | NA | NA | NA | NA | NA | NA | NA | — | 6,200 | 160,000,000 |
| Phenanthrene | NA | NA | NA | NA | NA | NA | NA | NA | — | 520 | 16,000,000 |
| Pyrene | NA | NA | NA | NA | NA | NA | NA | NA | — | 11,000 | 340,000,000 |
| Inorganics (mg/kg) | | | | | | | | | | | |
| Antimony | 37.6 | 0.8 | 4.4 | — | — | — | — | — | NA | 0.50 | 1,800 |
| Arsenic | — | — | — | — | — | — | — | — | NA | 5.8** | 83 |
| Barium | NA | NA | NA | NA | NA | NA | NA | NA | NA | 75** | 320,000 |
| Beryllium | 0.8 | — | — | — | — | — | — | — | NA | 0.20 | 35 |
| Cadmium | — | — | — | — | — | — | — | — | NA | 1.2** | 2,300 |
| Chromium | — | — | 146 | 24.2 | — | — | — | 41.7 | NA | 18** | 22,000 |
| Copper | 22,300 | 102 | 226 | — | 46.9 | 314 | — | 78.2 | NA | 32** | 170,000 |
| Lead | 1,540 | — | 29.0 | 57.0 | 22.5 | 61.0 | 39.2 | 270 | NA | 21** | 400 |
| Nickel | 26.3 | 62.9 | 136 | — | 20.4 | — | — | — | NA | 20** | 340,000 |
| Mercury | — | — | — | — | — | — | — | — | NA | 0.13** | 1,400 |
| Selenium | — | — | — | — | — | — | — | — | NA | 1 | 23,000 |
| Silver | — | — | — | — | — | — | — | — | NA | 1.0** | 21,000 |
| Zinc | — | — | 82.7 | 338 | — | — | 221 | 695 | NA | 46 | 1,000,000 |
| Cyanide | NA | NA | NA | NA | NA | NA | NA | NA | NA | 4 | 99,000 |

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 99 or 914, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

# Table 2
## Groundwater Sample Analytical Results
## Above Residential or Industrial Cleanup Criteria
## Industrial Brownhoist
## Bay City, Michigan

| Sample Location: Parameter | IB-MW-01D | IB-MW-02 | IB-MW-05 | IB-MW-06 | IB-MW-07 | IB-MW-08 | IB-MW-10 | IB-MW-11 | IB-MW-14 | ETG-MW-1D | ETG-MW-2S | ETG-MW-5 | ETG-MW-18 | ETG-MW-19 | Residential Criteria* | Industrial Criteria** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs (ug/L)** | | | | | | | | | | | | | | | | |
| Benzene | — | — | — | — | — | — | — | — | 8.3 | 2,800 | — | 24 | — | — | 5 | 5 |
| 1,2-Dichloroethane | — | — | — | — | — | — | — | — | — | 24 | — | — | — | — | 5 | 5 |
| **SVOCs (ug/L)** | | | | | | | | | | | | | | | | |
| Phenanthrene | — | — | — | — | — | 36 | — | — | — | — | 42 | — | 29 | 61 | 26 | 75 |
| Benzo(a)anthracene | — | — | — | — | — | 31 | — | — | — | — | — | — | — | — | 5 | 5 |
| Benzo(b)fluoranthene | — | — | — | — | — | 18 | — | — | — | — | — | — | — | — | 5 | 5 |
| Benzo(k)fluoranthene | — | — | — | — | — | 26 | — | — | — | — | — | — | — | — | 12 | 48 |
| Benzo(a)pyrene | — | — | — | — | — | 72 | — | — | — | — | — | — | — | — | 5 | 5 |
| **Inorganics (mg/L)** | | | | | | | | | | | | | | | | |
| Cadmium | — | — | 0.006 | — | — | — | — | — | 0.40 | — | — | — | — | — | 0.005 | 0.005 |
| Chromium | — | — | — | — | — | — | — | — | 0.42 | — | — | — | — | — | 0.1 | 0.1 |
| Lead | 0.026 | 0.013 | 0.017 | 0.018 | 0.010 | 0.010 | 0.017 | 0.010 | 0.44 | — | — | — | — | — | 0.004 | 0.004 |
| Silver | — | — | — | — | — | — | — | — | 0.46 | — | — | — | — | — | 0.034 | 0.098 |
| Cyanide | — | — | — | — | 0.48 | — | — | — | 0.55 | 0.67 | — | 0.90 | — | — | 0.2 | 0.2 |

Notes:

— Indicates the parameter was non-detect or detected below Residential Cleanup Criteria

Shading indicates parameter was detected above Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #8 Generic Residential Cleanup Criteria For Groundwater And Soil (Revision 4 6/5/95)

** - Based upon Environmental Response Division Operational Memorandum #14 Generic Industrial and Commercial Cleanup Criteria for Groundwater and Soil (Revision 2 6/5/95)

Amdura–Bay City

All samples collected between 3–21–95 and 3–23–95, except samples from MW–18, MW–20, and MW–21.

| *VOCs (ug/L)* | MW–1S | MW–1D | MW–2S | MW–2D | MW–3S | MW–3D | MW–4S | MW–4D |
|---|---|---|---|---|---|---|---|---|
| Acetone | <50 | <50 | <50 | <50 | | <50 | <50 | <50 |
| Benzene | 1 | 2,800 | <1 | <1 | | <1 | <1 | <1 |
| Bromodichloromethane | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| Bromoform | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| Bromomethane | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| 2–Butanone | <50 | 470 | <50 | <50 | | <50 | <50 | <50 |
| Carbon disulfide | <50 | <50 | <50 | <50 | no | <50 | <50 | <50 |
| Carbon tetrachloride | <1 | <1 | <1 | <1 | sample – | <1 | <1 | <1 |
| Chlorobenzene | <1 | <1 | <1 | <1 | 1.22 feet | <1 | <1 | <1 |
| Chloroethane | <1 | <1 | <1 | <1 | of free | <1 | <1 | <1 |
| Chloroform | <1 | <1 | <1 | <1 | product | <1 | <1 | <1 |
| Chloromethane | <1 | <1 | <1 | <1 | (LNAPL) | <1 | <1 | <1 |
| Dibromochloromethane | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| 1,2–Dichlorobenzene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| 1,3–Dichlorobenzene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| 1,4–Dichlorobenzene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| 1,1–Dichloroethane | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| 1,2–Dichloroethane | <1 | 42 | <1 | <1 | | <1 | <1 | <1 |
| 1,1–Dichloroethene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| cis–1,2–Dichloroethene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| trans–1,2–Dichloroethene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| 1,2–Dichloropropane | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| cis–1,3–Dichloropropene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| trans–1,3–Dichloropropene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| Ethylbenzene | <1 | 89 | <1 | <1 | | <1 | <1 | <1 |
| 2–Hexanone | <50 | <50 | <50 | <50 | | <50 | <50 | <50 |
| Methylene chloride | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| 4–Methyl–2–pentanone | <50 | <50 | <50 | <50 | | <50 | <50 | <50 |
| Styrene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| 1,1,2,2–Tetrachloroethane | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| Tetrachloroethene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| Toluene | <1 | 48 | <1 | 8 | | <1 | <1 | <1 |
| 1,1,1–Trichloroethane | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| 1,1,2–Trichloroethane | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| Trichloroethene | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| Vinyl acetate | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| Vinyl chloride | <1 | <1 | <1 | <1 | | <1 | <1 | <1 |
| Xylenes (total) | <3 | 140 | <3 | <3 | | <3 | <3 | <3 |
| ***PNAs (ug/L)*** | | | | | | | | |
| Acenaphthene | <5 | <5 | <5 | <5 | | <5 | <5 | <5 |
| Acenaphthylene | <5 | <5 | <5 | <5 | | <5 | <5 | <5 |
| Anthracene | <5 | <5 | 9 | <5 | | <5 | <5 | <5 |
| Benzo(a)anthracene | <5 | <5 | <5 | <5 | | <5 | <5 | <5 |
| Benzo(a)pyrene | <5 | <5 | <5 | <5 | | <5 | <5 | <5 |
| Benzo(b)fluoranthene | <5 | <5 | <5 | <5 | | <5 | <5 | <5 |
| Benzo(k)fluoroanthene | <5 | <5 | <5 | <5 | | <5 | <5 | <5 |
| Chyrsene | <5 | <5 | 7 | <5 | | <5 | <5 | <5 |
| Dibenzo(a,h)anthracene | <5 | <5 | <5 | <5 | | <5 | <5 | <5 |
| Fluoranthene | <5 | <5 | 16 | <5 | | <5 | <5 | <5 |
| Fluorene | <5 | <5 | 14 | <5 | | <5 | <5 | <5 |
| Ideno(1,2,3–cd)pyrene | <5 | <5 | <5 | <5 | | <5 | <5 | <5 |
| Naphthalene | <5 | 78 | <5 | <5 | | <5 | <5 | <5 |
| Phenanthrene | <5 | <5 | 42 | 7 | | 13 | <5 | <5 |
| Pyrene | <5 | <5 | 12 | <5 | | <5 | <5 | <5 |
| ***Dissolved Metals (mg/L)*** | | | | | | | | |
| Arsenic | <0.002 | <0.002 | 0.007 | 0.004 | | 0.003 | <0.002 | 0.002 |
| Barium | 0.2 | 0.3 | 0.4 | 1.5 | | 1.6 | <0.2 | <0.2 |
| Cadmium | <0.0002 | <0.0002 | 0.0005 | 0.0004 | | 0.0002 | 0.001 | <0.0002 |
| Chromium | <0.05 | <0.05 | <.002 | <0.05 | | <0.05 | <0.05 | <0.05 |
| Lead | <0.003 | <0.003 | <0.003 | <0.003 | | <0.003 | <0.003 | <0.003 |
| Selenium | <0.005 | <0.005 | <0.005 | <0.005 | | <0.005 | <0.005 | <0.005 |
| Silver | <0.0005 | 0.0012 | <0.0005 | 0.0023 | | 0.0029 | <0.0005 | 0.0006 |

Amdura – Bay City

All samples collected between 3–21–95 and 3–23–95, except samples from MW–18, MW–20, and MW–21.

| *VOCs (ug/L)* | MW–5 | MW–6 | MW–7 | MW–8 | MW–9 | MW–10 | MW–11 | MW–12 |
|---|---|---|---|---|---|---|---|---|
| Acetone | <50 | <50 | <50 | | <50 | <50 | <50 | <50 |
| Benzene | 24 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Bromodichloromethane | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Bromoform | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Bromomethane | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 2–Butanone | <50 | <50 | <50 | | <50 | <50 | <50 | <50 |
| Carbon disulfide | <50 | <50 | <50 | no | <50 | <50 | <50 | <50 |
| Carbon tetrachloride | <1 | <1 | <1 | sample – | <1 | <1 | <1 | <1 |
| Chlorobenzene | <1 | <1 | <1 | well | <1 | <1 | <1 | <1 |
| Chloroethane | <1 | <1 | <1 | dry | 9 | <1 | <1 | <1 |
| Chloroform | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Chloromethane | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Dibromochloromethane | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 1,2–Dichlorobenzene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 1,3–Dichlorobenzene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 1,4–Dichlorobenzene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 1,1–Dichloroethane | 1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 1,2–Dichloroethane | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 1,1–Dichloroethene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| cis–1,2–Dichloroethene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| trans–1,2–Dichloroethene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 1,2–Dichloropropane | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| cis–1,3–Dichloropropene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| trans–1,3–Dichloropropene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Ethylbenzene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 2–Hexanone | <50 | <50 | <50 | | <50 | <50 | <50 | <50 |
| Methylene chloride | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 4–Methyl–2–pentanone | <50 | <50 | <50 | | <50 | <50 | <50 | <50 |
| Styrene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 1,1,2,2–Tetrachloroethane | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Tetrachloroethene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Toluene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 1,1,1–Trichloroethane | 2 | <1 | <1 | | <1 | <1 | <1 | <1 |
| 1,1,2–Trichloroethane | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Trichloroethene | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Vinyl acetate | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Vinyl chloride | <1 | <1 | <1 | | <1 | <1 | <1 | <1 |
| Xylenes (total) | 4 | <3 | <3 | | <3 | <3 | <3 | <3 |
| ***PNAs (ug/L)*** | | | | | | | | |
| Acenaphthene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| Acenaphthylene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| Anthracene | <5 | <5 | 21 | | <5 | <5 | <5 | <5 |
| Benzo(a)anthracene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| Benzo(a)pyrene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| Benzo(b)fluoranthene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| Benzo(k)fluoroanthene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| Chyrsene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| Dibenzo(a,h)anthracene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| Fluoranthene | <5 | 5 | <5 | | <5 | <5 | <5 | <5 |
| Fluorene | <5 | <5 | 7 | | <5 | <5 | <5 | <5 |
| Ideno(1,2,3–cd)pyrene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| Naphthalene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| Phenanthrene | <5 | <5 | 21 | | <5 | <5 | <5 | <5 |
| Pyrene | <5 | <5 | <5 | | <5 | <5 | <5 | <5 |
| ***Dissolved Metals (mg/L)*** | | | | | | | | |
| Arsenic | 0.003 | <0.002 | <0.002 | | 0.002 | <0.002 | <0.002 | 0.019 |
| Barium | <0.2 | 0.2 | <0.2 | | 0.4 | 0.6 | 0.2 | <0.2 |
| Cadmium | <0.0002 | 0.0004 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Chromium | <0.05 | <0.05 | <0.05 | | <0.05 | <0.05 | <0.05 | <0.05 |
| Lead | <0.003 | <0.003 | <0.003 | | 0.003 | <0.003 | <0.003 | <0.003 |
| Selenium | <0.005 | <0.005 | <0.005 | | <0.005 | <0.005 | <0.005 | <0.005 |
| Silver | <0.0005 | <0.0005 | <0.0005 | | <0.0005 | 0.0013 | <0.0005 | <0.0005 |

Amdura–Bay City

MW–18 PNA sample collected on 4–13–95, and MW–20 & MW–21 samples collected on 11–17–95.
All other samples collected between 3–21–95 and 3–23–95.

| *VOCs (ug/L)* | MW–13 | MW–14 | MW–15 | MW–16 | MW–17 | MW–18 | MW–19 | MW–20 | MW–21 | MW–22 |
|---|---|---|---|---|---|---|---|---|---|---|
| cetone | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | |
| Benzene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Bromodichloromethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Bromoform | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Bromomethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 2–Butanone | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | |
| Carbon disulfide | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | no |
| Carbon tetrachloride | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | sample – |
| Chlorobenzene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | well |
| Chloroethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | dry |
| Chloroform | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Chloromethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Dibromochloromethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 1,2–Dichlorobenzene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 1,3–Dichlorobenzene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 1,4–Dichlorobenzene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 1,1–Dichloroethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 1,2–Dichloroethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 1,1–Dichloroethene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| cis–1,2–Dichloroethene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| trans–1,2–Dichloroethene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 1,2–Dichloropropane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| cis–1,3–Dichloropropene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| trans–1,3–Dichloropropene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Ethylbenzene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 2–Hexanone | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | |
| Methylene chloride | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| –Methyl–2–pentanone | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | <50 | |
| tyrene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 1,1,2,2–Tetrachloroethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Tetrachloroethene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Toluene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 1,1,1–Trichloroethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| 1,1,2–Trichloroethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Trichloroethene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Vinyl acetate | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Vinyl chloride | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | |
| Xylenes (total) | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | |
| ***PNAs (ug/L)*** | | | | | | | | | | |
| Acenaphthene | <5 | <5 | <5 | <5 | <5 | <5 | 7 | | <5 | |
| Acenaphthylene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | | <5 | |
| Anthracene | <5 | <5 | <5 | <5 | <5 | <5 | 5 | | <5 | |
| Benzo(a)anthracene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | no | <5 | |
| Benzo(a)pyrene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | sample | <5 | |
| Benzo(b)fluoranthene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | | <5 | |
| Benzo(k)fluoroanthene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | | <5 | |
| Chrysene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | | <5 | |
| Dibenzo(a,h)anthracene | <5 | <5 | <5 | <5 | <5 | 6 | <5 | | <5 | |
| Fluoranthene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | | <5 | |
| Fluorene | <5 | <5 | <5 | <5 | <5 | <5 | 18 | | <5 | |
| Ideno(1,2,3–cd)pyrene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | | <5 | |
| Naphthalene | <5 | <5 | <5 | <5 | <5 | <5 | <5 | | <5 | |
| Phenanthrene | <5 | <5 | <5 | 7 | <5 | 29 | 61 | | <5 | |
| rene | <5 | <5 | <5 | <5 | <5 | 12 | <5 | | <5 | |
| ***issolved Metals (mg/L)*** | | | | | | | | | | |
| Arsenic | 0.003 | <0.002 | 0.012 | <0.002 | 0.007 | 0.003 | 0.006 | | | |
| Barium | <0.2 | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | | | |
| Cadmium | 0.0003 | <0.0002 | 0.0002 | <0.0002 | 0.0004 | <0.0002 | <0.0002 | | | |
| Chromium | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | | | |
| Lead | 0.005 | <0.003 | <0.003 | <0.003 | 0.009 | <0.003 | 0.026 | no | no | |
| Selenium | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | sample | sample | |

**I.B. Industrial Park Inc.**
301 N. Water Street
Bay City, MI 48708

**CERTIFIED MAIL / RETURN RECEIPT REQUESTED**

Stress-Con Industries, Inc.
3675 Auburn Road
Utica, MI 48317

Dear Dennis,

During the course of an Environmental Site Assessment on the premises covered by Stress-Con's leases at 301 North Water Street, Bay City, Michigan, 48708, (the "Premises" and the "Leases"), certain conditions were observed which indicate that Stress-Con has violated several provisions of the Leases. Specifically, the following conditions were observed:

1) Use of hazardous substances including gasoline and diesel fuel, form oils, and equipment maintenance related oils.
2) Drums of antifreeze and hydraulic oils were observed in the boom shop.
3) Numerous drums containing waste oils and form oils were observed in Building 41 with standing of the concrete floor observed nearby.
4) Waste oil drums were stacked along the Northwest corner of Building 42.
5) Ten to twelve drums labeled as "waste oil" were identifies in the maintenance shop and heavy staining was found on the concrete floor.
6) A parts washer sink and two 250 gallon above ground storage tanks ("ASTs") are located in the maintenance shop.
7) A pile of discarded oil filters were observed in the area of the former power plant building along with two ASTs used for diesel fuel.
8) Two ASTs storing diesel fuel and gasoline were observed near the entrance gate south of Buildings 41 and 42 with no secondary containment.

Violations of lease provisions include but are not limited to Subsections 4.01, 4.02, 4.02, and 4.04 of Article IV in that: 1) the premises have been used in a manner which has created a nuisance; 2) the use of the Premises not been in compliance with applicable laws and requirements; 3) hazardous substances have been used or generated and disposed of on the premises; and 4) these actions and conditions have jeopardized and conflicted with the Baseline Environmental Assessment and Due Care Requirements established in the Baseline Environmental Assessment document attached to and incorporated into the Leases.

Under the provisions of the Leases, Stress-Con is obligated to indemnify and hold IB Industrial Park, Inc. and its assigns harmless with respect to the use , storage, generation or disposal of hazardous substances on the Premises. Any costs incurred related to the above-described conditions shall be subject to indemnification by Stress-Con. Additionally, Stress-Con is obligated to take immediate actions to return the Premises to the condition existing at the time

the releases commenced. Stress-Con's obligations include, but are not limited to, the following actions: 1) removing all hazardous substances from onsite including the discontinuation of petroleum related fuel use on site and removal of all above-ground storage tanks and other containers; 2) conducting all future equipment maintenance off site; and 3) removing drums and all discarded oil filters from the premises. Under the Leases, you are required to take such actions within ten (10) days of the date of this notice.

Very truly yours,

David Ives

cc: Scott Steiner, Rhoades, McKee, Boer, Goodrich & Titta
Allen Reilly, Horizon Environmental

**I.B. Industrial Park, Inc.**
301 N. Water Street
Bay City, MI 48708

**CERTIFIED MAIL / RETURN RECEIPT REQUESTED**

Bay Track
P.O. Box 1714
Bay City, MI 48706

Dear LeRoy,

During the course of an Environmental Site Assessment on the premises covered by Bay Track's lease at 301 North Water Street, Bay City, Michigan, 48708, (the "Premises" and the "Lease"), certain conditions were observed which indicate that Bay Track has violated several provisions of the Lease. Specifically, the following conditions were observed:

1) Use of hazardous substances including gasoline, diesel fuel, and equipment maintenance related oils.
2) oil drums were located in the basement of Building 42.
3) Two ASTs storing diesel fuel with no secondary containment were observed near the north entrance off of Saginaw Street.

Violations of lease provisions include but are not limited to Subsections 4.01, 4.02, 4.02, and 4.04 of Article IV in that: 1) the Premises have been used in a manner which has created a nuisance; 2) the use of the Premises not been in compliance with applicable laws and requirements; 3) hazardous substances have been used or generated and disposed of on the premises; and 4) these actions and conditions have jeopardized and conflicted with the Baseline Environmental Assessment and Due Care Requirements established in the Baseline Environmental Assessment document attached to and incorporated into the Lease.

Under the provisions of the Lease, Bay Track is obligated to indemnify and hold IB Industrial Park, Inc. and its assigns harmless with respect to the use , storage, generation or disposal of hazardous substances on the Premises. Any costs incurred related to the above-described conditions shall be subject to indemnification by Bay Track. Additionally, Bay Track is obligated to take immediate actions to return the Premises to the condition existing at the time the releases commenced. Bay Track's obligations include, but are not limited to, the following actions: 1) removing all hazardous substances from onsite including the discontinuation of petroleum related fuel use on site and removal of all above-ground storage tanks and other containers; 2) conducting all future equipment maintenance off site; and 3) removing drums and all discarded oil filters from the premises. Under the Lease, you are required to take such actions within ten (10) days of the date of this notice.

Very truly yours,

David E Ives

CC: Scott Steiner, Roades, McKee, Boer, Goodrich, & Titta
Allen Reilly, Horizon Environmental

*ATTACHMENT 2*

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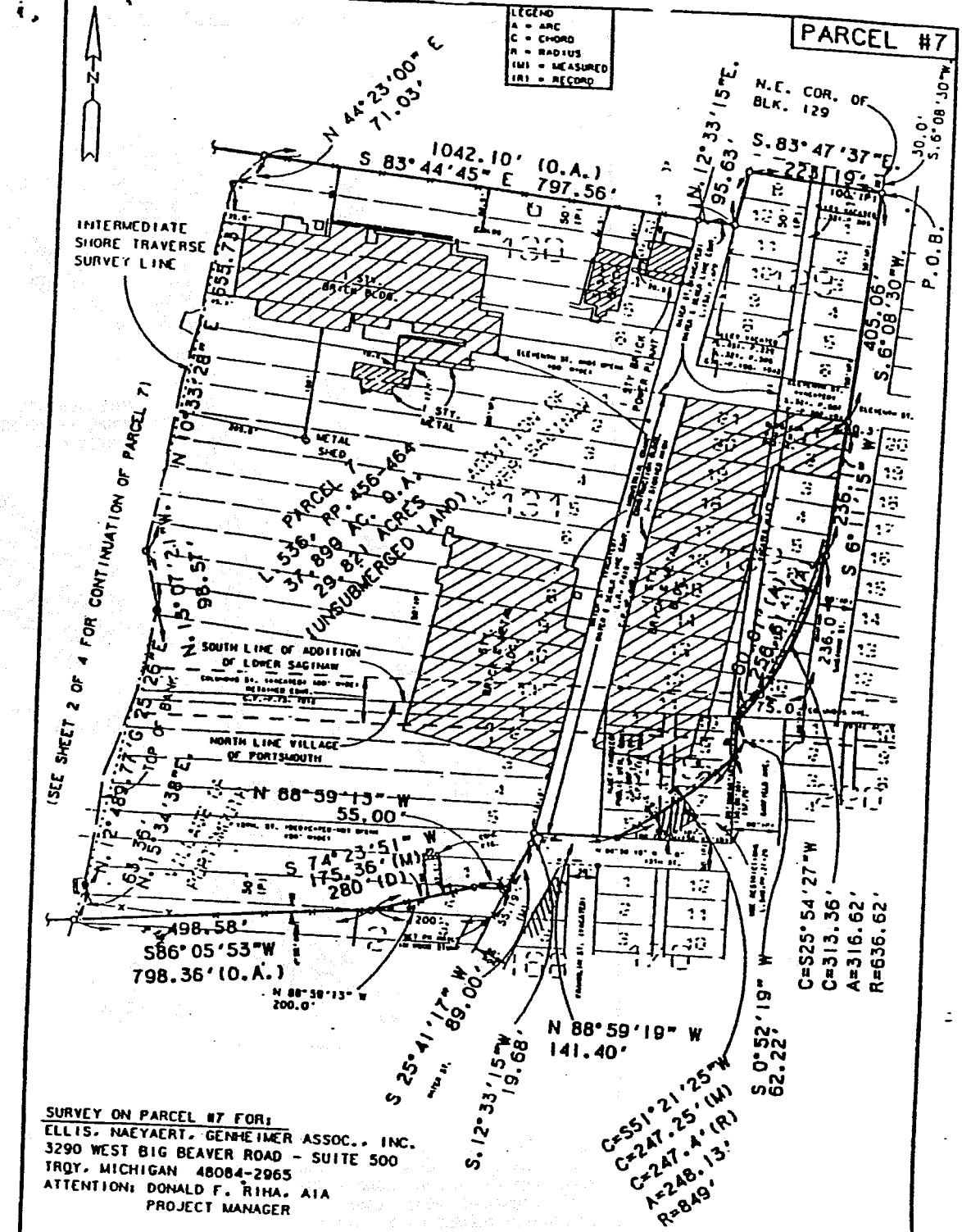
*SITE LEGAL DESCRIPTION*




SURVEY ON PARCEL #7 FOR:
ELLIS, NAEYAERT, GENHEIMER ASSOC., INC.
3290 WEST BIG BEAVER ROAD - SUITE 500
TROY, MICHIGAN 48084-2965
ATTENTION: DONALD F. RIHA, AIA
PROJECT MANAGER

REV. TO SHOW DIM. FROM TIE PT. TO EDGE OF ICE 4-15-92 DPW
REV. TO SHOW PARCEL ON TWO DRAWINGS 5-28-92 RTP

REQUESTED BY:
ENVIRONMENTAL PROTECTION AGENCY
FACILITIES MANAGEMENT AND SERVICES DIVISION
REAL ESTATE AND SPACE MANAGEMENT BRANCH
401 M STREET SOUTHWEST (PM-215)
WASHINGTON, D.C. 20460
ATTENTION: BUCKY GREEN

PROPERTY OWNER:
WOODMEN OF THE WORLD LIFE INSURANCE SOCIETY
1700 FORNAM STREET
OMAHA, NEBRASKA 68102

ATTENTION: MR. CURTIS L. OWEN

Wade-Trim/Edmonds
P.O. Box 380
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4329

| | |
|---|---|
| Scale 1" = 200' | Date 2-92 |
| Job # ETS225801 - | Surveyed PMC |
| Book # IN Page #FILE | Checked LDM |
| Drawn RTP | Sheet 1 of 4 |

PARCEL 7

SURVEY ON PARCEL #7 FOR:

Ellis, Naeyaert, Genheimer Assoc., Inc.
3290 West Big Beaver Road - Suite 500
Troy, Michigan 48084-2965

Attention: Donald F. Riha, AIA, Project Manager

REQUESTED BY:

PROPERTY OWNER:

Woodmen of the World Life Insurance Society
1700 Fornam Street
Omaha, Nebraska 68102

Attention: Mr. Curtis L. Owen

TITLE DESCRIPTION: Parcel #7

Situated in the City of Bay City.
Commencing 30 feet South on the Northeast corner of Block 129, Addition of Lower Saginaw; thence South along Saginaw Street to a point 236 feet North of the Northwest corner of Saginaw and 12th Streets; thence Southwesterly on 9° curve to the right 256.02 feet to a point 75 feet Westerly on North line of 12th Street from the West line of Saginaw Street; thence continuing along said curve to intersection with West line of Garfield Street; thence South to a point 27.5 feet South of the Northeast corner Lot 9, Block 169, Village of Portsmouth; thence Southwesterly on a curve to right of radius 849 feet to a point of 29 feet East of the Southwest corner of Block 169; thence West on North line of 13th Street to Westerly line of Water Street; thence Southerly along Water Street to Southeast corner Lot 1, Block 2, Village of Portsmouth; thence West 55 feet; thence Southwesterly 280 feet to a point 200 feet West of the Southeast corner Lot 2; thence Southwesterly 465 feet to a point; 90 feet Southerly along the East River Bank from the South line, Lot 1, Block 2; thence Northerly along River Bank to South line of lot 1, Block 130, Addition to Lower Saginaw; thence East to the Southwest corner of Lot 12, Block 129; thence Northerly to a point 30 feet South of Northwest corner Lot 129; thence East to the Point of Beginning, as per Plat thereof recorded in Liber 1 of Plats, Page 8 of Bay County Records.

| | | | | |
|---|---|---|---|---|
| P-Plat | M-Measured | D-Description | R-Record | C.M.-City Map |
| O-Set Iron | ●-Found Iron | ⊕-P.K. Nail | ⊙-Monument | x--x--x Existing Fence |

This survey was made from the legal description of the parcel furnished to us. Both map and description should be compared with the Abstract or Title or Title Policy for any exceptions, easements or differences in description.

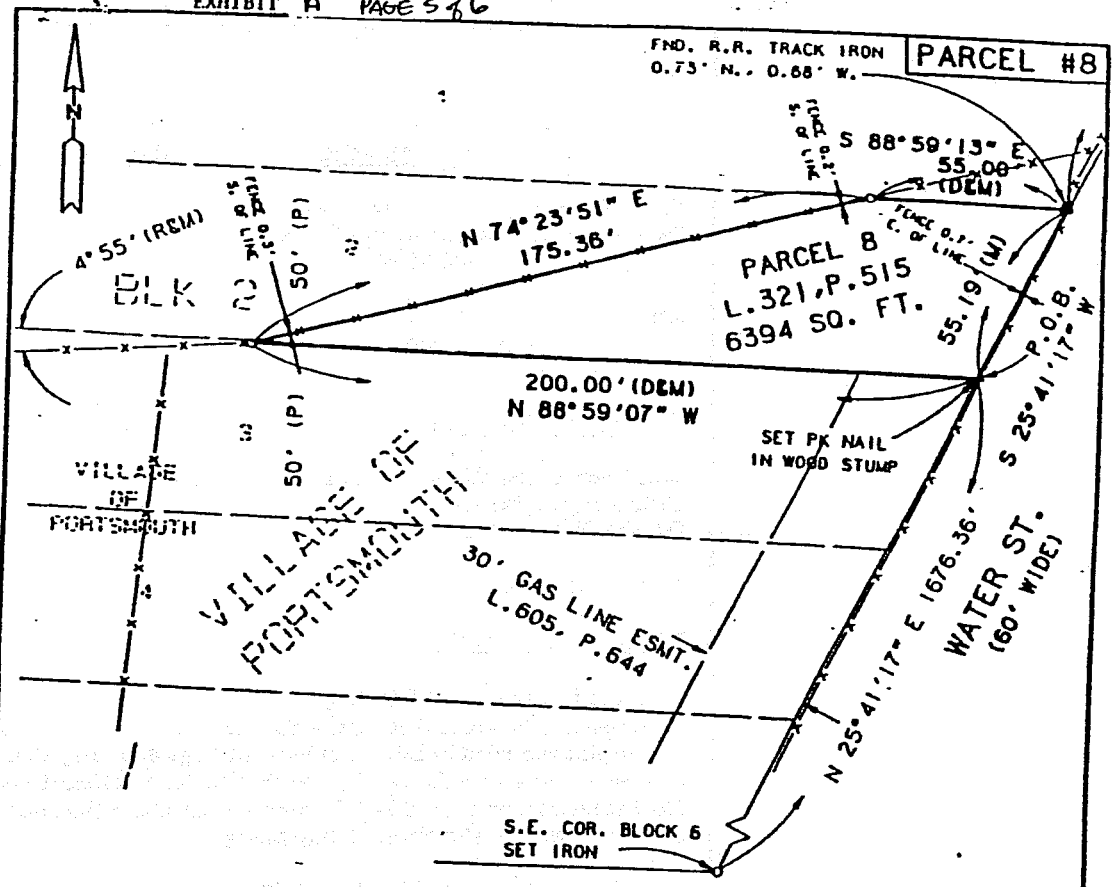
I hereby certify that this survey and descriptions shown hereon complies with the requirements of Public Act 132 of 1970 as amended. That the ratio of closure on the boundary of said survey exceeds 1' in 5000' and is within the acceptable limits of the surveying profession. There are encroachments on said survey.

Lloyd D. McGinnis

Lloyd D. McGinnis, R.L.S. #18999

Wade-Trim/Edmands
P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4129

| | | | |
|---|---|---|---|
| Scale NA | | Date 2-92 | |
| Job # ETS 2258.01 | | Surveyed PHC | |
| Book # W | Page # FILE | Checked LDH | |
| Drawn DPW | | Sheet 3 of 4 | |




REV. TO ADD DIMS. TO FENCE 5-28-92 RTP

SURVEY ON PARCEL #8 FOR:
ELLIS, NAEYAERT, GENHEIMER ASSOC., INC.
3290 WEST BIG BEAVER ROAD - SUITE 500
TROY, MICHIGAN 48084-2965
ATTENTION: DONALD F. RIHA, AIA
PROJECT MANAGER

REQUESTED BY:
ENVIRONMENTAL PROTECTION AGENCY
FACILITIES MANAGEMENT AND SERVICES DIVISION
REAL ESTATE AND SPACE MANAGEMENT BRANCH
401 M STREET SOUTHWEST (PM-215)
WASHINGTON, D.C. 20460
ATTENTION: BUCKY GREEN

PROPERTY OWNER:
WOODMEN OF THE WORLD LIFE INSURANCE SOCIETY
1700 FORNUM STREET
OMAHA, NEBRASKA 68102

ATTENTION: CURTIS L. OWEN

BEARING NOTE: Bearings are referenced to the Corps of Engineers Datum Referencing Monuments - Sta. 29 and Bay City Department of Public Works on the Saginaw River being North 6°41'06" East on Transverse Mercator Projection, East Zone (2101) 1927 North American Datum.
Distance Note-All distances are horizontal distance (No Grid Factor).

Wade-Trim/Edmonds
P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4329

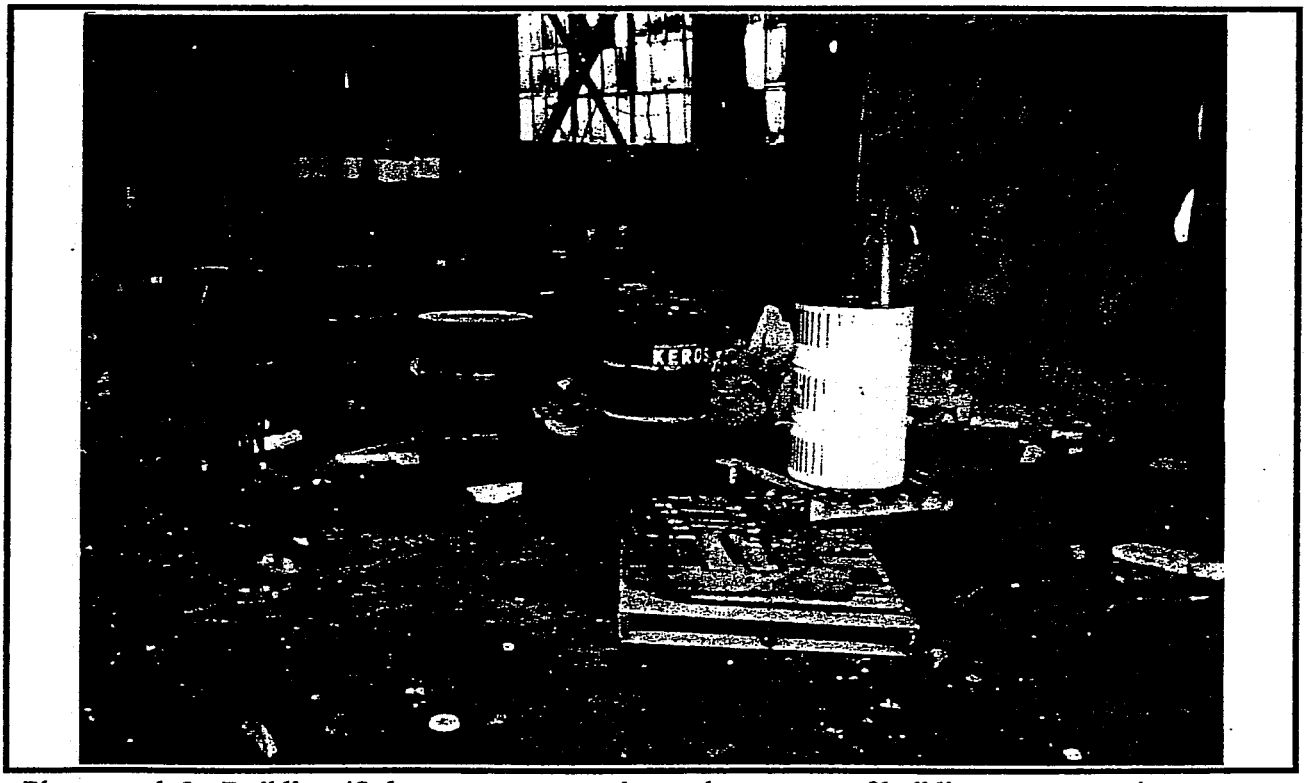
Scale 1" = 40'
Job # ETS2258.01
Book # 161 Page # 37
Drawn RTP

Date 2-92
Surveyed CWM
Checked LDM
Sheet 1 of 1

*ATTACHMENT 3*

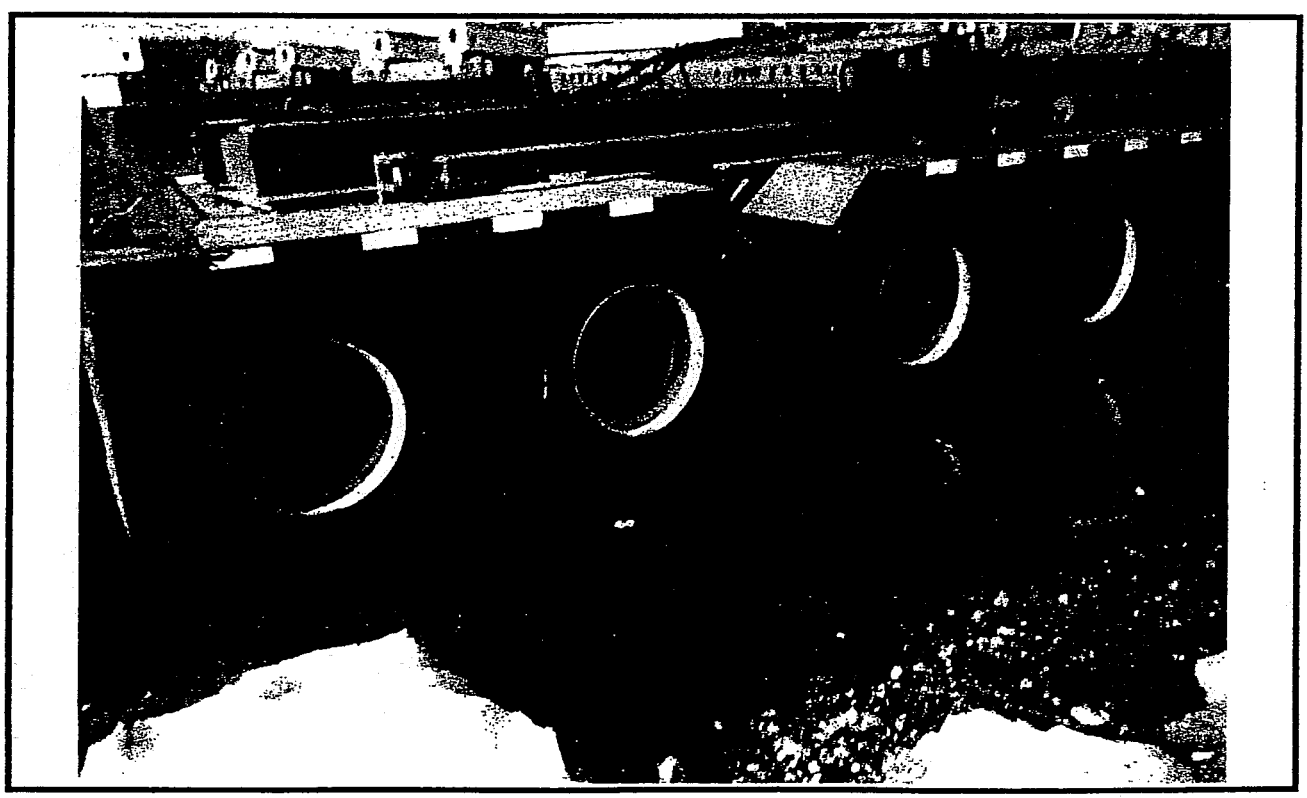
## *SITE PHOTOGRAPHS DOCUMENTING STRESS-CON HAZARDOUS SUBSTANCE USE*

Photograph 1. Gasoline and diesel ASTs near southeast gate. Photo also shows spilled diesel fuel in foreground. Photo taken by Mike Potter (2/8/01)



Photograph 2. Building 42 drum storage area in northwest part of building. Photograph taken by Keith Sikkema (1/25/01)

Photograph 3. Pile of discarded oil filters. Photo taken by Keith Sikkema (1/25/01)



Photograph 4. Oil and grease floating on surface water. Photo taken by Mike Potter (2/8/01)

Photograph 5. Area of accumulated oil and grease on ground near two ASTs at south entrance to site. Photo taken by Mike Potter (2/8/01)

*ATTACHMENT 4*

*1989 MWR INVESTIGATION REPORT*

# ENVIRONMENTAL INVESTIGATION
# of the
# AMDURA SITE
# BAY CITY, MICHIGAN

prepared for

HOWARD & HOWARD ATTORNEYS
LANSING, MICHIGAN

by

MWR, INCORPORATED
CHARLOTTE, MICHIGAN

SEPTEMBER 1989

## INTRODUCTION

MWR, Inc. (MWRI) was retained by Howard & Howard Attorneys (H & H) to conduct an environmental investigation of the 40 acre Amdura (American Hoist) facility in Bay City, Michigan (Figure 1). Amdura has occupied the site for the past 35 years operating an industrial complex manufacturing large cranes and hoists. Past land-uses on the site indicate the possibility of environmental liabilities. It was the intent of the investigation to document and quantify any existing environmental problems that may have been created by Amdura's manufacturing processes since the early 1950's. To accomplish this end MWRI proposed a program to explore all aspects of the Amdura site and included the following Tasks:

1. Site reconnaissance, to visually inspect the facility to document any areas which may require further investigations. Two site reconnaissance trips were conducted, July 7, 1989, and July 28, 1989,

2. Analysis of historic aerial photography of the site to document past land-use practices. Various formatted photography was secured from several State and Federal Agencies from 1938, 1950, 1955, 1963, 1977, and 1987,

3. Soil and ground water investigation, to establish the integrity of the of the soils and groundwater by analyzing for solvents, aromatics, polychlorinated biphenyls (PCB's) and heavy metals,

4. Soil gas survey, to rapidly and accurately survey suspected locations at around the site for the presence of volatile organic compounds in the vadose zone soils, and

5. Asbestos survey, to estimate the type and quantity of asbestos containing materials in the buildings and tunnels on the site.

The results of the above five tasks are summarized in the following report on the environmental conditions of the Amdura site. The report contains a brief history of the site as gleaned from supplied documents and interviews with the site manager. Discussions of the aerial photography are restricted to the prints in MWRI's possession at the time of report compilation. See the section on aerial photography for further explanations on prints reviewed. The balance of the report contains the methods, results, and discussions for the groundwater, soils, and asbestos investigations.

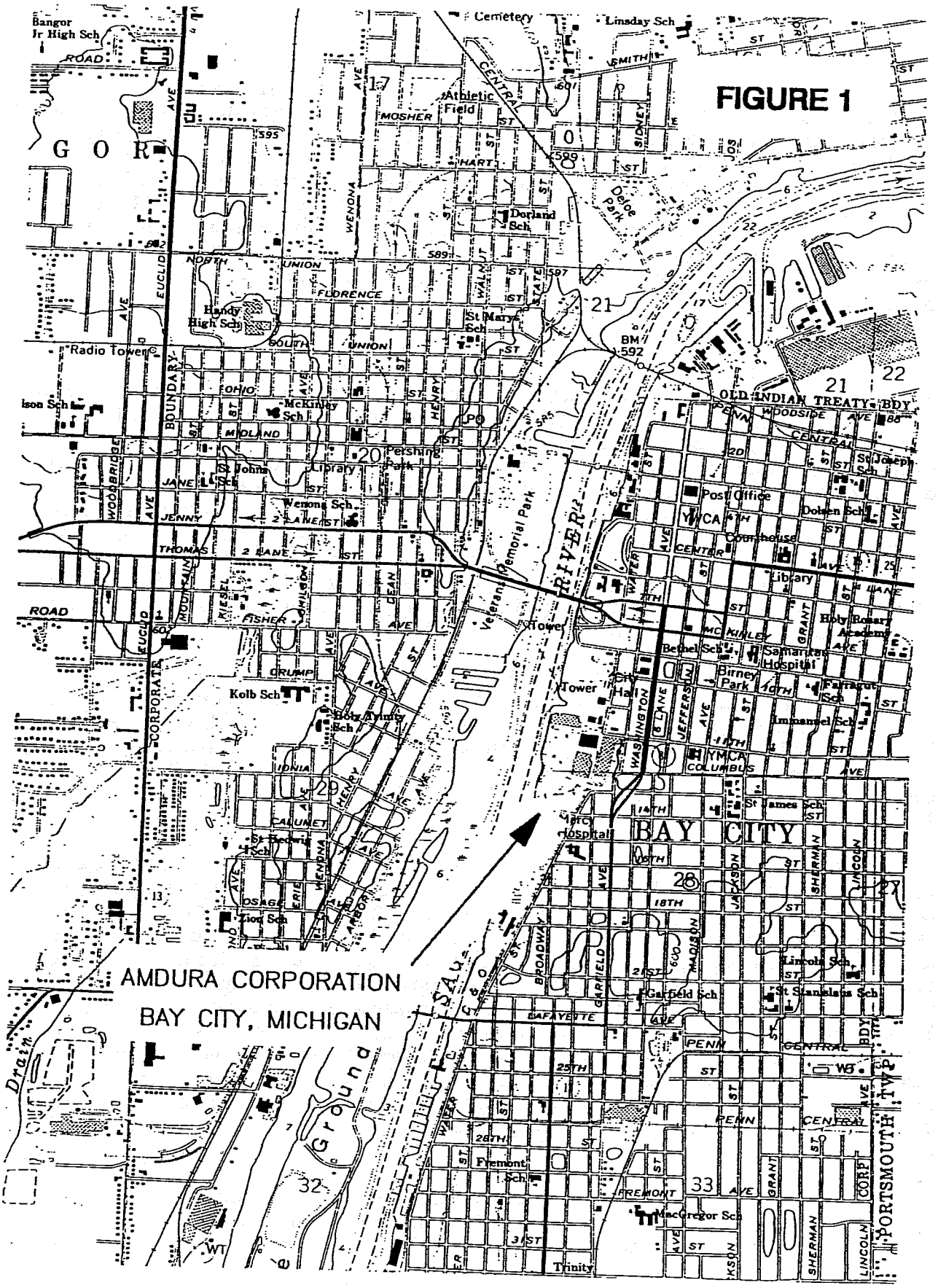


FIGURE 1
AMDURA CORPORATION
BAY CITY, MICHIGAN
BAY CITY
Bangor Jr High Sch
Cemetery
Linsday Sch
Athletic Field
Dorland Sch
Handy High Sch
St Marys Sch
Radio Tower
McKinley Sch
Pershing Park
Library
St Johns Sch
Wenona Sch
Veterans Memorial Park
Post Office
YWCA
Courthouse
Library
Holy Rosary Academy
Bethel Sch
Samaritan Hospital
Birney Park
Farragut Sch
Immanuel Sch
City Hall
Tower
Kolb Sch
Holy Trinity Sch
St Hedwig Sch
Zion Sch
Mercy Hospital
St James Sch
Lincoln Sch
St Stanislaus Sch
Garfield Sch
Fremont Sch
MacGregor Sch
Trinity
OLD INDIAN TREATY BDY
PORTSMOUTH TWP
Ground
Drain
CORPORATE BOUNDARY
EUCLID AVE
WOODBRIDGE AVE
MOUNTAIN
KIESEL
JOHNSON
DEAN
HENRY
WENONA
WALNUT
STATE
CENTRAL
SMITH
SIDNEY
MOSHER
HART
NORTH UNION
FLORENCE
SOUTH UNION
OHIO
MIDLAND
JANE
JENNY
THOMAS
FISHER
CRUMP
IONIA
CALUMET
OSAGE
ERIE
ARBOR
WATER
WASHINGTON
JEFFERSON
COLUMBUS
WOODSIDE
PENN
CENTRAL
CENTER
MCKINLEY
GRANT
JACKSON
SHERMAN
LINCOLN
BROADWAY
GARFIELD
MADISON
LAFAYETTE
FREMONT
ROAD
17
20
21
22
28
29
32
33

## SITE HISTORY

The Amdura site presently occupies approximately 40 acres adjacent to the Saginaw River as it flows through Bay City, Michigan immediately south of the central business district (Figure 1). The site has been occupied continuously since shortly after the Civil War. The first permanent business to occupy the site was a hardware store sometime in the mid- to late 1800's. It later specialized in the manufacture of saddles, harnesses, and other leather equipment used in the horse trades. Portions of the present day storage building (western sector) are the remanent of the old hardware facility and harness shop.

Subsequently a group of local businessmen pooled their resources and formed a company known as Industrial Works in the early part of this century. They manufactured cranes and associated equipment until sometime in the mid 1920's. At that time Industrial Works absorbed several smaller businesses and became Brown Hoist still associated with the crane manufacturing industry. It is during this period, the early 1920's, that most of the major buildings were erected on the site. The foundry building, pattern repair building, powerhouse, and portions of building 41 were all erected in this period immediately after World War I. Several other smaller buildings built during this period such as the bicycle storage, pattern shop, water purifying plant, and the carpenter shop have been razed.

The site was electrified and heated by steam driven generators in the powerhouse (the boilers are still present although not in service). Coal was used to fire the boilers for steam generation. Water was delivered to the powerhouse via a water-intake channel that ran across the north edge of the property. The channel has been filled and the intake crib for the water purifying plant is all that remains.

Brown Hoist changed its name to Industrial Brown Hoist Corporation sometime in the ensuing 30 years. In 1953 Industrial Brown Hoist was bought by Pennsylvania Coal & coke Corporation. It was again sold in 1957 to American Steel & Pump Corporation, and again to Samuel Cohen in 1959. Finally, in 1960 Industrial Brown Hoist Corporation was sold to American Hoist & Derrick Company (American Hoist). At that time the Foundry was operated by a firm called Detroit Grey Iron. In the late 1960's American Hoist had to resort to a lockout to force Detroit Grey Iron from the property. At that time American Hoist took over the foundry and converted into an manufacturing and assembly area for their crane booms. There has been no foundry operations on the site since this time.

American Hoist remained active on the site through the 1960's and 1970's, operating 24 hours a day-seven days a week during the mid- to late 1970's and the North Sea oil boom. Early in the

1980's they started moving their operation to facilities in South Carolina, and finally closed their doors in 1983. Since that time there has been no crane manufacturing activities on the site, however, some large sections of booms remain and are shipped out as orders are filled. Additionally many of the patterns in the Pattern Storage and Repair Buildings are stilled housed on site and occasionally several are shipped to the South Carolina facility.

Presently, the portions of the site are sublet out to several small businesses. Building 42, the paint building, and the sand blasting building are leased to Promatec, Inc. Promatec is involved in duct work construction for the Midland Nuclear Plant conversion. There is a small fork truck repair company located in the south end of Building 42. The old foundry is being leased to GLIC Environmental also known as Main Environmental. GLIC is using the foundry for vehicle storage.

Although power to the site is supplied by the local utility company the power house is still in operation. Several generators are on line producing D.C. for use by the large overhead cranes in Buildings 41 and 42. Heating is accomplished by individual gas burners in various sections of each of the major buildings except the Pattern Storage and Pattern Repair Buildings. These buildings have never been heated.

The physical boundaries of the site remain today much the way they have for the last 70 years. The history of heavy industrial development throughout the Saginaw River Valley suggests that the site was filled along the river bank to create a more stable parcel for site development. This condition was common up and down the river valley as low ground was filled with foundry sands from the many foundries that were part of the automobile industry. While no information exist concerning the site modification activities over the past 120 years, by 1920 the site had been modified into its present configuration. The only major modification of the site was the filling of the water-intake channel along the north boundary of the property.

Other site modification activities were of a more temporary nature. When American Hoist took control of the company, they made a large excavation in the soils near the river. This was done as a way of testing the cranes as they were prepared for shipment. As a result of these test diggings this large hole became an on-site landfill for the solid wastes generated by the on-site manufacturing activities. However, physical no evidence of the pit exists today.

## AERIAL PHOTOGRAPHY

A review of historic aerial photography of the site can yield past land use practices and may reveal areas of possible

environmental contamination. Aerial photography of the Amdura site was secured from the Michigan Dept. of Natural Resources, Land and Water Management Division. Flights available were flown in 1977 and 1987. Stereoscopic pairs with a scale of 1" = 200 feet of the site were reviewed.

Additional photography was available from the U.S. Dept. of Agriculture, Agriculture Stabilization and Conservation Service. Flights available from the ASCS were flown in 1950, 1955, 1963, 1969, 1977, and 1988. Prints from the first four flights were ordered in stereoscopic pairs at a scale of 1' = 400'. At the present time this order has been not been received. ASCS has indicated that it will require approximately three more weeks to research and complete the order.

Aerial photography was also reviewed at the Center For Remote Sensing, Michigan State University to secure additional flights. The Center is a repository for old ASCS photography and they had aerial coverage from 1938, 1950, 1955, 1963, 1969, and 1978. A check of the files revealed that there were no prints available for any of the flight years except 1978. However, the photomosaics were available for 1938, 1950, 1955, and 1963. These prints are very small scaled and serve as an index for the entire flight series. The appropriate mosaics from the four years were enlarged sufficiently to yield a photo with a scale of approximately 1" = 400'. This technique yielded photographs of poor quality. Although the site, major building, and other landmarks are discernable, the finer details are lost in the grain of the print.

As a result of the above activities aerial photography from 1938, 1950, 1955, 1963, 1977, and 1987 were analyzed for the appearance of any land-use activities that would suggest the presence environmental liabilities. As mentioned above the photography from the photomosaics yielded little information. The following observations were made from the photography.

**1938:**

- The physical size of the site is much as it is today
- Sites north and south of the Amdura site are undeveloped
- The Storage Building is in two independent sections, the center section has not been built
- There is no 120,000 gallon water storage tank at the northeast corner of the site
- There is no evidence of the water intake channel along the north boundary of the site (however, it is present on 1921 blueprints of the site)
- There is no evidence of any large pit in the vacant portion of the site (southwest corner)
- Building 41, west portion of Building 42, the Foundry, Pattern Repair building, the Pattern Shop, and the Power House are all visible

**1950:**

- o Sections of the Storage Building are joined into one building
- o The Foundry, Building 41, Building 42, the Pattern Repair building, the Pattern Shop, and the Powerhouse are all visible
- o The 120,000 gallon storage tank is not present
- o Water intake channel present
- o No evidence of any large pit

**1955:**

- o The Foundry, Building 41, Building 42, the Pattern Repair, Pattern Storage, Pattern Shop, and the Powerhouse are visible (expansion to Building 42 complete extending the size of the building to its present day dimensions)
- o Water intake channel visible
- o No 120,000 gallon water storage tank
- o No evidence of any large pit

**1963:**

- o All major buildings are visible
- o Sand Blasting and Paint Buildings are not visible (have yet to be erected
- o Water intake channel visible
- o 120,000 gallon water storage tank may be present
- o No evidence of any large pit

**1977:**

- o 120,000 gallon water storage tank present
- o All major buildings present (Paint Shop and Sandblasting Building visible next to old foundry)
- o Water intake channel filled
- o Vacant area covered with storage sheds and stacks of stock materials
- o Many railroad tracks crisscross the site
- o The soils around the foundry are dark (foundry sands)
- o No evidence of any large pit

**1987**

- o Asphalt plant in the center of the vacant area
- o Several large piles of aggregate near the asphalt plant
- o Remnants of the railroad tracks on portions of the site
- o No evidence of any large pit

Review of the available aerial photography indicate no major areas of possible environmental contamination on the Amdura site. The general appearance of the site was one of orderliness. There was no indication of any plant operations that would suggest anything less than industry standards.

MWRI will submit an Addendum to this report as soon the additional air photography from the ASCS arrives and has been analyzed. This photography will be on a scale sufficient to better

interpret the site activities during the periods the flights were flown.

## SOIL QUALITY

The investigation of the site soils was undertaken as a result of the foot survey. Sampling areas were selected based of visual observations.

### Boring Locations

Sixteen locations were selected (Figure 2) around the site for soil borings (SB) and sample collecting. SB-1 and SB-2 are located near the former site of an underground storage tank (UST). These samples may have contained volatile organic compounds (VOC's) specifically the purgeable aromatic compounds common in vehicle fuels. SB-3 and SB-4 are located west of a steel water tank whose product storage history was unknown and which may have once contained petroleum or other hydrocarbon products. SB-5 and SB-6 are located in the spent solvent storage area where the presence of chlorinated VOC's was suspected. SB-7 and SB-8 are located northwest of Building 42 in the waste loading zone. SB-9 through SB-14 are in the fill area underlain by some ten feet of foundry sands and are thought to contain heavy metals. SB-15 and SB-16 are near the baghouse north of Building 42. These soils were potentially contaminated with heavy metals. Analysis was also completed on soil samples retrieved from the monitor well boreholes, discussed in the Groundwater Quality Section, along the north side of Building 41 (MW-7 and MW-8, Figure 2).

Two soil samples were collect at locations SS-1 and SS-2 (Figure 2) along the south perimeter of the site. The foot survey revealed large amount of solid wastes disposed in this area. These wastes contained welding rods along with cinders and other rubble.

### Drilling and Sampling Methods

Two split-spoon samples were taken from each soil boring location using the ASTMD-1586 method. Split-spoons are a soil sampling device consisting of a long barrel and a valve on the end which opens to allow soil to enter but not to leave. The spoons are hammered into the ground with the drilling rig and 140 lb weight. When they are recovered from the ground the valve is unscrewed from the end and the spoon is split down the middle to expose the collected material.

Boring logs were kept for each hole. The logs record changes in soil-type, depth of the boring, split-spooned intervals, number of blows per split-spoon sample, and other boring data. Soil boring logs are found in Appendix A. The first split spoon sample

was from the surface to a depth of two feet. After the first spoon was driven and retrieved, drilling continued to a depth of four feet using four and a half inch solid stem augers. The second split spoon was taken from four to six feet. In SB-7 use of the solid stem augers was abandoned when borehole cave-in persisted. The switch to four and half inch o.d. hollow stem augers allowed a spoon to be driven inside the augers with out disturbing the boring walls, allowing recovery of a representative sample.

To prevent cross-contamination between boring locations, augers, split-spoons and other tooling were decontaminated with a steam cleaner using high pressure hot water and detergent. This method will volatilize any VOC's and remove any soils which may contain heavy metals.

Three samples were taken from each split spoon. Different analytical procedures were preformed on each. The first sample was collected in a 40 ml glass vial, the cap was fitted with an inert septum. These were analyzed for purgeable halocarbons and purgeable aeromatics, using EPA methods 601 and 602 respectively. The second sample was collected in a 500 ml plastic jar. These were analyzed for the presence of total heavy metals, using EPA method 200.7 for the 13 priority pollutant metals. The samples collected were stored on ice until delivery to MWRI's contract laboratory, Fire and Environmental Consulting Laboratories, Inc. of East Lansing, Michigan. The third sample was placed in an air-tight plastic dish. These containers were half filled with the retrieved soils. Any VOC's within the soils would volatilize into the head space of the container. At the end of the day, the head space air in these containers was analyzed for VOC's by using an HNu Model 101 Photo Ionizing Detector (PID). The PID's probe is placed in the container for about 30 seconds. The meter records total VOC's in parts per million (ppm). These data are placed in Appendix B.

Samples from locations SS-1 and SS-2 were collected at the ground surface. After the top six inches of soil were removed the sample was collected and placed in a 500 ml plastic container. As a result of the presence of welding rod wastes in this location of the site, these two samples were analyzed for total heavy metals only. These samples were also placed on ice and delivered to the contract laboratory.

**Analytical Results and Discussion**

Thirty-one samples were collect and analyzed from the sixteen soil boring locations. Only one sample was collected at SB-1 due to the proximity of the ground water. A total of four samples were collected for analysis from MW-1, MW-2, SS-1, and SS-2. The analytical results from the 601 and 602 scans for all soil samples are tabulated in Table 1. The total heavy metal analytical results from all the sampling locations are tabulated in Table 2.

**Purgeable Halocarbons**

1,1,1-trichloroethane (TCA) was found in the soils at the location of the underground storage tank, SB-1 and SB-2 at both depths; down-gradient of the water storage tank, SB-3 and SB-4 at both depths; in the vicinity of the solvent storage area, SB-5 and SB-6 at both depths; and at SB-7 near the waste loading area of Building 42 at both depths (Table 1). 1,1,2,2-tetrachlorethane was found at SB-8 in the surface sample and at SB-14 also in the surface sample. Bromoform was also found at SB-8 at the surface.

TCA and tetrachloroethane are common industrial chlorinated solvents used primarily in the degreasing of metal. Along with tetrachlorethene these compounds account for more than ninety percent of the solvent/degreasing market. The presence of these two compounds at the Amdura site is no surprise and was expected. Bromoform is used in the separation of mixtures of different minerals. Its presence on the site can be tied directly to the foundry operations.

The concentrations of the compounds are low and range from 30 parts per billion (ppb) form bromoform at SB-14 to 270 ppb at SB-5 (surface). Although these concentrations are low they will require remediation by the Michigan Dept. of Natural Resources. The extent of the remediation will be based on the extent of the contamination. However, the MDNR will probably require a closure standard of nondetect or below detection limit (BDL) for these compounds. The physical properties of these compounds, ie. their vapor pressure at soil temperatures, lend themselves well for recovery by vapor extraction. Additional sampling will be required in the areas of the underground storage tank, water storage tank, spent solvent storage area, and the northwest corner of building 42 to document the extent of the contaminated area. These data should be collected and reviewed in conjunction with the results from the soil gas survey discussed below.

Most chlorinated compounds cannot be landfilled depending on their use, status when released, source, generator, and unless the contaminated soils are below the toxic compound leachate potential (TCLP), a level set by the US EPA in response to the Resource Conservation and Recovery Act (RCRA). The TCLP's for TCA is 0.41 mg/l (or a concentration not to exceed 8.2 mg/l for a soil concentration). Bromoform and tetrachloroethane at this time have no established TCLP's and are not on the landfill band list. Therefore, contaminated soils at any concentrations can be deposited at landfills.

If remediation is required at the Amdura site two options exist for treatment: vapor extraction and landfilling. The technology best suited for the site will depend on the extent of the contamination and regulatory requirements.

**Purgeable Aromatics**

No aromatic compounds were detected at any of the sampling locations (Table 2). These data are consistent with the past site activities in the area of vehicle fuels. The only known underground storage tank was located between SB-1 and SB-2 (Figure 2). It has, since American Hoist closed in 1983, been excavated. The only other vehicle fuel storage tank was a small above ground tank at the southwest corner of Building 41.

**Heavy Metals**

Thirty-five samples were collected and analyzed for total heavy metal concentrations of the 13 priority pollutant metals. Table 2 tabulates the results of the analyses. Nine metals were found in varying concentrations at various locations throughout the site. Of these nine metals, five were present in all or nearly all of the soil samples: chromium, copper, lead, nickel, and zinc. Concentrations ranged from 0.4 mg/kg to 223,000 mg/kg.

The metals appear to ubiquitous throughout the site soils. This condition is a result of the presence of foundry sands throughout the site. Foundry sands generally have concentrations of heavy metals as a result of the mold forming process. No apparent pattern emerges from these data for all the metals. An area near the northwest corner of Building 42 (Figure 2 waste loading area) and the area around SB-13 have the higher concentrations for the five metals mentioned above.

The site will be managed for remediation based on the potential danger of the metal to the environment. The US EPA has set standard tests for measuring the toxicity of a compound based on its leachability. The EP Toxicity test for metals gives the concentration of the leachable metal in mg/l that can then be compared to a concentration value which has been deemed safe. An EP Tox leachate analysis was conducted on the samples containing the highest concentrations of chromium, copper, lead, nickel, and zinc. Table 3 gives the results for the analysis.

Of the five metals chromium and lead had no measurable concentrations in the leachate. Action levels for these two metals are 5.0 mg/l set by the US EPA and the State under Act 64. These two metals are the two which will be of greatest concern to the MDNR. The other metals, copper, nickel, and zinc have no action levels and are not regulated, except nickel in the plating industry. Any heavy metals remediation that will require landfilling will have to take place before May 1990 to avoid undergoing some form of pre-treatment as the 3rd, 3rd regulations go into effect.

Further heavy metals analysis may be required by the regulators to document the extent and severity of the contamination. The results of the EP Tox tests suggests that an involved remediation will not be required. A practical solution

may be to cap the site with an impervious layer of soils.

## GROUND WATER QUALITY

### Monitor Well Locations

Seven monitor wells (MW) were installed, located in Figure 2, on the property to document the quality of the ground water as it entered the site (hydraulically up-gradient) and as it exited (hydraulically down-gradient). Monitor wells MW-1, MW-2 and MW-3 were installed up-gradient of the site along Saginaw Street, and monitor wells MW-4, MW-5, MW-6, and MW-7 were installed along the Saginaw River (Figure 2). The samples recovered from these seven monitor wells were analyzed for purgeable halocarbons and purgeable aromatics using EPA scans 601 and 602 and total heavy metals (for the 13 priority pollutant metals), using EPA scan 200.7.

### Installation Methods

Monitor wells MW-1, MW-2, MW-3 and MW-4 were drilled to an average depth of eleven feet, monitor well MW-5 to a depth of 13 feet, and monitor wells MW-6 and MW-7 to a depth of twenty feet. The varying depths of the monitor wells along Saginaw Street is in part due to the lack of a discrete saturated zone within the dry compact clays encountered there. Although no predominantly sandy strata were encountered the wells produced water, mostly likely via fractures in the clay.

Four and a half inch hollow-stem augers were used to drill and install the monitor wells. During the drilling phase split spoon samples were taken at various depths in order to identify a water producing formation. Once found, drilling continued approximately three to four feet into the saturated zone. The hollow stem augers were left in the hole during well installation to prevent borehole collapse. Before completing a well, the static water level was determined by lowering a fiberglass tape down the augers and recording both hole depth and amount of standing water in the hole.

The wells casings consisted of a three-foot section of stainless steel screen. The slot opening was 0.007". Coupled to the screen was a Schedule 80 PVC riser pipe whose length was equal to the total depth of the well. This insured that the casing rose three feet above the ground surface.

The assembled casing was lowered down the borehole inside the hollow stem augers. The well borehole annulus around the screen was backfilled with quartz sand, in order to minimize fine-grained particles from entering the well screen. The sand pack was added until it was about two feet above the top of the screen. Once the well is sand-packed and the augers are pulled out of the hole, about one foot of dry bentonite clay pellets were added down the

hole. On top of the dry bentonite, the annulus is grouted with a bentonite slurry to within two feet from grade. The remaining annulus is grouted with ready-mix concrete, into which a locking steel well-head cover was set.

**Monitor Well Development**

A well that has been properly developed is free from the finer grained materials present the few inches surrounding the well screen. Development serves two purposes. The most important is to remove fine-grained particles on which organic compounds and dissolved metals can be adsorbed, which can result in inaccurate analytical results. Secondly, in the lab, the liquid being injected into a gas chromatograph must be free of suspended particles.

A manually-operated positive displacement pump was used on MW's 1, 2, 3 and 4. These wells are located next to the Saginaw River and produce large quantities of water. The water is pumped continuously to the surface. As water is removed from the annulus the flow of groundwater into the well pulls the finer particles along. This process is continued until no turbidity is observed in a sample. These wells pumped from fifteen to thirty gallons before developing completely.

The method used in developing low volume monitor wells is bailing. This was done to MW's 5, 6 and 7, which were not capable of sustaining sufficient flow for the pump. The bailer used is a 1.7-inch OD by three-feet PVC tube with a ball and seat in the bottom. As it is lowered into the water the ball rises and the tube fills with water the ball sinks back into the seat trapping water. The bailer is lifted and emptied intermittently, once enough water has accumulated in the screen to be removed. This process is continued until extracted water is non-turbid. About ten gallons of water were removed from each well before developing completely.

**Sampling Monitor Wells**

Samples were taken immediately following the development of the monitor wells. The samples were to be tested for total heavy metals, EPA method 200.7, and volatile organic compounds, EPA methods 601 and 602.

**Analytical Results and Discussions**

Seven ground water samples were collected and analyzed from the seven monitor wells as shown in Figure 2. The analytical results for the purgeable halocarbons and purgeable aromatics are shown in Table 4. The analytical results for the total heavy metals are tabulated in Table 5.

**Purgeable Halocarbons and Purgeable Aromatics**

Only chloromethane the least toxic of all chlorinated hydrocarbons was found at 0.02 ppm in MW-3. Chloromethane in used as a solvent, refrigerant and in the manufacture of tetraethyl lead (a gasoline additive). Additional investigation in the vicinity of MW-3 should be completed to document the extent of the chloromethane plume. Results should be reviewed along with the results of the soil gas survey discussed below. Remediation of ground water contamination associated with chlorinated hydrocarbons would require a recovery well(s) and the treating the water through liquid phase carbon to remove the compounds. At 0.02 ppm of chloromethane the pump and treat process would be rapid and efficient.

**Heavy Metals**

Zinc and nickel were found in all the up-gradient well in concentrations in the ppb range. Up-gradient monitor wells monitor ground water **before** it enters the site. Zinc was also found in all the down-gradient wells along the Saginaw River. Nickel was also found MW-1 at the southwest corner of the site. These compounds appear to be common in the ground water of the region and at these concentrations will represent background levels.

Mandatory remediation of the ground water for metals has several option. The most common (acceptable to the regulatory agencies) treatment technologies for heavy metals in ground water involves pumping and treating. The most common of these methods is the pumping ground water from a recovery well and adjusting the water to a high pH to precipitate out the metals. Other options include specially designed resin beds and biofilters.

## WATER INTAKE CRIB

**Crib Location**

The old water intake crib is located to the north of the site (Figure 2). The crib has about ten feet of standing water in it. One sample was taken and analyzed using EPA method 601, 602 and 200.7. The pit was sampled using a Kemmerer style sampling bottle. This sampling device allows a sample to be collected at a discrete depth without atmospheric interference. The sampling port on the bottom was open and poured directly into a 40 ml vial with zero head space. This was to insure that any volatiles in the water do not escape.

**Results and Discussion**

The crib is all that is left of the water intake system used to supply water to the now razed water treatment facility for steam generation. Water now present in the crib was thought to be a mixture of precipitation and ground water. The water was

characterized by high clarity, no color, and profuse growths of algae.

Analysis of the sample shows no purgeable halocarbons or aromatic compounds or heavy metals are in the waters contained in the crib. These data are tabulated in Tables 6 and 7 and also in Appendix E. These data compared to the data from the ground water investigation (Tables 4 and 5) indicates that communication between the ground water and the ponded water in the crib is minimal to non-existent. All the ground water samples contained concentrations of zinc and three out of the seven wells had concentrations of nickel.

## SOIL GAS SURVEY METHOD AND TECHNIQUES

### Introduction

A soil gas survey was performed on the American Hoist site in Bay City Michigan during the period from August 9 through 18, 1989. The objective of the survey was to screen subsurface soils at the site for presence of volatile-phase organic chemicals associated with known activities at the site. The survey technology is particularly sensistive to solvents and thinners used for parts degreasing and painting operations, both of which were conducted at the Amdura site. These organic chemicals are highly mobile in soils and groundwater, and are subject to regulatory control by the State of Michigan and by the U.S.E.P.A.

Solvents and thinners are broadly classed as volatile organic compounds, or VOC's. VOC material spilled into soils creates a wetted soil volume at the spill point, and a portion evaporates to create a much larger soil volume impacted by vapors. Conventional soil assessment programs are based on collection of small-volume soil samples which are transported to a laboratory for analysis of liquid-phase VOC's. Conventional analysis is not sensitive to soil vapors. Lack of sensitivity increases the likelihood that VOC's will be present but overlooked. Soil gas surveys increase the likelihood of detecting VOC's spilled into soils.

### Methods

The survey technique used at the Amdura site collected samples of air from the soil pore space through a stainless steel probe driven into the ground. Soil gas vapors were drawn through the probe, directly into a Foxboro 128 Organic Vapor Analyzer (OVA) equipped with a flame ionization detector (FID). The detector was calibrated daily against a 95 ppm methane standard, and zeroed against atmospheric air. The daily drift of the instrument was very small, less than 5% over the sampling interval. This detector system is sensitive to regulated VOC's as well as naturally occuring compounds such as methane. This field survey method may

TABLE 6. ANALYTICAL RESULTS FOR PURGEABLE HALOCARBONS & PURGEABLE AROMATICS FROM THE SURFACE WATERS (WATER TREATMENT CRIB)

| PURGEABLE HALOCARBONS | Mg/L |
|---|---|
| Chloroethane | - |
| Trichlorofluoromethane | - |
| 1,1-Dichloroethene | - |
| Methylene chloride | - |
| trans-1,2-Dichlorethene | - |
| 1.1-Dichloroethane | - |
| Chloroform | - |
| 1,1,1-Trichloroethane | - |
| Carbon tetrachloride | - |
| 1.2-Dichloroethane | - |
| Trichloroethene | - |
| 1,2-Dichloropropane | - |
| Bromodichloromethane | - |
| 2-Chloroethylvinyle ether | - |
| cis-1,3-Dichloropropene | - |
| trans-1,3-Dichloropropene | - |
| 1,12-Trichloroethane | - |
| Tetrachloroethene | - |
| Dibromochloromethane | - |
| Chlorobenzene | - |
| Bromoform | - |
| 1,12,2-Tetrachlorethane | - |
| (m)-1,3-Dichlorobenzene | - |
| (p)-1,4-Dichlorobenzene | - |
| (o)-1,2-Dichlorobenzene | - |
| PURGEABLE AROMATICS | |
| Benzene | - |
| Toluene | - |
| Ethyl Benzene | - |
| p,m-Xylene | - |
| o-Xylene | - |

TABLE 7. ANALYTICAL RESULTS FOR HEAVY METALS FROM THE SURFACE WATER (WATER TREATMENT CRIB)

| | Mg/L |
|---|---|
| Antimony | - |
| Arsenic | - |
| Beryllium | - |
| Cadmium | - |
| Chromium | - |
| Copper | - |
| Lead | - |
| Mercury | - |
| Nickel | - |
| Selenium | - |
| Silver | - |
| Thallium | - |
| Zinc | - |

TABLE 3. EP TOXICITY FOR FIVE SELECTED HEAVY METALS FOUND IN THE SOIL SAMPLES

| SAMPLE | SB-7 | SB-7 | SB-13 | SB-14 |
|---|---|---|---|---|
| LOCATION | SS-12 | SS-13 | SB-24 | SS-27 |
| CHRONIUM | <0.02 mg/l | | | |
| COPPER | | | 5.64 mg/l | |
| LEAD | | | <0.04 mg/l | |
| NICKEL | | | | 0.10 mg/l |
| ZINC | | 2.12 mg/l | | |

TABLE 5. HEAVY METAL ANALYTICAL RESULTS FROM THE GROUNDWATER

CONCENTRATIONS REPORTED IN Mg/L

| | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 | MW-7 |
|---|---|---|---|---|---|---|---|
| Antimony | - | - | - | - | - | - | - |
| Arsenic | - | - | - | - | - | - | - |
| Beryllium | - | - | - | - | - | - | - |
| Cadmium | - | - | - | - | - | - | - |
| Chromium | - | - | - | - | - | - | - |
| Copper | - | - | - | - | - | - | - |
| Lead | - | - | - | - | - | - | - |
| Mercury | - | - | - | - | - | - | - |
| Nickel | 0.04 | - | - | - | 0.06 | 0.02 | 0.07 |
| Selenium | - | - | - | - | - | - | - |
| Silver | - | - | - | - | - | - | - |
| Thallium | - | - | - | - | - | - | - |
| Zinc | 0.06 | 0.06 | 0.04 | 0.02 | 0.08 | 0.05 | 0.03 |

TABLE 4 PURGEABLE HALOCARBON AND PURGEABLE AROMATIC ANALYTICAL RESULTS FROM THE GROUNDWATER IN MONTIOR

CONCENTRATIONS IN mg/l

| PURGEABLE HALOCARBONS | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 | MW-7 |
|---|---|---|---|---|---|---|---|
| Chloroethane | - | - | 0.02 | - | - | - | - |
| Trichlorofluoromethane | - | - | - | - | - | - | - |
| 1,1-Dichloroethene | - | - | - | - | - | - | - |
| Methylene chloride | - | - | - | - | - | - | - |
| trans-1,2-Dichlorethene | - | - | - | - | - | - | - |
| 1.1-Dichloroethane | - | - | - | - | - | - | - |
| Chloroform | - | - | - | - | - | - | - |
| 1,1,1-Trichloroethane | - | - | - | - | - | - | - |
| Carbon tetrachloride | - | - | - | - | - | - | - |
| 1.2-Dichloroethane | - | - | - | - | - | - | - |
| Trichloroethene | - | - | - | - | - | - | - |
| 1,2-Dichloropropane | - | - | - | - | - | - | - |
| Bromodichloromethane | - | - | - | - | - | - | - |
| 2-Chloroethylvinyle ether | - | - | - | - | - | - | - |
| cis-1,3-Dichloropropene | - | - | - | - | - | - | - |
| trans-1,3-Dichloropropene | - | - | - | - | - | - | - |
| 1,12-Trichloroethane | - | - | - | - | - | - | - |
| Tetrachloroethene | - | - | - | - | - | - | - |
| Dibromochloromethane | - | - | - | - | - | - | - |
| Chlorobenzene | - | - | - | - | - | - | - |
| Bromoform | - | - | - | - | - | - | - |
| 1,12,2-Tetrachlorethane | - | - | - | - | - | - | - |
| (m)-1,3-Dichlorobenzene | - | - | - | - | - | - | - |
| (p)-1,4-Dichlorobenzene | - | - | - | - | - | - | - |
| (o)-1,2-Dichlorobenzene | - | - | - | - | - | - | - |
| **PURGEABLE AROMATICS** | | | | | | | |
| Benzene | - | - | - | - | - | - | - |
| Toluene | - | - | - | - | - | - | - |
| Ethyl Benzene | - | - | - | - | - | - | - |
| p,m-Xylene | - | - | - | - | - | - | - |
| o-Xylene | - | - | - | - | - | - | - |

TABLE 2. CONT.

| | SB-10 SS-18 | SB-10 SS-19 | SB-11 SB-20 | SB-11 SS-21 | SB-12 SS-22 | SB-12 SS-23 | SB-13 SS-24 | SB-13 SS-25 | SB-14 SS-26 | SB-14 SS-27 | SB-15 SS-28 | SB-15 SS-29 | BS-16 SS-30 | SB-16 SS-31 | MW-6 | MW-7 | 1S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PRIORITY POLLUTANT METALS | | | | | | | | | | | | | | | | | |
| Antimony | - | 0.7 | - | - | 1.6 | - | 37.5 | 0.8 | - | 4.4 | - | - | - | - | - | - | - |
| Arsenic | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Beryllium | - | - | - | - | - | - | 0.8 | - | - | - | - | - | - | - | - | - | - |
| Cadmium | - | - | - | - | - | - | 0.8 | - | - | - | - | - | - | - | - | - | - |
| Chromium | 4.9 | 4.9 | 2 | 2.8 | 70.1 | 5.2 | 13.6 | 10 | 2.5 | 146 | 24.2 | 12.9 | 9.8 | 9.8 | 5.5 | 8.2 | 7.3 |
| Copper | 17.2 | 62.2 | 12.4 | 13.4 | 176 | 37.7 | 22300 | 102 | 11.3 | 226 | 30 | 46.9 | 314 | 25 | 5.5 | 4.8 | 22.1 |
| Lead | 14.3 | 38.8 | 4.7 | 7.1 | 30.6 | 13.4 | 1580 | 14.6 | 6.46 | 29 | 57 | 22.8 | 61 | 14 | - | - | 39.2 |
| Mercury | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Nickel | 3 | 4.4 | 1 | 2.8 | 106 | 8.5 | 26.3 | 62.9 | 11.9 | 135 | 18.5 | 20.4 | 6 | 11.1 | 4.2 | 4.1 | 6.4 |
| Selenium | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Silver | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Thallium | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Zinc | 18 | 45.9 | 11.1 | 12.1 | 12.1 | 27.7 | 15.5 | 20.6 | 10 | 52.7 | 336 | 25.8 | 30 | 21 | 15 | 17.6 | 221 |

TABLE 2. HEAVY METALS ANALYTICAL RESULTS FROM THE SOIL SAMPLES. CONCENTRATIONS REPORTED IN Mg/L

| | SB-1 3-5 | SB-2 0-2 | SB-2 4-6 | SB-3 SS-4 | SB-3 SS-5 | SB-4 SS-6 | SB-4 SS-7 | SB-5 SS-8 | SB-5 SS-9 | SB-6 SS-10 | SB-6 SS-11 | SB-7 SS-12 | SB-7 SS-13 | SB-8 SS-14 | SB-8 SS-15 | SB-9 SS-16 | SB-9 SS-17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PRIORITY POLLUTANT METALS | | | | | | | | | | | | | | | | | |
| Antimony | - | 0.7 | - | - | - | - | - | - | - | - | - | 1.3 | 4.2 | - | - | - | - |
| Arsenic | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Beryllium | - | 0.4 | - | - | 0.5 | 0.4 | - | - | 0.7 | - | 1 | - | 0.4 | 0.7 | - | - | 1.5 |
| Cadmium | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Chromium | 7.1 | 3.3 | 5.9 | 6.3 | 7.6 | 9 | 1.2 | 5 | 7.4 | 13.4 | 61.5 | 178 | 23.5 | 39.4 | 5.9 | 10.7 | 32.1 |
| Copper | 23.8 | 49.6 | 145 | 39.7 | 40.6 | 42.8 | 6.6 | 50 | 28.6 | 28.3 | 39.8 | 438 | 930 | 109 | 32.4 | 55.4 | 166 |
| Lead | 56.2 | 60.6 | 35.5 | 58.4 | 54.1 | 53.2 | 15.2 | 50.5 | 38.9 | 10.9 | 27 | 110 | 388 | 35.3 | 7.8 | 19.5 | 38.1 |
| Mercury | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Nickel | 5.3 | 4 | 10.6 | 6.1 | 8 | 8.2 | 2.4 | 6.6 | 12.1 | 15.4 | 27.5 | 126 | 58.5 | 24.6 | 7 | 15.1 | 31.6 |
| Selenium | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Silver | - | - | - | - | - | - | - | - | - | - | 0.3 | 1.2 | - | - | - | - | - |
| Thallium | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Zinc | 54.7 | 74.4 | 57 | 85 | 90.7 | 86.5 | 63 | 79.2 | 145 | 46 | 109 | 219 | 462 | 76.2 | 25 | 36.9 | 58.5 |

TABLE 1. CONT.

| | SB-9 SS-17 | SB-10 SS-18 | SB-10 SS-19 | SB-11 SS-20 | SB-11 SS-21 | SB-12 SS-22 | SB-12 SS-23 | SB-13 SS-24 | SB-13 SS-25 | SB-14 SS-26 | SB-14 SS-27 | SB-15 SS-28 | SB-15 SS-29 | BS-16 SS-30 | SB-16 SS-31 | MW-6 | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PURGEABLE HALOCARBONS | | | | | | | | | | | | | | | | | |
| Chloroethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Trichlorofluoromethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 1,1-Dichloroethene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Methylene chloride | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| trans-1,2-Dichlorethene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 1.1-Dichloroethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Chloroform | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 1,1,1-Trichloroethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Carbon tetrachloride | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 1.2-Dichloroethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Trichloroethene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 1,2-Dichloropropane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Bromodichloromethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 2-Chloroethylvinyle ether | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| cis-1,3-Dichloropropene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| trans-1,3-Dichloropropene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 1,12-Trichloroethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Tetrachloroethene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Dibromochloromethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Chlorobenzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Bromoform | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| 1,1,2,2-Tetrachlorethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| (m)-1,3-Dichlorobenzene | - | - | - | - | - | - | - | - | - | - | 0.04 | - | - | - | - | - | |
| (p)-1,4-Dichlorobenzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| (o)-1,2-Dichlorobenzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| PURGEABLE AROMATICS | | | | | | | | | | | | | | | | | |
| Benzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Toluene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| Ethyl Benzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| p,m-Xylene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| o-Xylene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

TABLE 1. PURGEABLE HALOCARBON AND PURGEABLE AROMATIC RESULTS FROM THE SOIL SAMPLES. CONCENTRATIONS REPORTED IN mg/kg.

| | SB-1 3-5 | SB-2 0-2 | SB-2 4-6 | SB-3 SS-4 | SB-3 SS-5 | SB-4 SS-6 | SB-4 SS-7 | SB-5 SS-8 | SB-5 SS-9 | SB-6 SS-10 | SB-6 SS-11 | SB-7 SS-12 | SB-7 SS-13 | SB-8 SS-14 | SB-8 SS-15 | SB-9 SS-16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PURGEABLE HALOCARBONS | | | | | | | | | | | | | | | | |
| Chloroethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Trichlorofluoromethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Methylene chloride | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| trans-1,2-Dichlorethene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.1-Dichloroethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Chloroform | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1,1,1-Trichloroethane | - | - | - | 0.14 | 0.21 | 0.21 | 0.20 | 0.27 | 0.18 | 0.13 | 0.15 | 0.09 | 0.11 | - | - | - |
| Carbon tetrachloride | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1.2-Dichloroethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Trichloroethene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloropropane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Bromodichloromethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2-Chloroethylvinyle ether | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| cis-1,3-Dichloropropene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| trans-1,3-Dichloropropene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1,12-Trichloroethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Tetrachloroethene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Dibromochloromethane | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Chlorobenzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Bromoform | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.03 | - | - |
| 1,1,2,2-Tetrachlorethane | - | - | - | - | - | - | - | - | - | - | - | - | - | 0.08 | - | - |
| (m)-1,3-Dichlorobenzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| (p)-1,4-Dichlorobenzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| (o)-1,2-Dichlorobenzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| PURGEABLE AROMATICS | | | | | | | | | | | | | | | | |
| Benzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ethyl Benzene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| p,m-Xylene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

appears to have leaked for quite a while. The area outside the wall by the machine is stained and adjacent to pads which may have held leaking drums. Leakage through 2 ft of cement in the buildings was found to be generally much smaller than the outside contamination. All other internal readings of the building subfloor and perimeter were among the lowest data collected on site. Building 42 contained rail tracks and very heavy cranes. Many places in the building had cement over 2 ft thick. A leaking sewer line running through the middle east to west had recently been shut off. Toilet odors were detected after drilling through the cement in that area and may have contributed to readings on the OVA.

**West Side Yard**

The large open space on the map was laced with foundry refuse and casting sands. Readings in these areas and near sand piles were fairly low @ 10-45 ppm. This material is not particularly high in volatile organics and washes well in the weather because it is so porous. These readings may represent runoff from other areas since the elevation is low here.

**Northwest Corner**

In the northwest corner of the site one high reading was obtained near the river by the dock. It was taken in the middle of a spot where grass does not grow, indicating that something may have been poured there. Other readings around the old foundry are relatively low.

**Water Intake Crib and North Side**

Two readings were taken near the ivy covered pump pit just west of the pattern storage buildings. They are 20 ppm and 5 ppm. The whole north side of the site was elevated less than the adjacent cement or gravel plant and some white runoff (presumably dust) had entered the Amdura site. Since the readings on the north side were so low it does not appear that any VOCs entered the site from the adjacent property.

**Parking Lot and Yard**

The parking lot in the northwest and area around the water tower yielded low readings although VOCs were detectable. At the site of the removed underground gas tank readings were low in the area where soil had been replaced. Only directly north, about 20 ft where soil had not been replaced, was a significant reading obtained, (22 ppm). The yard between the maintenance buildings and the pattern buildings showed all low readings.

**Maintenance Building**

Along the south wall of the maintenance building one significant reading of 300 ppm was taken. This value, like the one

useful in visualizing the data.

Interpretation of the data and maps is necessary to decide which areas may require different analytical techniques but the trends are clear.

**East of Building 41**

Figure 3 indicates three regions of heavy contamination focused in relatively tight patterns east of building 41. It appears that surface fuel oil or hydraulic oil spills were mostly immobilized due to the high clay content at this site. Obvious oil or fuel spills did not penetrate to nearby monitor wells.The clay is heavy in this area under much rust and foundry waste. An oily area directly beneath the old yard crane behind building 41 was presumed to be part of a leak from the crane. Most of the oil appears to be contained in a small cemented area with soil. Another oily area is under fresh gravel in the yard.

A reading of more than 1000 ppm was collected in an area where no odor or oiliness was detected east of building 41. The cattail area may have given a high reading due to anaerobic swamp gas generation.

A low reading was detected in an area of strong odor, nearest the east edge of the site. This may represent a heavy oil contamination associated with a heavy yard crane at this location. Further studies to understand the composition of the VOCs at these two areas are needed to determine the extent of contamination and identity of the contaminants.

**Southwest of Building 41**

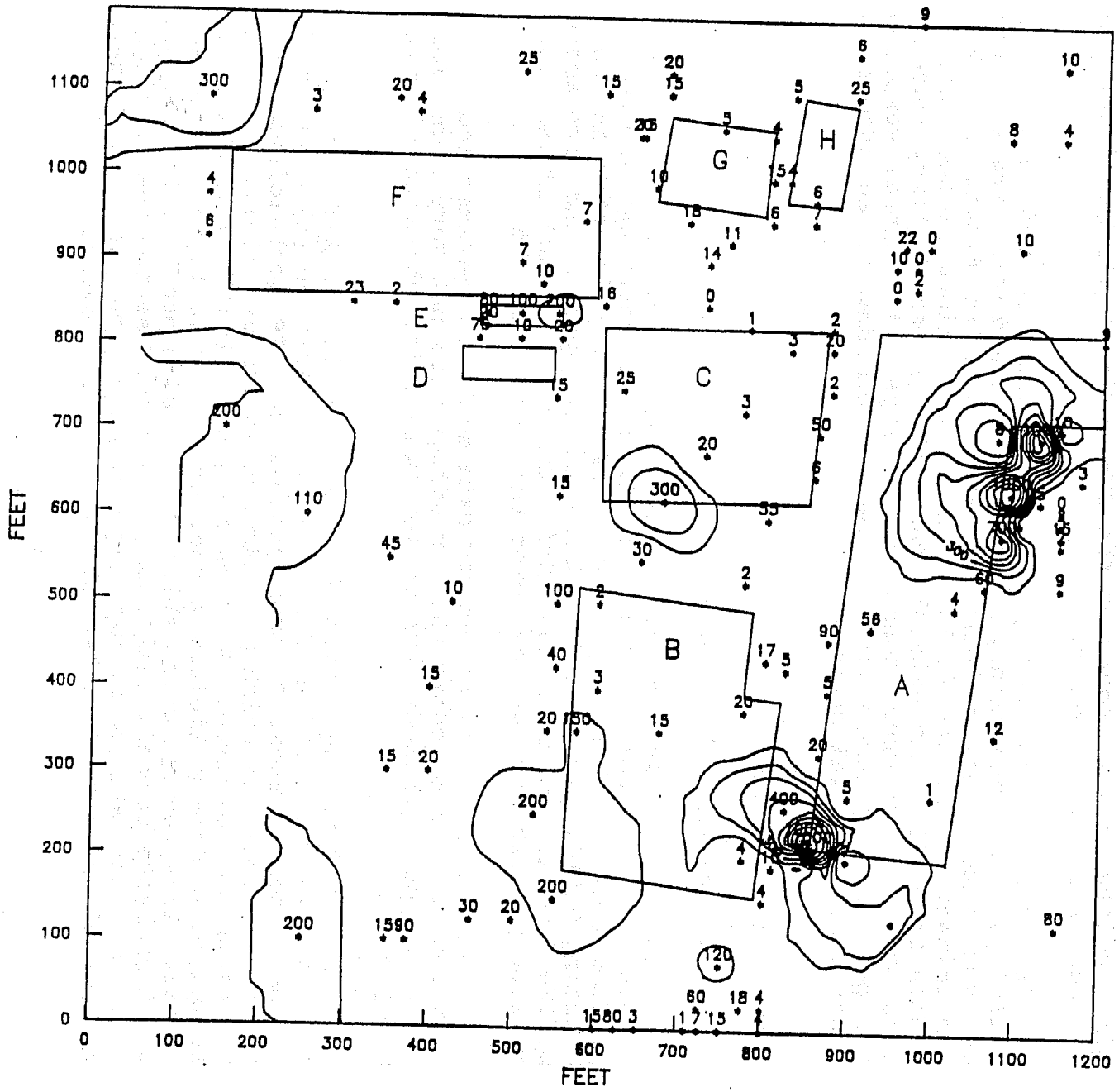
This area is contaminated where an above-ground fuel tank had been located. Oil stains appear on the pavement and in between railroad tracks in the low area between buildings 41 and 42. The direction of spread is more northerly into the low soil and not to south as the contour map indicates. The small circle in front of the large door at the south is a reading of 7 ppm through 2 ft of cement. The southern wing of the contour at the southwest corner is probably an artifact of the mapping process as is the wing of that same contour extending into the building 42 area. The spread of that plume is definitely to the north between the low lying tracks. A reading taken in the center of the contaminated zone @ 7 ft was still 800 ppm. This area appeared to be the most concentrated and widespread on the site.

**Building 42**

The west side of building 42 has enough high readings around the outside to indicate spillage along the wall. One high reading in building 42 was taken under stained cement near a machine which

TABLE 3

SOIL GAS SURVEY CONTOUR MA
Amdura Inc.
Bay City, Michigan




A – BUILDING 41
B – BUILDING 42
C – MAINTENANCE BLD
D – SANDBLASTING BLD
E – PAINT BLD
F – OLD FOUNDRY
G – PATTERN BLDS
H – POWER HOUSE

CONTOUR INTERVAL = 100ppm

indicate the potential existence of spilled materials, but does not identify compounds present.

The driven probe is the main method recommended by the American Petroleum Institute (API) for soil surveys and is the most commonly used technique used by most investigators. Dilution of the soil gas sample with air is one of the main problems with the method. Sustained readings of 5 seconds or more were taken as valid. Flame-outs and rapid needle deflections occurred where the soil was not sufficiently gas permeable. In these cases another nearby area was probed. Readings tended to tail of quickly due to a combination of the shallow soil depth (3 ft), minor leakage around the annulus which eventually dilutes the soil gas with clean air, and the lack of power of the OVA to draw soil gases through the denser or wetter soils.

A total of 157 data points were taken in and around all buildings, old foundations, railroad tracks and other areas on the 40 acre site. These locations are given in Figure 3. VOC contaminant vapors can follow both man made disturbances such as trench backfills, and natural zones of high permeability such as sand strata or fracture zones in dry clays. Additional sampling was performed in areas found to be contaminated in an effort to locatalize potential sources.

## Results and Discussion

### Raw Data and Contour Map

The raw data is presented in Appendix G. Coordinates listed in the X and Y columns are feet from the southwest corner as plotted from a site blueprint dated 1966. The paint shop and sand blasting buildings were not on the older blueprints and were added by MWRI to the contour map. Soil descriptions and stroke data reflect permeability at the point they were recorded.

Comments recorded in the raw data section sometimes indicated oily appearances or odors where readings were not very high. This indicates poor permeability or low volatility characteristic of heavy oils.

The contour map given in Figure 3 is an X-Y-Z computer generated representation of zones of contamination (Z) based on X-Y (feet) coordinates. It was prepared by MWR technicians using contouring software which projects average values of contamination at points not measured. Much as a topographical map of elevation is prepared from a limited number of measurements, this map was prepared from the raw data table. This version produced the picture which analysts from the site thought best represented the findings. There are limitations to any projections beyond the points where the actual data was collected, however the overall picture is

in the extreme northwest, was a single reading that did not have any nearby comparable reading. Old signs in the vicinity warning of fire hazards indicate that VOCs might have once been present in or outside of this building. Unfortunately, no readings could be taken in the building near the wall so it may be only a very localized spill that was detected. The soil directly beneath the maintenance building was very wet. Further study by soil boring or headspace analysis may reveal additional contamination at the south edge of the maintenance building.

**Building 41**

Building 41 appears to be the most contaminated in and around the large southern section. Much of the floor was badly stained and oily but readings were hard to get because of the wetness under the cement and heavy clay content. The two highest values obtained from under the floor were 56-60 ppm and other readings were low. The planned 10 readings inside the building could not be taken because of excessive soil moisture.

**Power House and Pattern Buildings**

No readings could be obtained from the basements of the power plant or the eastern pattern building because of standing water or muck directly under the foundation. Many readings were taken around the perimeters and low values were obtained. The western pattern building has a narrow crawl space under its floor which prevented sampling directly under it. We were informed that the pattern buildings were constructed to warehouse wooden patterns and there was no evidence of any solvent or chemical activity in them.

**Old Foundry**

Only 3 of the 10 projected data points could be collected from inside the old foundry building. All readings were under 10 ppm. An oily side building was found on the north edge of the building along with an oily concrete pad on the exterior. The floor was too thick to drill through and the outer pad too oily to stand on and drill through. Data from the edge of the soil adjacent to the building at the oily spots did not yield significant readings so it is likely that the soil in the area was not contaminated with VOCs.

**Paint Shop**

A small paint drum storage room attached to the southeast corner of the old foundry was tested at the low spot in the floor giving a reading of 16 ppm. The paint shop itself showed contamination focused in the northeast of the building and to the south outside between it and the sandblasting building. Some clay was found so that only 4 instead of 6 readings could be completed.

**Old Foundation and South Side**

South of building 42 is the foundation of a small building not found on the 1922 or 1966 blueprints. It is closest to a paint shop

in the 1922 blueprint. The soil there was contaminated up to 120 ppm in the vicinity of the railroad tracks. It is believed that the foundation is the focal point of the contamination. The southern end of the site was laced with railroad tracks which served the buildings. Readings as high as 200 ppm were obtained from low areas near or in between the tracks. Since there are no buildings in the area and the high readings are on or very near the track the high readings in this area may be due to leakage from the trains.

**Conclusions**

Data from the soil gas survey indicate several areas of concentration indicating the need for some form of treatment for volatile organics. The contour map and raw data listed here show the areas of concern around the site. As can be seen in the data, there are areas where the soil appears contaminated but readings were not possible due to the wetness or high clay content in the sample. These areas may be reexamined by another technique such as soil borings, headspace analysis, or simple extractions.

Data inside the buildings under the cement was difficult to obtain but extra investigation at the outside perimeters was conducted. The soil gas survey findings indicate that the paint shop, building 41, and the west side of building 42 show contamination which may extend under the floors of these buildings.

The areas around building 41 obviously contaminated with fuels or oils appear localized enough for simple removal while the paint shed, the yard near the river, and the old foundation at the south of the site may be amenable to some other technology for remediation.

## POLYCHLORINATED BIPHENYLS (PCB's)

Polychlorinated Biphenyls (PCB's) were widely used chemicals in industry due to their heat absorbing and flame retardant properties. They represent a class of chlorinated hydrocarbons all with the same or very similar ability to absorb heat. PCB's were used in everything from carbonless paper to insulating liquids. Their wide use in the industrial world has led PCB's to be one of the mostly widely distributed environmental pollutants. As a result it has become one of the most investigated and regulated substances in the industrial/commercial sector.

The Toxic Substances Control Act (TSCA) of 1976 (Public Law 94-469) required the Environmental Protection Agency to draft regulations on the control, marking, and disposal of PCB's. The Act banned the use of PCB's in any application but totally enclosed systems by October 1977, and banned the manufacture of the compounds by October 1978. PCB's have been the major components of most

nonflammable synthetic chlorinated hydrocarbon insulating liquids since 1932. Most of the PCB's manufactured in the United States since 1971 have been used in the electrical component industry with 70% in electrical capacitors and 30% used in transformers. PCB's manufactured under the trade name of Aroclor 1242 was the chief transformer oil used in this country until 1971. Since then Aroclor 1016 has been used for this purpose. Transformers containing PCB's are generally used near buildings where fire hazards existed from non-PCB oil transformers.

The July 7, 1989, site visit of the AMDURA facility indicated the presence of 31 oil containing transformers at various locations (nine different transformer stations or pads) around the site (Figure 4). All transformers were labeled as to the presence of PCB oil and at what concentration in accordance with TSCA. The inspections were conducted by Transformer service, Inc. out of Concord, New Hampshire. Table 9 gives the number of Transformers at each pad. The pad number corresponds to those in Figure 4. Visual inspection of the transformers revealed several areas where PCB oil may have escaped into the immediate environment. There was evidence of stained soils around some of the transformer pads, oil stained concrete beneath other transformers, and the presence of "oil-sorb" around one of the transformers labeled as containing PCB oils (Pad 6).

It appeared that all transformers were still in service at the time of the site visit with the exception of one transformer at Pad 6 which was jumpered. Visual observations indicated the probable release of PCB's into the environment either recently or sometime in the past. A sampling plan was drafted to investigate the presence of PCB's in the soils or concrete pads in the immediate vicinity of the nine pads.

**Methods**

PCB oils are very immiscible in water and therefore, will not migrate with percolating rain water from their point of release. Their movement in the soils, if any, would be as a liquid (PCB's have a very low vapor pressure at ambient soil temperatures) in response to the total area saturated as influenced by the soil characteristics and gravity. Any PCB's reaching the groundwater would not mix with the aquifer, but would remain at the soil water interface and spread laterally as the loadings increased.

Sampling took place in the immediate vicinity of all nine transformer pads. Two locations on the perimeter of the pads where were selected for the sample collection site. One additional sample was collected at Pads 1, 4, and 9. These additional samples were composite collections of oil soaked soils, concrete chips, paint chips, and small bits of woody material retrieved from areas on the pads or transformers that suggested PCB contamination. Only one sample was collected at Pad 2, located on the old generator

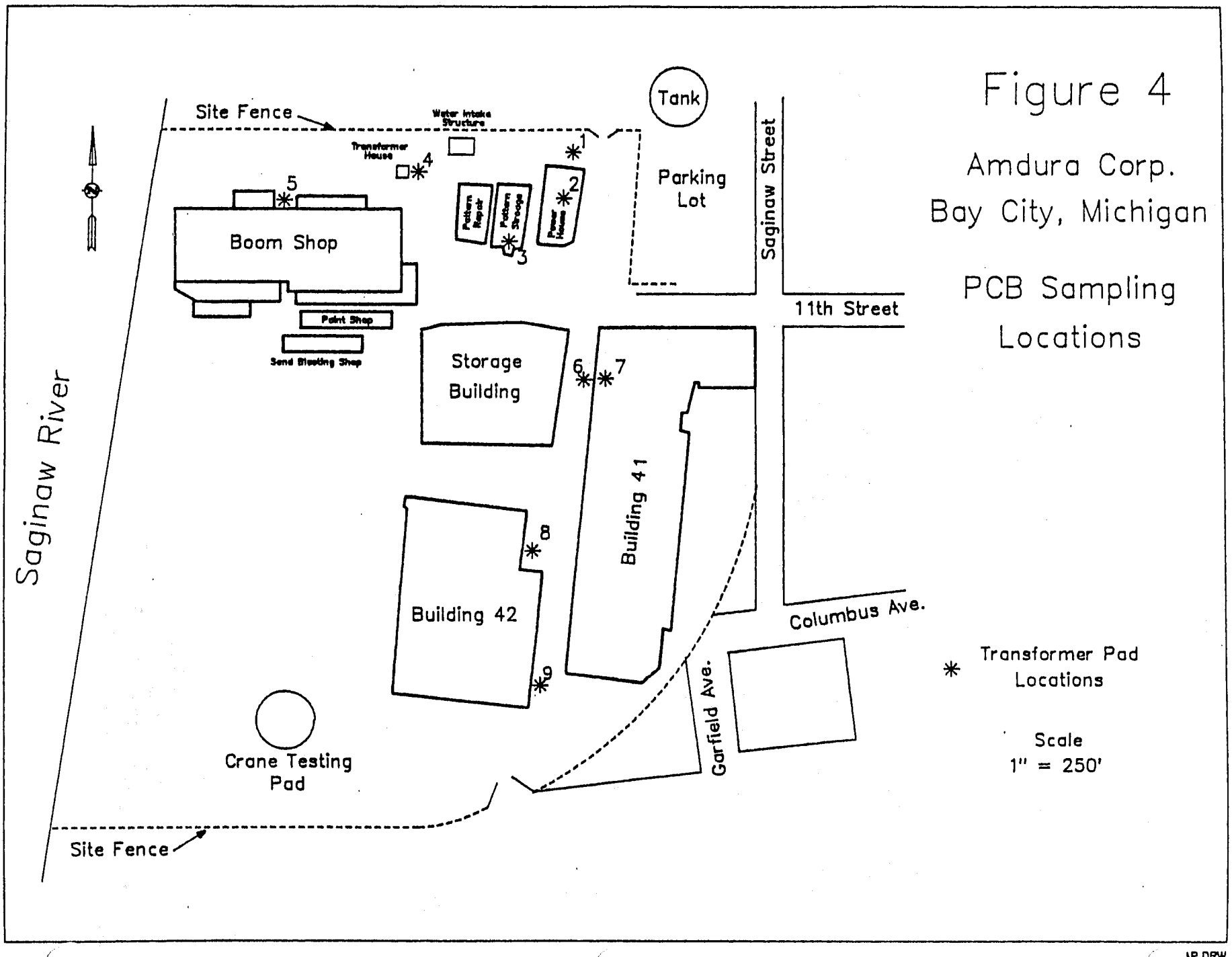


Figure 4
Amdura Corp.
Bay City, Michigan
PCB Sampling
Locations
Site Fence
Water Intake Structure
Transformer House
Tank
Parking Lot
Saginaw Street
11th Street
Boom Shop
Pattern Repair
Pattern Storage
Power House
Paint Shop
Sand Blasting Shop
Storage Building
Building 41
Building 42
Columbus Ave.
Garfield Ave.
Crane Testing Pad
Saginaw River
Site Fence
1
2
3
4
5
6
7
8
9
Transformer Pad Locations
Scale
1" = 250'

AP.DRW

TABLE 8.

Transformer Location by Pad

and

PCB Sampling Intensity

| Pad Number | Number of Transformers | Samples Collected |
|---|---|---|
| 1 | 9 | 3 |
| 2 | 1 | 1 |
| 3 | 1 | 2 |
| 4 | 3 | 3 |
| 5 | 2 | 2 |
| 6 | 4 | 2 |
| 7 | 4 | 2 |
| 8 | 5 | 2 |
| 9 | 2 | 3 |

deck inside the powerhouse (Figure 4). One small transformer was located at this particular location, and the wood flooring was scraped and splintered to collect the sample. The exact location and composition of all collected samples are tabulated in Appendix H.

Soil samples were collected using a stainless spade. The spade was pushed into the soils to a depth of six inches. At that point it was withdrawn and the exposed core was sampled approximately in the middle. Enough material was removed to fill a 40 ml vial. The sample vials were labeled with an identifier and placed on ice. Concrete samples were collected by pulverizing the top layer of exposed concrete with a pin hammer and collecting the resultant concrete powder in the sample vial. Other matrix sampled for the composite samples were collected by chipping or splintering with a knife blade and collecting the sample in the vial. All sampling equipment was decontaminated between samples using a detergent wash and rinse with distilled water.

Samples were delivered to the contract laboratory, Fire and Environmental Consulting Laboratories, Inc. of East Lansing, Michigan. PCB analysis was preformed according to EPA method 608. The samples were run through a methylene chloride extraction to mobilize any PCB's. The extraction was analyzed using a gas chromatograph looking for evidence of the PCB isomers: 1016, 1221, 1223, 1242, 1248, 1254, and 1260.

**Results and Discussion**

Twenty samples were collected from the nine transformer locations as shown in Figure 4. None of the samples analyzed had concentrations of PCB's above the detection limit of 1.0 mg/kg (Table 9). Appendix I tabulates the data from each sample.

The data indicates that no PCB's have been released into the soils in the immediate vicinity of the nine transformer pads. It is suspected that the oil in the transformers has been changed since the testing and label placement took place. Any PCB release would have to have been reported to the MDNR and a work plan drafted for its immediate remediation.

## ASBESTOS

**Introduction**

An inspection of all of the buildings on the site was conducted to determine the presence and quantity of asbestos containing material. The age and use of the buildings suggested that asbestos was commonly used through out the structures and probably was in a poor state of repair. The following section of

TABLE 9. PCB Analytical Results from the immediate vicinity of the nine transformer pads.

| | Mg/L |
|---|---|
| PAD-1-1 | - |
| PAD-1-2 | - |
| PAD-1-3 | - |
| PAD-2-1 | - |
| PAD-3-1 | - |
| PAD-3-2 | - |
| PAD-4-1 | - |
| PAD-4-2 | - |
| PAD-4-3 | - |
| PAD-5-1 | - |
| PAD-5-2 | - |
| PAD-6-1 | - |
| PAD-6-2 | - |
| PAD-7-1 | - |
| PAD-7-2 | - |
| PAD-8-1 | - |
| PAD-8-2 | - |
| PAD-9-1 | - |
| PAD-9-2 | - |
| PAD-9-3 | - |

this report pertains to the asbestos inspection and its results.

Asbestos is found in many different types of building materials. These may include, but are not limited to, the following: domestic water pipe insulation, heating water pipe insulation, tank insulation, suspended ceiling tile, floor tile, roof tar and paper, baseboard molding, boiler gasket, and fire brick.

Although asbestos has many characteristics that make it useful in building materials, recent cases of asbestos linked diseases, such as; lung cancer, asbestosis (scarring of the lungs) and mesothelioma (cancer of the lung lining), have produced strict regulations in regards to this material. In 1972, the Occupational Safety and Health Administration (OSHA) limited asbestos exposure for abatement and construction workers. The Environmental Protection Agency (EPA) prohibited spraying of asbestos materials for insulation, fire protection and soundproofing. In 1986, regulations pertaining to asbestos became even stricter. One of these regulations, passed by Congress - AHERA (Asbestos Hazard Emergency Response Act), mandated nationwide asbestos inspections and control of these materials in schools. And, finally, another Congressional bill is being discussed at the current time to expand AHERA to the commercial sector.

**Methods**

An asbestos inspection is performed using the following techniques:

1) Initial Walkthrough. During the walkthrough of the building, the inspector notes suspect asbestos-containing building materials. He/she also draws a floor plan of the building for designating sample locations, presence and quantity of suspect materials.

2) Sample Acquisition. A trained professional with necessary equipment and proper respiratory protection samples any suspect asbestos-containing materials present in the building. The location, condition, description and approximate quantity of each sample is noted on the map and/or field sheet (data sheets that contain key information). All equipment used is properly decontaminated between each sample. The samples are placed into air-tight containers, labeled and prepared for shipment to an accredited laboratory.

3) Sample Analysis. An EPA-accredited laboratory is contracted to perform the analysis of all samples taken to determine the presence of fibrous asbestos. A complete report is provided from the laboratory.

4) Written Report. A comprehensive report is written based on data obtained from the field and from the laboratory

analysis. This report contains laboratory and field data, diagrams, discussion and recommendations, and a conclusion.

The following information will be necessary to understand the contents of this report:

1) ACM - Asbestos-Containing Material
2) Decontamination - Cleaning of contaminated areas. Includes such activities as; wet-wiping and HEPA (High Efficiency Particulate Air) vacuuming.
3) Encapsulation - The use of an agent to seal the surface (bridging encapsulant) or penetrate and seal the bulk (penetrating encapsulant) of ACM
4) Fibrous - Composed almost entirely of fibers with an aspect ratio of at least 3 to 1 and at least 5 microns long
5) Friable - Material that can be crumbled or reduced to powder by hand pressure
6) Mag - A white, fibrous asbestos insulation usually applied on heating water or steam piping systems

In addition to the above terms, the following abbreviations may be used in the field data:

1) FB - fire brick
2) SP - straight pipe insulation
3) BG - boiler gasket
4) TI - tank insulation
5) WP - wall plaster
6) RP - roof paper
7) RA - roof tar
8) FT - floor tile
9) SCT - suspended ceiling tile
10) GCT - glued-on ceiling tile
11) CPL - ceiling plaster
12) PJ - pipe joint insulation

The inspection was conducted building by building and the reults are reported for each building in the following format:

I. Discussion

II. Recommendations and Conclusions

III. Diagrams

IV. Laboratory Report (provided by the accredited laboratory found in Appendix J)

## Power House

### Discussion

The Power House is divided into three levels: basement, main level and the boiler room (see Figure 5). Samples of various types of fire brick, boiler gasket, pipe insulation, tank insulation and light heat shield were taken in this area. All samples tested positive for fibrous asbestos except for the fire brick (samples 1, 2 and 4). The following materials contain fibrous asbestos.

1) Mag Pipe Insulation. Debris from an insulated heating water system straight pipe had fallen to the ground (sample 3). This material and the piping that it fell from is in poor condition. Also, an additional one foot section of asbestos-containing material (ACM) from this pipe is located in a deteriorated state north of boiler #3. Located in the south portion of the basement is additional pipe insulation that has become slightly deteriorated (sample 9). Situated in the main level is a 10" vertical insulated pipe (sample 6). The condition of the insulation varies from fair to poor at the exposed ends.

2) Corrugated Paper Insulation. Two samples of domestic water pipe insulation were taken in the basement (samples 8 and 10). Most of this material has sustained water damage and is either lying on the floor or is in the process of falling off of the pipe.

3) Tank Insulation. Located in north quadrant of the basement is a water tank wrapped with asbestos-containing material (sample 7). During installation of this wrap, this material was cut into one by two foot sections, placed on the tank and wrapped with wire. This ACM is in poor condition and easily susceptible to continued fiber releases.

4) Boiler Gasket. The boiler gasket is located on the east end of boilers #2 and #3 (sample 5). This material is in good to fair condition and is not easily accessible to disturbance.

5) Light Heat Shield. This material is located in the southwest portion of the basement (sample 58). It is non-friable and in fair condition.

<u>Approximate Quantity of Asbestos-Containing Materials</u>:

| | |
|---|---|
| 10" Mag Straight Pipe Insulation | 175 feet |
| 8" Mag Straight Pipe Insulation | 25 feet |
| 2" Mag Straight Pipe Insulation | 50 feet |
| 8" Corrugated Straight Pipe Insulation | 50 feet |
| 6" Corrugated Straight Pipe Insulation | 50 feet |
| 2" Corrugated Straight Pipe Insulation | 200 feet |

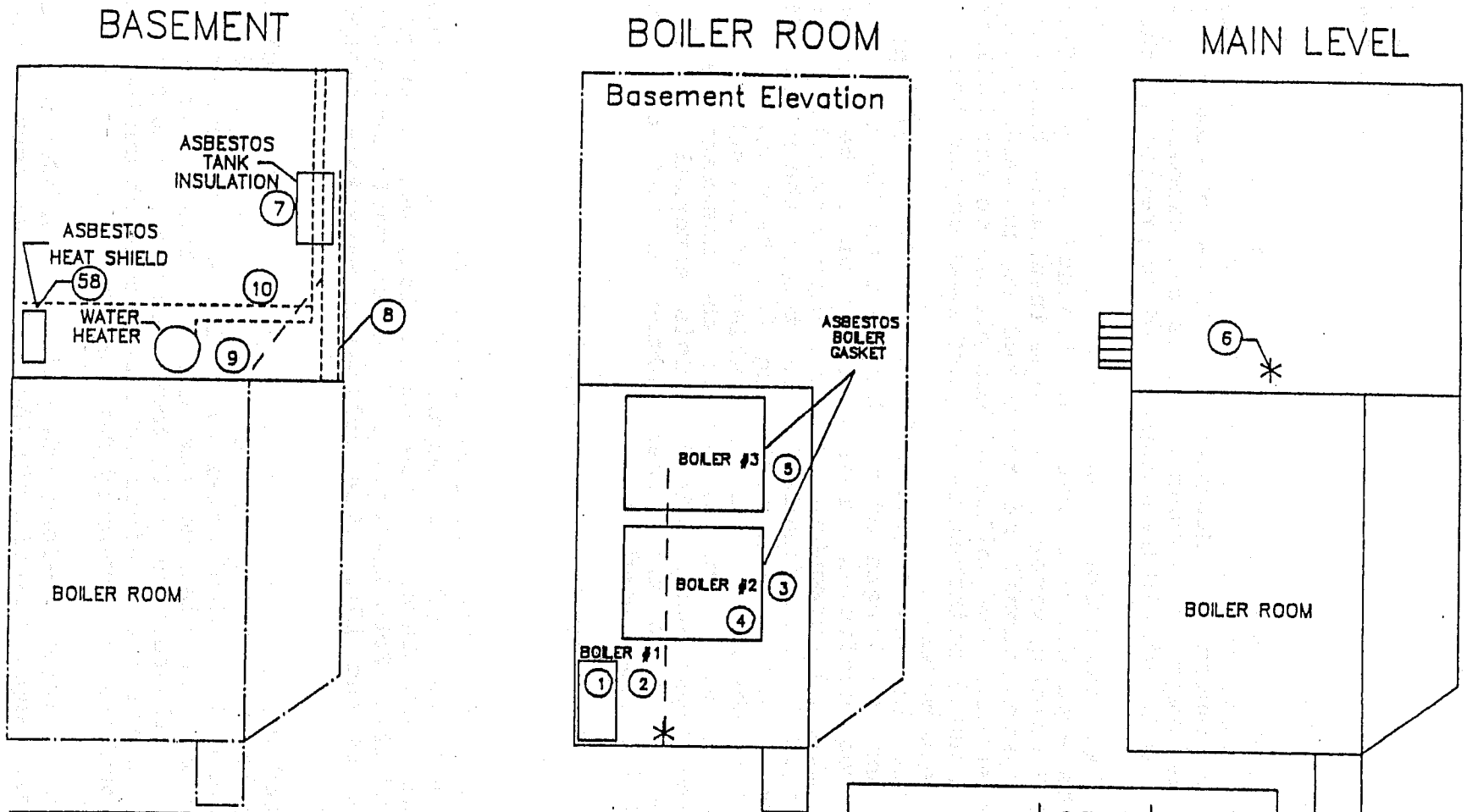



FIGURE 5
POWER HOUSE
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

Legend

- Corrugated Paper Straight Pipe Insulation
- Mag Straight Pipe Insulation
- * Vertical Pipe
- O Sample Location

PWRHOUS2.DRW

| | |
|---|---|
| Tank Insulation | 100 sq. feet |
| Boiler Gasket | 10 sq. feet |
| Light Heat Shield | 8 sq. feet |

**Recommendations and Conclusions**

The ACM present on the main level is in relatively good condition. The vertical pipe is wrapped with canvas and protects the majority of the insulation. However, the ACM is not completely wrapped and various areas of fibrous asbestos are exposed to the atmosphere. These areas should be encapsulated to prevent further deterioration.

The loose/fallen insulation present in the boiler room should be removed and the area decontaminated by trained and qualified personnel. The 10" heating water system pipe insulation that runs over the boiler system should be rewrapped to prevent future asbestos fiber releases. The boiler gasket placed on the boilers requires no action until maintenance is performed on the boilers that may disturb this material.

Numerous areas in the basement contain ACM. The pipe insulation that runs the length of the basement on the east and south sides is in poor condition. This material should be removed by trained and qualified personnel. During this removal, it is also recommended that the tank insulation located in the northeast corner be removed. The area surrounding the tank should be decontaminated due to the previous deterioration of the substance. Also located in the southwest corner of the basement is an asbestos-containing light heat shield. This material is non-friable. However, due to the water damage present on this material, removal is recommended.

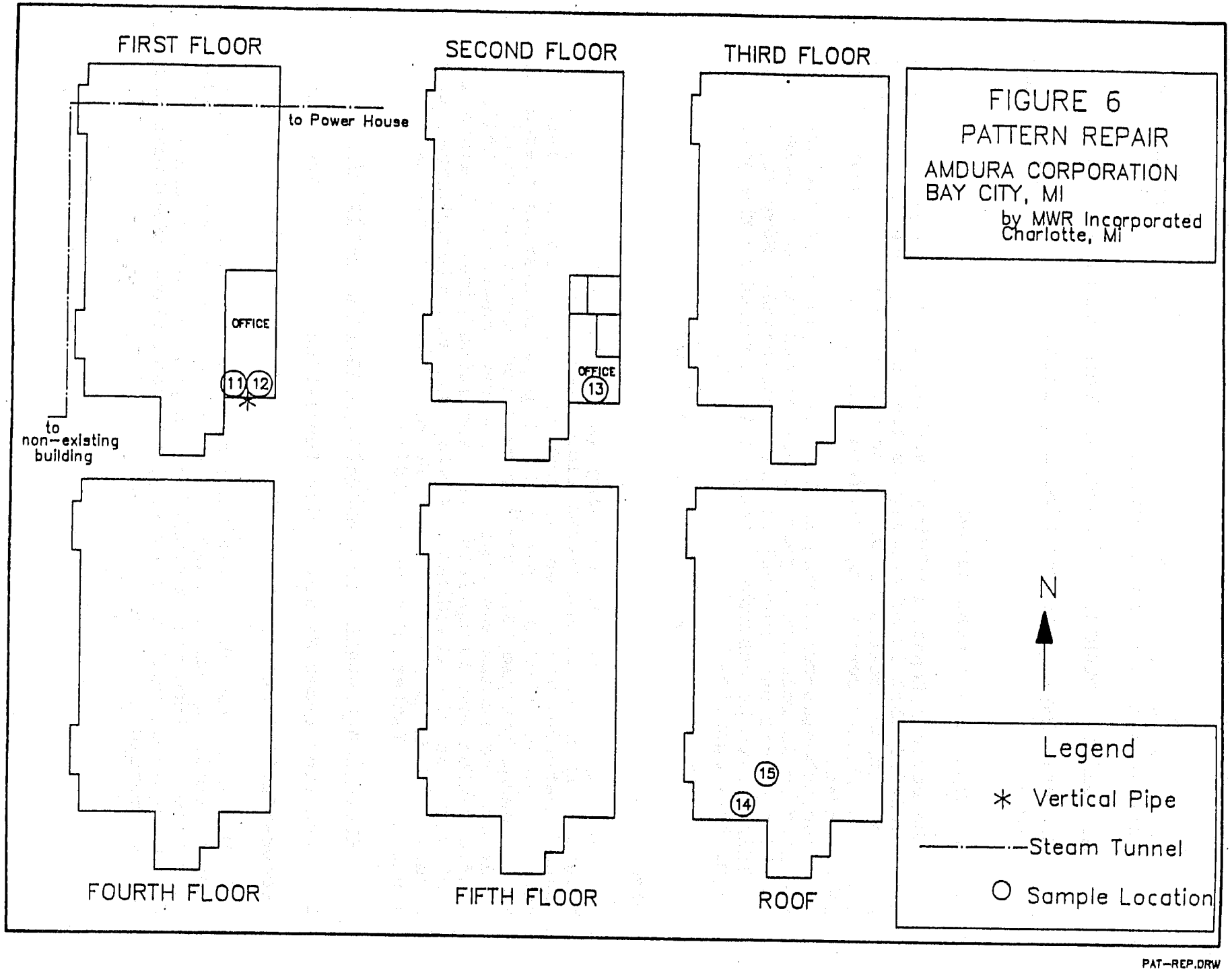
## Pattern Repair Building

**Discussion**

The Pattern Repair Building is divided into six levels: first through fifth floor and roof (see Figure 6). Samples of the following materials were taken: pipe insulation, wall plaster, roof paper and roof tar. Both the wall plaster and roof tar tested negative (samples 13 and 15). The following materials tested positive:

1) Corrugated Paper Straight Pipe Insulation. Two samples of this material were taken in the office on the first floor (samples 11 and 12). This material is located on the south side of the building behind the utility sink. It runs vertically approximately one-half foot onto the second floor. Since this material has received extensive contact during the years, its condition is severely deteriorated.

2) Roof Paper. Located along the perimeter of the roof, a tar paper edging approximately six inches wide has been placed


FIRST FLOOR
SECOND FLOOR
THIRD FLOOR
to Power House
OFFICE
11
12
OFFICE
13
to
non-existing
building
FIGURE 6
PATTERN REPAIR
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, MI
N
15
14
Legend
Vertical Pipe
Steam Tunnel
Sample Location
FOURTH FLOOR
FIFTH FLOOR
ROOF

PAT-REP.DRW

(sample 14). Although this material tested positive for asbestos and is in fair condition, it is non-friable and contained in a resinous matrix.

Approximate Quantity of Asbestos-Containing Materials:

| | |
|---|---|
| 3" Corrugated Paper Straight Pipe Insulation | 15 feet |
| Roof Paper | 100 sq. feet |

**Recommendations and Conclusions**

The Pattern Repair Building requires little remediation. The only material that is of concern is the corrugated paper straight pipe insulation located on the first floor. Since this ACM is in poor condition, removal by trained and qualified personnel is recommended.

The asbestos-containing roof paper on the outer perimeter of the roof is in relatively good condition and is non-friable. Due to these conditions, removal is not recommended. However, if the building is to be destroyed, removal is required by the governing regulatory agencies.

## Pattern Storage Building

**Discussion**

The Pattern Storage Building is divided into three levels: basement, first floor and second floor (see Figure 7). Very little suspect material was present in this facility. The only material sampled was corrugated paper straight pipe insulation present in the basement (sample 16). The basement had sustained a great deal of damage and access was limited. However, based on the building configuration and blueprints, the insulated pipes run along the east side of the building. Again, due to water damage, this material is in poor condition. No other suspect materials were found in the Pattern Storage building.

Approximate Quantity of Asbestos-Containing Materials:

| | |
|---|---|
| 3" Corrugated Paper Straight Pipe Insulation | 100 feet |

**Recommendations and conclusions**

The only asbestos-containing material found in the Pattern Storage building was a length of corrugated paper straight pipe insulation. Since this material is in poor condition and further disturbance is probable, removal by trained and qualified personnel is recommended.

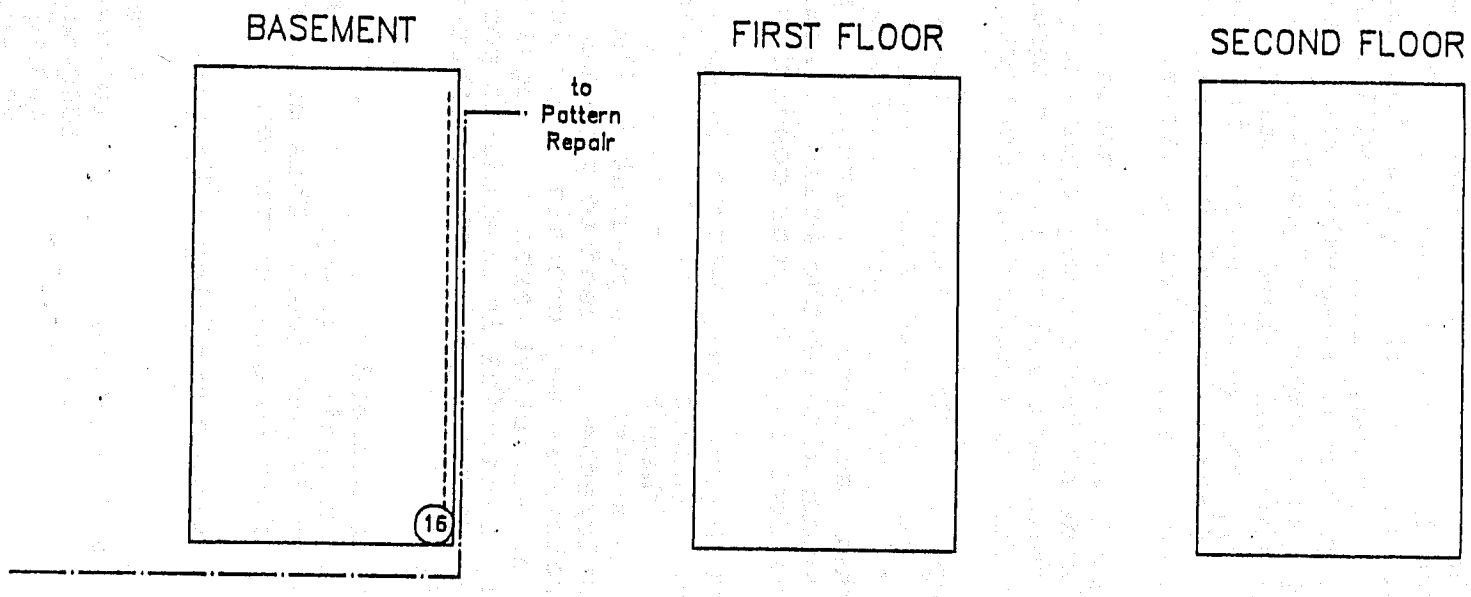



FIGURE 7
PATTERN STORAGE
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

N

Legend

Corrugated Paper Straight Pipe Insulation

Steam Tunnel

Sample Location

PATTERN.DRW

## Foundry

### Discussion

The Foundry consists of the main level with an air handler unit on the second level in the southeast area (see Figure 8). Many suspect materials were found in this facility. The following materials were sampled: wool felt straight pipe insulation, corrugated paper straight pipe insulation, floor tile with mastic - black, maroon, peach, beige, and brown, suspended and glued-on ceiling tile, baseboard molding, roof paper and ceiling plaster. Of these materials, the suspended and glued-on ceiling tile (samples 25 and 26, respectively), the brown floor tile (sample 24), the roof paper (sample 29) and the ceiling plaster (sample 28) tested negative. The following materials tested positive:

1) Wool Felt Straight Pipe Insulation. One length of this ACM is present on the east side of the foundry over the garage door (samples 17 and 18). This material is in poor condition caused by a high potential for air erosion and contact.

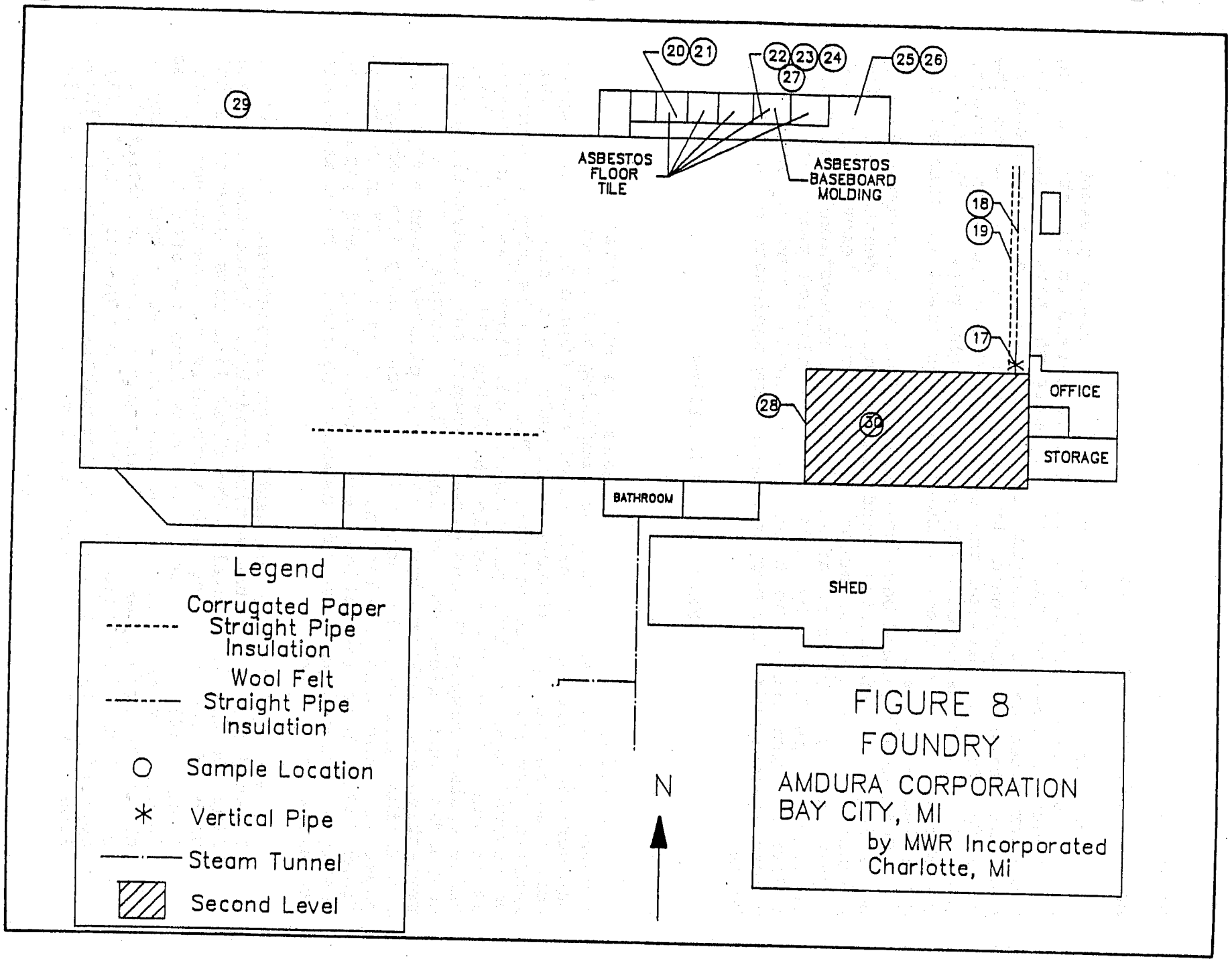
2) Corrugated Paper Straight Pipe Insulation. This material was found in conjunction with the wool felt straight pipe insulation (sample 19). It is also in poor condition. In addition, there is another section of corrugated paper insulation present in the south side of the building near the roof. This material varies from fair to poor condition.

3) Floor Tile. The black (sample 20), maroon (sample 21), peach (sample 22) and beige (sample 23) floor tile existing in the offices in the northeast area contain a small percentage of asbestos. This asbestos is present in the floor tile itself and not the mastic/adhesive used to glue the floor tile down. (NOTE: Some materials may contain 1% or less of asbestos. According to the strictest asbestos regulations (AHERA 40 CFR 763) thus far, a material is considered positive if it contains greater than 1% asbestos.) These floor tiles are non-friable and in fair condition.

4) Baseboard Molding. The baseboard molding present in the offices is also asbestos-containing (sample 27). It is located along the perimeter of the offices. This material is compact, non-friable and in fair to good condition.

<u>Approximate Quantity of Asbestos-Containing Materials</u>:

| | |
|---|---|
| 2" Wool Felt Straight Pipe Insulation | 30 feet |
| 3" Corrugated Paper Straight Pipe Insulation | 100 feet |
| Black Floor Tile | 1000 sq. feet |
| Peach Floor Tile | 400 sq. feet |
| Maroon Floor Tile | 200 sq. feet |
| Beige Floor Tile | 400 sq. feet |


20
21
22
23
24
27
25
26
29
ASBESTOS FLOOR TILE
ASBESTOS BASEBOARD MOLDING
18
19
17
28
30
OFFICE
STORAGE
BATHROOM
SHED
Legend
Corrugated Paper Straight Pipe Insulation
Wool Felt Straight Pipe Insulation
Sample Location
Vertical Pipe
Steam Tunnel
Second Level
N
FIGURE 8
FOUNDRY
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

FOUNDRY.DRW

Baseboard Molding 10 feet

**Recommendations and conclusions**

Most of the asbestos-containing materials present in the Foundry are non-friable and pose little hazard to the surrounding environment. However, the wool felt straight pipe insulation and the corrugated paper straight pipe insulation are friable and in poor condition. Continued deterioration is likely due to the potential for air erosion and contact. Under these conditions, removal of the asbestos-containing straight pipe insulation is recommended. This removal should be performed by trained and qualified personnel.

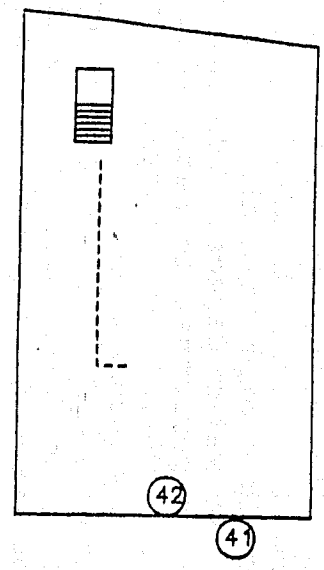
The floor tile and baseboard molding are in fair condition and non-friable. Non-friable conditions usually denote that the release of fibrous asbestos is minimal. Removal is not recommended, but if it is necessary during renovation/demolition, it must be performed by trained and qualified personnel. In addition, care should be taken not to drill, sand or scrape it unless equipped with the proper respiratory equipment and necessary tools.

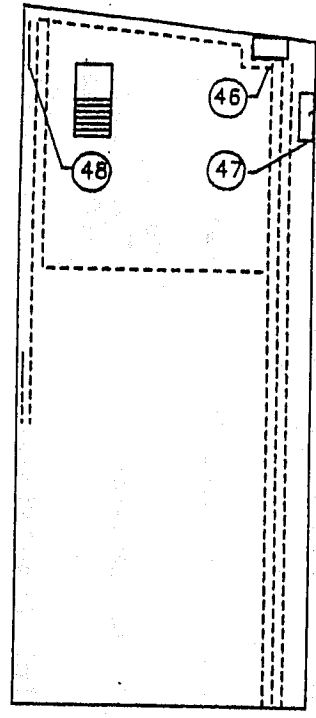
## Maintenance Building

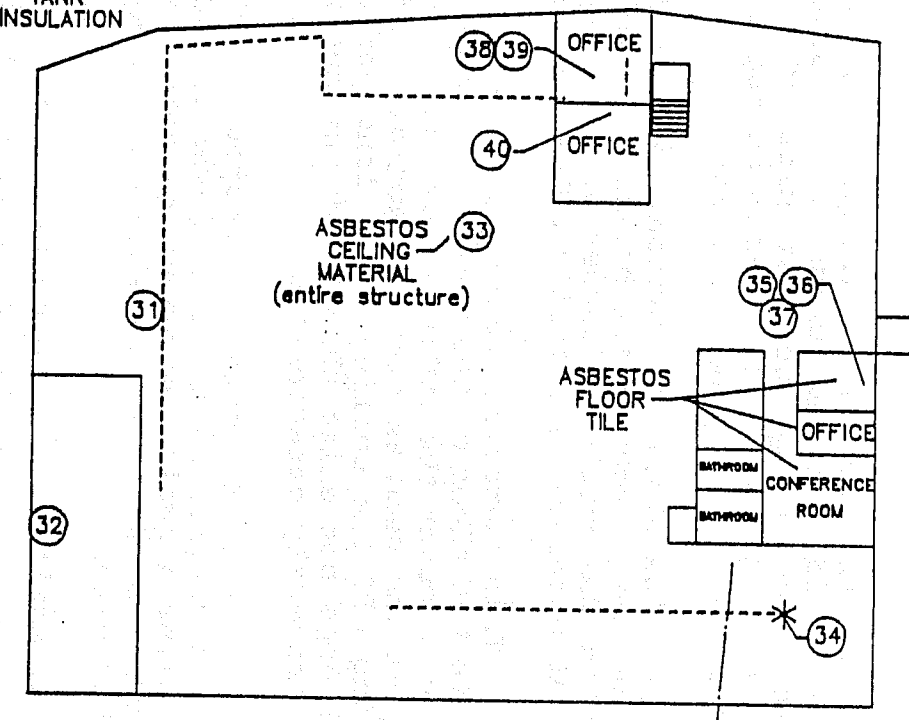
**Discussion**

The Maintenance Building consists a main level, a basement located under the east side of the building and a second floor over the northeast area of the main level (see Figure 9). Many suspect asbestos-containing building materials were present in this facility but few tested positive. The materials sampled include: corrugated paper straight pipe insulation, floor tile (red - sample 32, beige (12" x 12") - sample 35, beige (9" x 9"), beige with white spots - sample 39, and green - sample 40), roof/ceiling tar, suspended and glued-on ceiling tile (samples 37 and 38, respectively), roof tar (sample 41), wall plaster (sample 42), tank insulation, and mag pipe joint insulation. Only the corrugated paper straight pipe insulation, roof/ceiling tar, 9" x 9" beige floor tile, tank insulation, mag straight pipe and pipe joint insulation tested positive for asbestos content. These materials are explained below:

1) Corrugated Paper Straight Pipe Insulation. This ACM is located throughout the entire building. There are two major lines on the main level. The first line runs along the south side of the building and vertically to the tunnel system (sample 34). The second line runs from the offices, located in the northeast area, along the perimeter of the building to the southwest corner. This line is severely deteriorated and most of the insulation has fallen to the ground (sample 31). Approximately five lines run throughout the basement. Three lines run along the east side of the basement, one line




Legend

- Corrugated Paper Straight Pipe Insulation
- Mag Straight Pipe Insulation
- ○ Sample Location
- * Vertical Pipe
- Steam Tunnel

N

FIGURE 9
MAINTENANCE
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

MAINTNCE.DRW

travels the north side to the west side (sample 46) and another runs along the west side cutting across to east side. Another horizontal line runs along the west side of the building on the second floor. The majority of this corrugated paper straight pipe insulation is in poor condition.

2) Mag Straight Pipe and Pipe Joint Insulation. Two small sections of mag insulation are present in the basement (sample 48). These are located in the northwest corner and the west central area. Again, this material is severely deteriorated.

3) Roof/Ceiling Tar. This material was sampled from a section that had fallen to the floor on the main level (sample 33). This material seems to cover the underside of the wooden structure. Most likely it was used as fire protection. This material has been falling off the ceiling for a long period of time. Therefore, it does not exist throughout the entire structure. This ACM is severely deteriorated.

4) Beige Floor Tile. This floor tile is located in the offices of the east office complex on the main level (sample 36). This material contains a small percentage of asbestos, is in fair condition and is non-friable. Care should be taken not to drill or sand this material.

5) Tank Insulation. A small tank covered with asbestos-containing material is present in the northeast corner of the basement (sample 47). This material is severely deteriorated. In addition, debris is laying on the floor around the tank.

Approximate Quantity of Asbestos-Containing Material:

| | |
|---|---|
| Roof/Ceiling Tar | 25,000 sq. feet |
| 4" Corrugated Paper Straight Pipe Insulation | 750 feet |
| Beige Floor Tile | 100 sq. feet |
| Tank Insulation | 100 sq. feet |
| 8" Mag Straight Pipe and Pipe Joint Insulation | 20 feet |

**Recommendations and Conclusions**

The Maintenance Building contains five different types of ACM. The material located in the basement: tank insulation, mag insulation, and corrugated paper straight pipe insulation, is in a severely deteriorated state caused by water damage. Removal of this material by trained and qualified personnel is recommended. Until this is accomplished, access should be restricted to personnel wearing the proper respiratory protection.

The corrugated paper straight pipe insulation present on the main level is also in poor condition. This material and the debris under the pipe lines should be removed and the areas should be decontaminated. This work should be performed by trained and

qualified personnel. The beige floor tile one the main floor is posing little hazard to the environment. No response action is necessary. The roof/ceiling tar present on the wooden structure is non-friable but in poor condition. Removal is not recommended but as the material falls to the floor (usually after it rains), it should be removed and the area be decontaminated immediately.

The corrugated paper straight pipe insulation present on the second floor is in fair condition. Repair and/or encapsulation is recommended for the damaged areas to prevent further fiber release.

## Building 41 and 41A

### Discussion

Nine samples of suspect asbestos-containing building materials were taken in Building 41 and 41A (see Figures 10 and 11). These include: corrugated paper straight pipe insulation, suspended ceiling tile (sample 44), beige floor tile, wool felt straight pipe insulation, transite ceiling board, roof paper (sample 51), brown floor tile (sample 52), red floor tile, black floor tile (sample 54), green floor tile, and white roof tar. The corrugated paper straight pipe insulation, beige floor tile, wool felt straight pipe insulation, transite ceiling board, red floor tile, green floor tile and white roof tar tested positive. These materials are explained below:

1) Corrugated Paper Straight Pipe Insulation. This ACM is basically in two different locations on the first floor. Two lines run along the northern portion of the building (sample 43). One line runs in the central area from east to west. These materials vary from poor to fair condition. Usually, the material which is in fair condition is closest to ground level and has deteriorated by contact. The material located over the office complex on the north side is in fair condition. In addition, two lengths of insulated pipe have fallen and are lying west of the bathroom on the south end. This material is severely deteriorated.

2) Wool Felt Straight Pipe Insulation. This material is located in both bathrooms on the first floor (sample 49) and has been repainted several times. Most of the material is in fair condition but several of the ends are exposed and have the potential for fiber release.

3) Floor Tile. The beige floor tile located in the offices in the northwest area on the first floor (sample 45), the red floor tile located in the north central bathroom on the first floor (sample 53), and the green floor tile located on the third floor (sample 56) tested positive for asbestos. This material is non-friable and in fair condition.

4) Transite Ceiling Board. This transite board is located

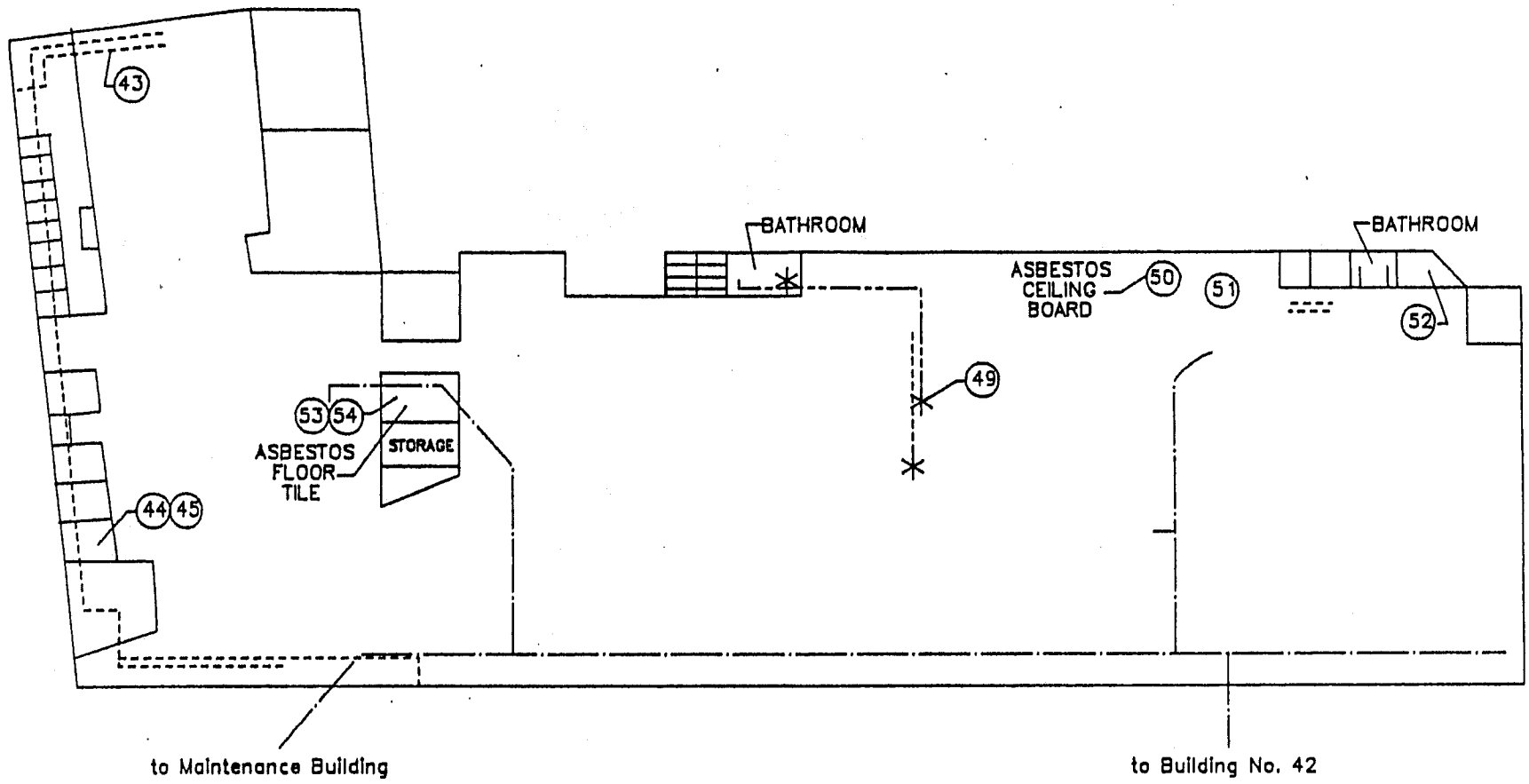



FIGURE 10

BUILDING 41 AND 41A

AMDURA CORPORATION
BAY CITY, MI

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Charlotte, Mi

N

Legend

- Corrugated Paper Straight Pipe Insulation
- Wool Felt Straight Pipe Insulation
- * Vertical Pipe
- O Sample Location
- Steam Tunnel

1-1.DRW

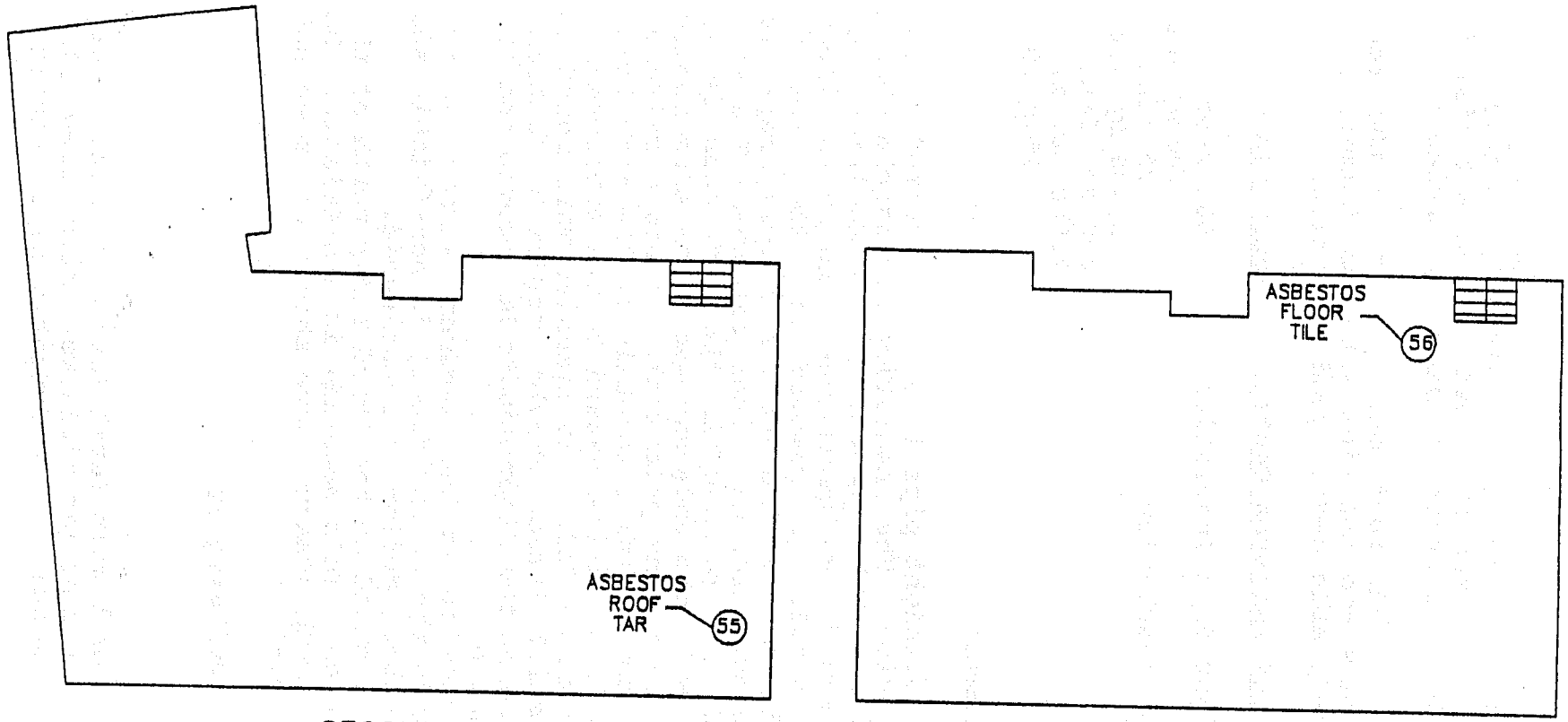


FIGURE 11
BUILDING 41 AND 41A
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

N

Legend

○ Sample Location

BLDG41-2.DRW

in the new addition on the east side of the building on the first floor (sample 50). Some of the material has fallen to the floor and has broken apart. Most of the material is intact and inaccessible. Transite board is non-friable.

5) Roof Tar. The white roof tar applied to the roof approximately six years ago contains asbestos (sample 55). This material is non-friable and in good condition.

Approximate Quantity of Asbestos-Containing Materials:

| | |
|---|---|
| 4" Corrugated Paper Straight Pipe Insulation | 500 feet |
| Beige Floor Tile | 500 sq. feet |
| 4" Wool Felt Straight Pipe Insulation | 75 feet |
| Transite Ceiling Board | 2,300 sq. feet |
| Red Floor Tile | 200 sq. feet |
| White Roof Tar | 7,500 sq. feet |
| Green Floor Tile | 75 sq. feet |

**Recommendations and Conclusion**

The corrugated paper straight pipe insulation located on the main level varies in condition. The insulation accessible should be removed by trained and qualified personnel. In addition, the two lengths of asbestos-containing insulation lying on the floor west of the bathrooms should be removed and the area be decontaminated. The insulation over the offices should be repaired and/or encapsulated to prevent further fiber release. The wool felt straight pipe insulation present in the bathrooms is in relatively good condition with the ends exposed. The ends should be re-encapsulated to decrease the potential for fiber release. The two types of asbestos-containing floor tile on the main level are in fair condition and pose little hazard to the environment. No response actions are recommended. The transite wall board is non-friable. This ACM still intact should require no action. However, the transite lying on the floor should be removed and the area should be decontaminated.

The white roof tar located on the southern portion of the building (accessible through the second floor) is non-friable and in good condition. No response action is recommended.

The green floor tile located on the third floor north of the stairway is in fair condition. This material is non-friable. No response action is recommended, however care should be taken not to drill or sand this material.

## Building 42

**Discussion**

This building consists of a main level (see Figure 12). Very little suspect asbestos-containing materials were discovered. The only sample taken was of a section of corrugated paper straight

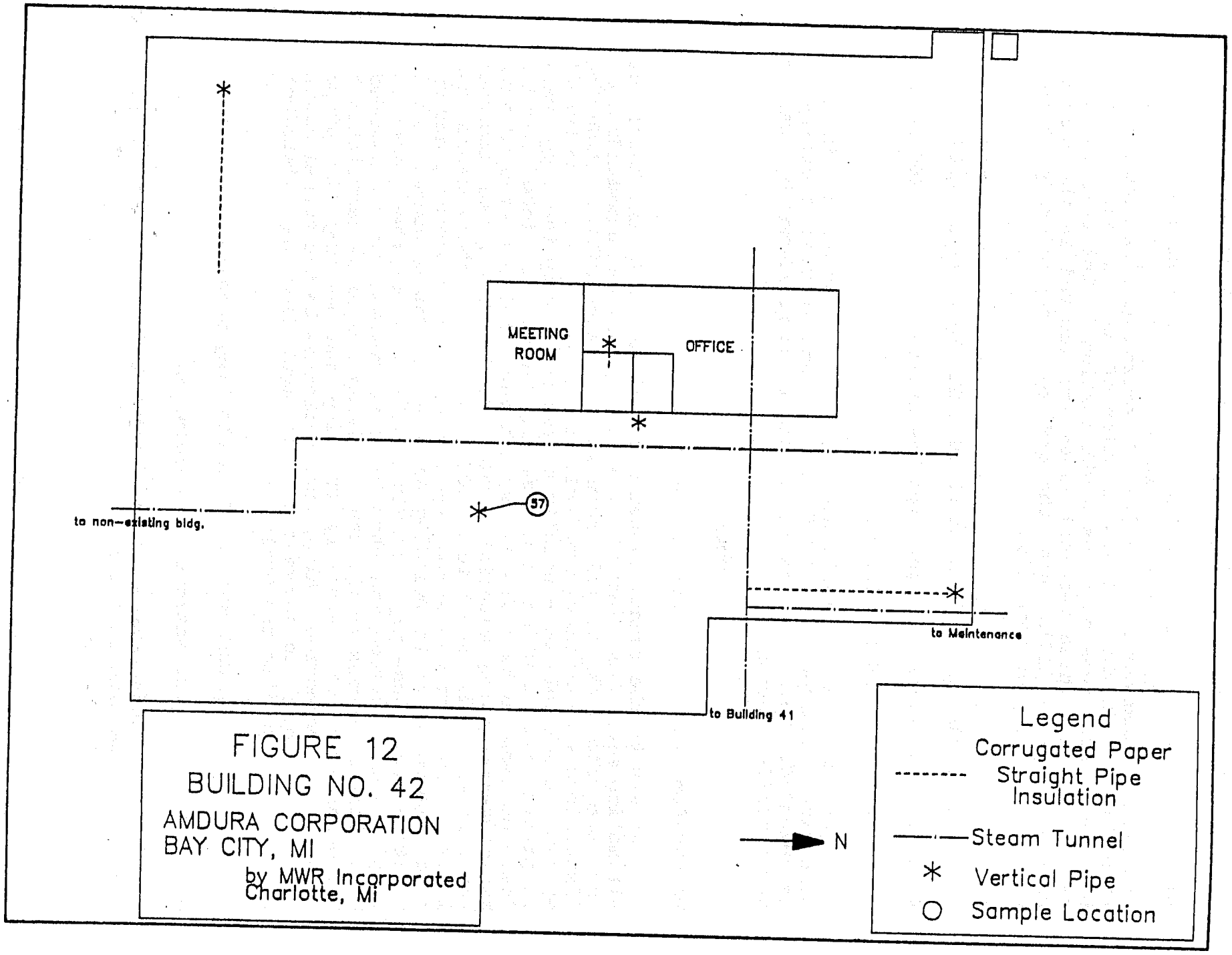


FIGURE 12
BUILDING NO. 42
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

BLDG42.DRW

pipe insulation (sample 57). This sample tested positive.

This material is present in approximately five different locations throughout the facility. A horizontal line runs into the tunnel system in the northeast section of the building. Another horizontal line runs near the south portion of the building from east to west. Three vertical lines are located in the central portion of the building near the offices. The majority of this material is in poor condition.

Approximate Quantity of Asbestos-Containing Materials:

| | |
|---|---|
| 4" Corrugated Paper Straight Pipe Insulation | 200 feet |

**Recommendations and Conclusion**

The corrugated paper straight pipe insulation is in poor condition. Removal of all of this present in this facility is recommended. This response action should be performed by trained and qualified personneL.

## Tunnel System

**Discussion, Recommendations and Conclusion**

Access to the tunnel system was limited due to the hazard of attempting entry (see Figure 13). However, various recommendations and conclusions can be made from what was accessible. Based on discussions with company personnel, most of the pipes in the tunnel system are uninsulated - usually necessary to keep the pipes warm to prevent the solution from freezing during the winter months. There do seem to be a few lines, however, that are wrapped with asbestos-containing material. The three areas noted include: three lines running south to Building 42 from the Maintenance, two lines running west to the Foundry from the Pattern Storage, and one line running south to Building 41 from the Power House. It is unlikely that these pipes remain insulated after they enter the complex tunnel system and therefore, no removal is recommended. Nevertheless, access to the tunnel system should be restricted to personnel with the necessary training and wearing the proper respiratory protection. Also, open entrances to the tunnel system should be capped to prevent air movement that may distribute asbestos fibers into the buildings.

## Paint Shed and Sandblasting Shed

**Discussion, Recommendations and Conclusion**

The two sheds located south of the Foundry contain no suspect asbestos-containing materials.

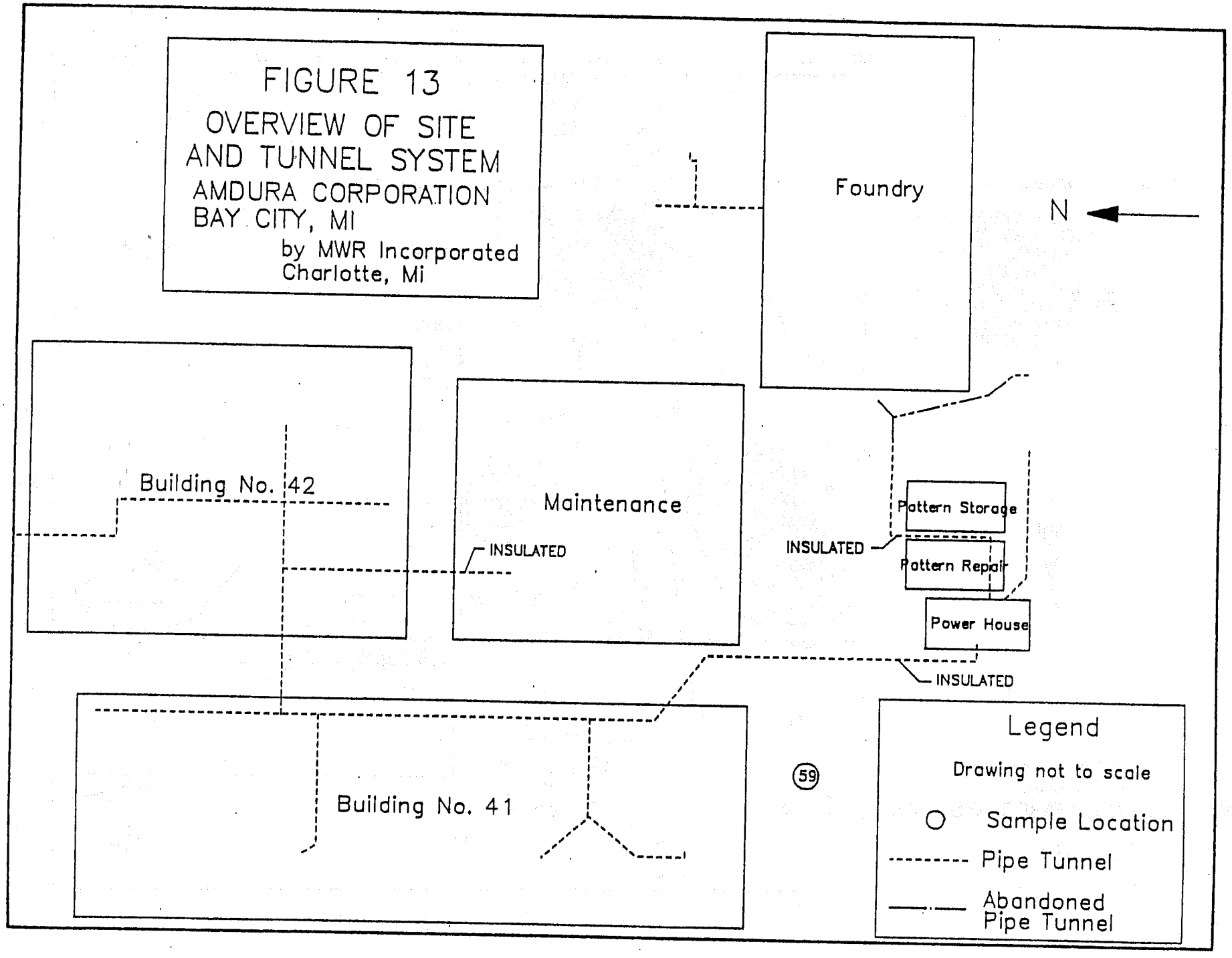
FIGURE 13
OVERVIEW OF SITE
AND TUNNEL SYSTEM
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi
Foundry
N
Building No. 42
Maintenance
INSULATED
INSULATED
Pattern Storage
Pattern Repair
Power House
INSULATED
Building No. 41
59
Legend
Drawing not to scale
Sample Location
Pipe Tunnel
Abandoned
Pipe Tunnel

TUNNEL.DRW

TABLE 3

SOIL GAS SURVEY CONTOUR MAP
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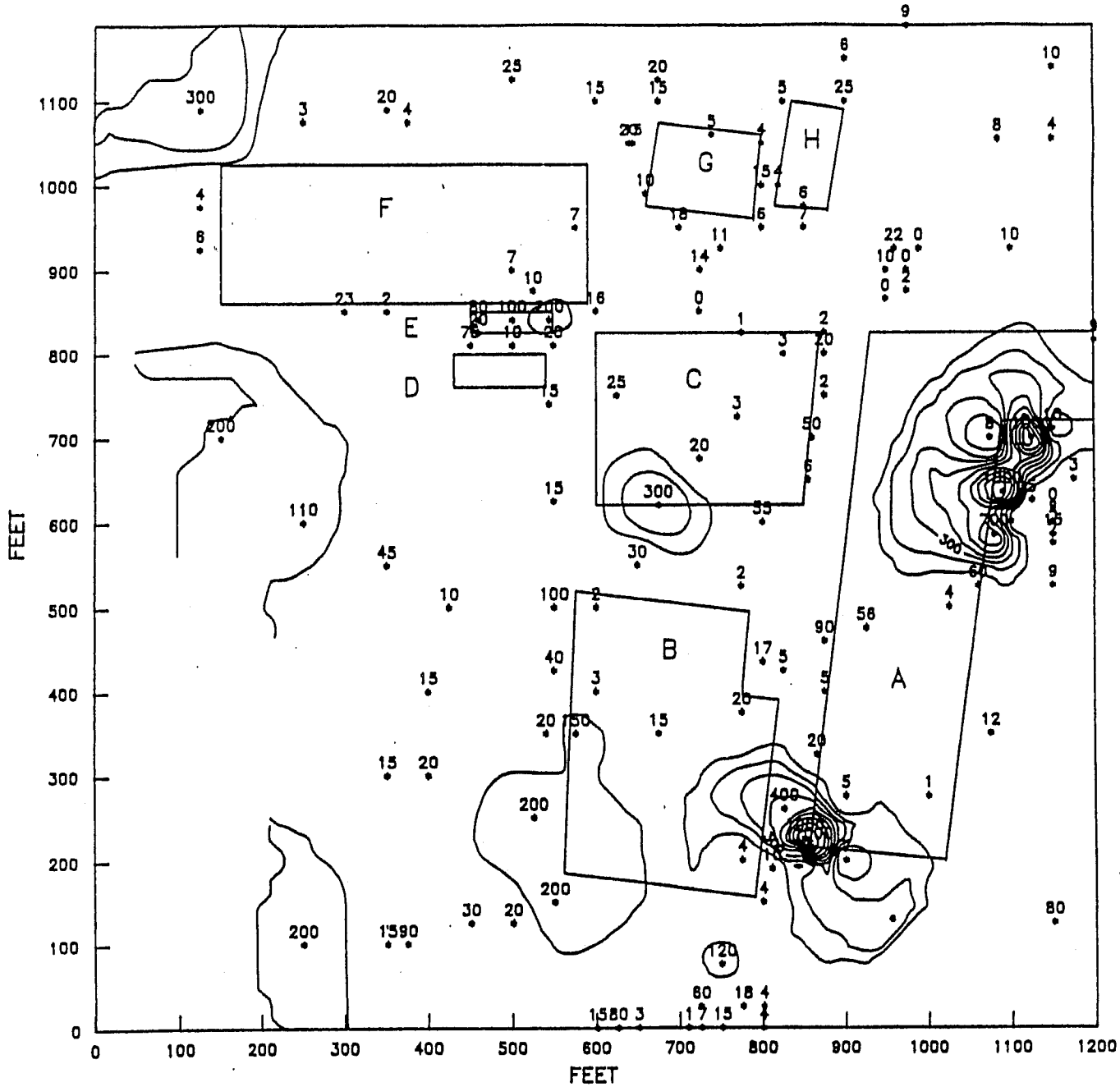
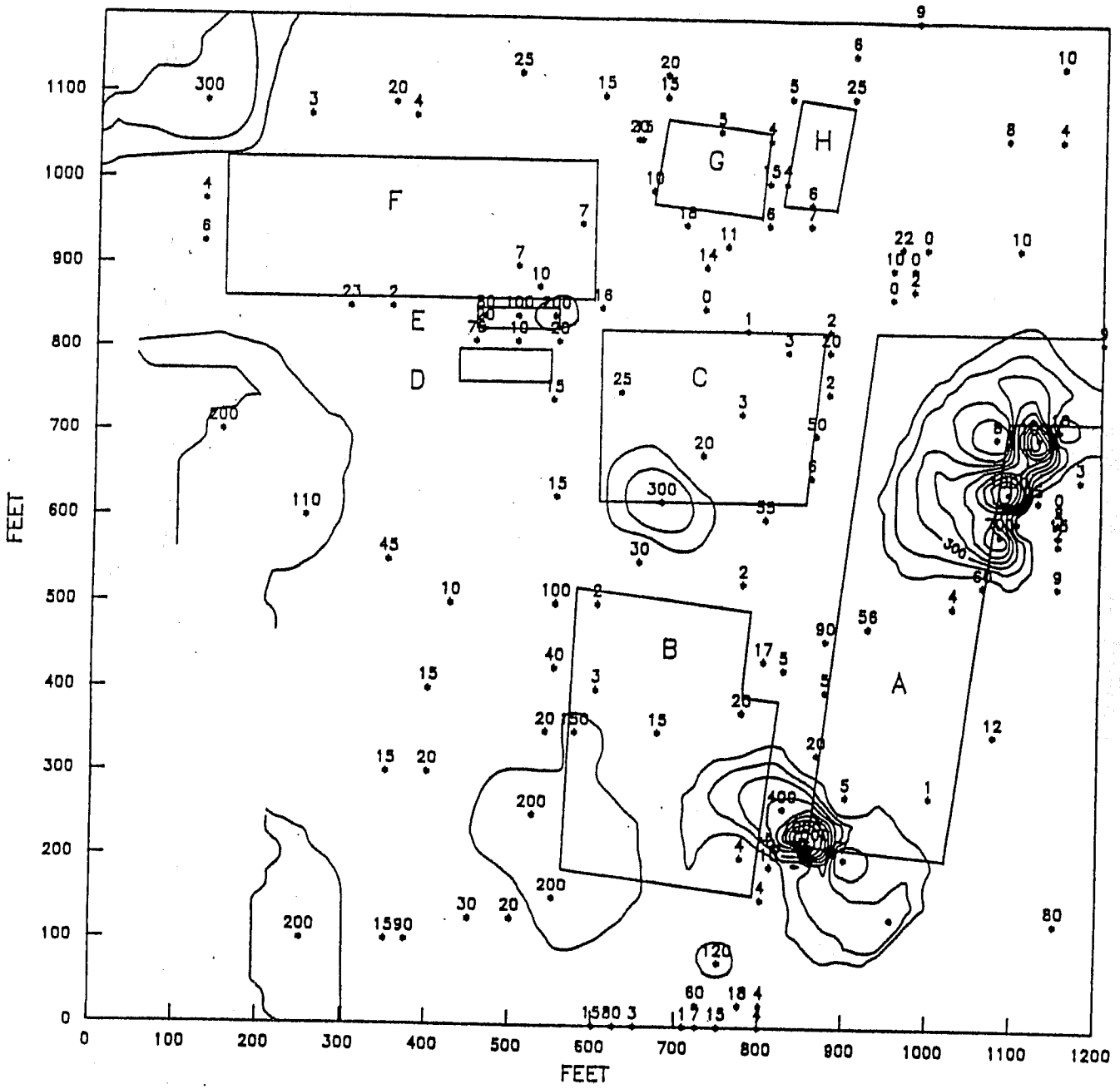


A – BUILDING 41
B – BUILDING 42
C – MAINTENANCE BLD
D – SANDBLASTING BLD
E – PAINT BLD
F – OLD FOUNDRY
G – PATTERN BLDS
H – POWER HOUSE

CONTOUR INTERVAL = 100ppm

TABLE 3

SOIL GAS SURVEY CONTOUR MAP
Amdura Inc.
Bay City, Michigan



A – BUILDING 41
B – BUILDING 42
C – MAINTENANCE BLD
D – SANDBLASTING BLD
E – PAINT BLD
F – OLD FOUNDRY
G – PATTERN BLDS
H – POWER HOUSE

CONTOUR INTERVAL = 100ppm

# ENVIRONMENTAL INVESTIGATION
# of the
# AMDURA SITE
# BAY CITY, MICHIGAN

## APPENDICES A THROUGH G

# APPENDIX A

# MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard and Howard | Amdura, Bay City, Mi | SB-1 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 7-31 | 1 of 16 | Hex-core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 7.5 ft | 4 in | | |

| Soil Sample No. | Penetration & Recovery (inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1, 2 | | | Dk. Brown, fine to medium grained sand, moist, slight organic odor. | |
| SS-1 | 6/24 | 1 | 1 | 1 | | 3, 4 | | | Dk. Brown, fine to medium grained sand moist, with 1 cm zones of yellow sand. | |
| | | | | | | 5, 6 | | | Dk. brown, fine to medium grained sand moist. | |
| | | | | | | 7, 8, 9, 10, 11 | | | Olive green, fine grained, sand. Strong organic odor. | |

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

# MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard and Howard | Amdura, Bay City, | SB-2 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 7-31-89 | 2 of 16 | Hex-core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6ft. | 4 in | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| ss-2 | 12/24 | 10 | 9 | 6 | | 1 | | | Dk. Fill material<br>Dk. Brown, fine-med. grained sand, with pebbles, moist. | |
| | | | | | | 2 | | | Lt. brown, med. sand, few pebbles, moist. | |
| | | | | | | 3 | | | Dk. brown, med. grained sand, moist. | |
| | | | | | | 4 | | | Grey, fine grained,sand. moist | |
| ss-3 | 6/12 | 6 | 12 | 16 | | 5 | | | Grey clay, with some sand and silt, dry, very hard. | |
| | | | | | | 6 | | | | |
| | | | | | | 7 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 11 | | | | |

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## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard and Howard | Amdura-Bay City | SB-3 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 7-31-89 | 3 of 16 | Hex-core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6ft. | 4 in | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS-4 | 18/24 | 6 | 5 | 6 | | 1 | | | Dark Brown, fine-med. grained sand, no odor, with large angular pebbles, dry. | |
| | | | | | | 2 | | | | |
| | | | | | | 3 | | | | |
| SS-5 | 12/24 | 5 | 5 | 2 | | 4 | | | | |
| | | | | | | 5 | | | | |
| | | | | | | 6 | | | | |
| | | | | | | 7 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 11 | | | | |

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P.O. BOX 10
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(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | SB-4 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 7/31/89 | 4 of 16 | Hex-core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 ft. | 4 in | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS-6 | 12/24 | 13 | 13 | 12 | | 1 | | | Black, fine-medium grained sand with coarser brick material, dark slag, moist. | |
| | | | | | | 2 | | | | |
| | | | | | | 3 | | | Dark black, fine-med. grained sand with pebbles, moist. | |
| | | | | | | 4 | | | | |
| SS-7 | 18/24 | 3 | 2 | 4 | | 5 | | | Black, fine-grained sand with no odor, Grey, fine-grained sand with no odor, Reddish-brown, fine-grained sand with no odor. | |
| | | | | | | 6 | | | Grey, very fine-grained sand, with no odor. | |
| | | | | | | 7 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 11 | | | | |

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## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City | SB-5 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 7-31-89 | 5 of 16 | Hex-core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 ft. | 4 in | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS-8 | 12/24 | 10 | 10 | 11 | | 1 | | | Dark (Black,Brown) sand, fine-med. grain with angular pebbles, moist. | |
| | | | | | | 2 | | | | |
| | | | | | | 3 | | | Lt. brown clay, with sand & silt, moist. | |
| | | | | | | 4 | | | | |
| SS-9 | 6/24 | 7 | 7 | 4 | | 5 | | | | |
| | | | | | | 6 | | | | |
| | | | | | | 7 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 11 | | | | |

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## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City | SB-6 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 7-31-89 | 6 of 16 | Hex-core | T. Ramos |

Surface Elevation | Top of Casing | Potentiometric (Date)

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 ft. | 4 in | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS10 | 12/12 | 10 | 4 | 3 | | 1 | | | Black Sand with slag. | |
| | | | | | | 2, 3 | | | | |
| SS11 | 6/12 | 5 | 8 | 5 | | 4, 5 | | | Brown sand, fine-med. grained with coarser pebbles, dry. | |
| | | | | | | 6, 7, 8, 9, 10, 11 | | | | |

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## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | SB-7 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-1-89 | 7 of 16 | Hex-Core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 ft. | 4 in. | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS-12 | 12/24 | 8 | 7 | 5 | | 1 | | | Dark Reddish-brown, medium grained sand with larger angular pebbles, also slag pebbles, no odor, unconsolidated, moist. | |
| | | | | | | 2, 3 | | | Dark Brown sand, fine-med. grained, no odor, with larger pebbles, moist. | |
| SS-13 | 6/24 | 3 | 2 | 3 | | 4, 5 | | | Grey sand, fine-grained, no odor, wet. | |
| | | | | | | 6, 7, 8, 9, 10, 11 | | | | |

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## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | SB-8 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-1-89 | 8 of 16 | Hex-Core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 ft. | 4 in. | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS14 | 12/24 | 9 | 12 | 7 | | 1 | | | Same Dark Sand with slag pebbles. | |
| | | | | | | 2, 3 | | | Black, fine-med. grained sand, with rounded pebbles, no odor, moist. | |
| SS15 | 12/24 | 4 | 3 | 3 | | 4, 5 | | | Same, increases in moisture. | |
| | | | | | | 6, 7, 8, 9, 10, 11 | | | | |

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P.O. BOX 10
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(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | SB-9 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-1-89 | 9 of 16 | Hex-Core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 ft. | 4 in. | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS16 | 18/24 | 15 | 11 | 12 | | 1 | | | Parking lot, black sand, 6" grey sand, Zone reddish-brown. | |
| | | | | | | 2 | | | | |
| | | | | | | 3 | | | Black, fine-med. grained, sand, no odor, moist. | |
| SS17 | 18/24 | 5 | 3 | 5 | | 4 | | | | |
| | | | | | | 5 | | | | |
| | | | | | | 6 | | | | |
| | | | | | | 7 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 11 | | | | |

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# MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | SB-10 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-1-89 | 10 of 16 | Hex-Core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 Ft. | 4 in. | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS18 | 18/24 | 9 | 16 | 16 | | 1 | | | Black, fine-med. grained, sand, no odor, moist. | |
| | | 9 | 6 | 7 | | 2, 3 | | | | |
| SS19 | 18/24 | | | | | 4, 5 | | | | |
| | | | | | | 6, 7, 8, 9, 10, 11 | | | | |

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(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | SB-11 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-1-89 | 11 of 16 | Hex-Core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 Ft. | 4 in. | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS20 | 18/24 | 8 | 10 | 7 | | 1 | | | Black, fine-med. grained, sand, no odor, moist. | |
| | | | | | | 2 | | | | |
| | | | | | | 3 | | | | |
| | | | | | | 4 | | | | |
| SS21 | | 1 | 1 | 2 | | 5 | | | Black, fine-med. grained, sand, no odor, moist, with cinders. | |
| | | | | | | 6 | | | | |
| | | | | | | 7 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 11 | | | | |

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Screened Interval

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P.O. BOX 10
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(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Andura, Bay City, MI | SB-12 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-1-89 | 12 of 16 | Hex-Core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 ft. | 4 in. | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS22 | 18/24 | 6 | 6 | 6 | | 1 | | | Black, fine-med. grained, sand, no odor, moist, with cinders. | |
| | | | | | | 2, 3 | | | | |
| | | | | | | 4 | | | Black, fine-med. grained, sand, no odor, moist. | |
| SS23 | 18/24 | 2 | 2 | 2 | | 5 | | | | |
| | | | | | | 6 | | | Grey, fine-grained, sand, wet, no odor. | |
| | | | | | | 7, 8, 9, 10, 11 | | | | |

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(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | SB-13 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-1-89 | 13 of 16 | Hex-Core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 ft. | 4 in. | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS24 | 20/24 | 6 | 8 | 10 | | 1 | | | Black Sand, with Cinders, Brick material. | |
| | | | | | | 2 | | | | |
| | | | | | | 3 | | | Black, fine-med. grained, sand, no odor, moist. | |
| | | | | | | 4 | | | | |
| SS25 | 18/24 | 4 | 3 | 4 | | 5 | | | | |
| | | | | | | 6 | | | | |
| | | | | | | 7 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 11 | | | | |

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P.O. BOX 10
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(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | SB-14 |

| Date Drilled | Sheet 14 of 16 | Drilling Method | Geologist |
|---|---|---|---|
| 8-1-89 | | Hex-Core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 Ft. | 4 in. | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS26 | 18/24 | 20 | 18 | 23 | | 1 | | | All Crushed stone, 6" yellow-brown sand, fine-grained, wet. | |
| | | | | | | 2 | | | | |
| | | | | | | 3 | | | Yellow-brown sand, clay sand, black sand. | |
| | | | | | | 4 | | | | |
| SS27 | 18/24 | 27 | 42 | 25 | | 5 | | | Same, with white & green slag. | |
| | | | | | | 6 | | | | |
| | | | | | | 7 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 11 | | | | |

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## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | SB-15 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-2-89 | 15 of 16 | Hex-Core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 Ft. | 4 In. | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS28 | 18/24 | 4 | 4 | 5 | | 1 | | | Brownish, yellow sand, fine-med. grained, no odor, dry. | |
| | | | | | | 2 | | | Dark brown sand, fine-med. grained, no odor, dry. | |
| | | | | | | 3 | | | | |
| | | | | | | 4 | | | | |
| SS29 | 18/24 | 4 | 7 | 13 | | 5 | | | Same as above, with cinders. | |
| | | | | | | 6 | | | | |
| | | | | | | 7 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 11 | | | | |

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

# MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | SB-16 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-1-89 | 16 of 16 | Hex-Core | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 6 Ft. | 4 in. | | |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| SS30 | 18/24 | 9 | 9 | 9 | | 1 | | | Black, fine-med. grained, sand, no odor, moist. | |
| | | | | | | 2 | | | | |
| | | | | | | 3 | | | | |
| | | | | | | 4 | | | | |
| SS31 | 18/24 | 13 | 8 | 3 | | 5 | | | Black, fine-med. grained, sand, no odor, moist, with cinders. | |
| | | | | | | 6 | | | | |
| | | | | | | 7 | | | | |
| | | | | | | 8 | | | | |
| | | | | | | 9 | | | | |
| | | | | | | 10 | | | | |
| | | | | | | 11 | | | | |

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

# MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | MW-1 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-3-89 | 1 of 7 | Hollow Stem | D. Regalbuto |

Surface Elevation | Top of Casing | Potentiometric (Date)

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 15' | 8" | 2" Sch 80 PVC | 2" 304-SS 7-Slot |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 5 | | | Sand, black with silt, abundant cinder, slag cobbles & gravel, metal fragments. | |
| | | | | | | 10 | | | /1" resembles pulverized brick. | |
| SS-1 | 24/24 | 2 | 1 | 2 | | | | | Sand, fine-med. grained, gray, trace of clay. Silt in clay. | |
| | | | | | | | | | Sand, fine to very fine grained, gray, trace of silt. | |
| | | | | | | | | | Silt, clay-based on rig rate. | |
| | | | | | | 15 | | | Sand, med. grained, very coarse, gray, saturated. | |
| SS-2 | | 3 | 4 | 7 | | | | | Silt, black organic, peat-like, damp. | |
| | | | | | | | | | Silt, dark brown, trace of sand, damp. | |
| | | | | | | 20 | | | Set well at 15'. | |

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

# MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Howard & Howard | Amdura, Bay City, MI | MW-2 |
|---|---|---|

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-3-89 | 2 of 7 | Hollow Stem | D. Regalbuto |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 15' | 8" | 2" Sch 80 PVC | 2" 304-SS 7-Slot |

| Soil Sample No. | Penetration & Recovery (inches) | Split Spoon Blow Counts 6" Intervals -- 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 5 | | | Sand, Black with silt, gravel & cobbles (i.e. slag, metal, bricks) |
| | | | | | | 10 | ▽ | X | |
| SS-1 | 24/10 | 8 | 5 | 3 | | | | | Wood, saturated, yellow to gray, fresh. |
| SS-2 | 24/16 | 3 | 5 | 4 | | 15 | | | Sand, gray, fine to coarse in beds 2-6", trace of clay, saturated, shell fragments (bivalves). |
| | | | | | | | | | TD @ 15'. |
| | | | | | | 20 | | | |
| | | | | | | 25 | | | |
| | | | | | | 30 | | | |

SS = Split Spoon
ST = Shelby Tube

Screened Interval
Bentonite and Sand Slurry
Bentonite Slurry w/ Tremie Hose
Cement Slurry w/ Tremie Hose
Sand Screen Pack
X Native Material Back-fill
Static Water Level
Shale Packer

dry granular bentonine.

# MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Well No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | MW-3 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-4-89 | 3 of 7 | Hollow Stem | D. Regalbuto |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 13 Ft. | 8 In. | 2" Sch 80 PVC | 2" 304-SS 7-Slot |

| Soil Sample No. | Penetration & Recovery (inches) | Split Spoon Blow Counts 6" Intervals -- 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Foundry sand & slag, brick. |
| | | | | | | 5 | | | Sand, tan to light gray with silt, trace of clay |
| | | | | | | | | BEN. | |
| | | | | | | | | | Sand, dark gray to green in silt, clay, shell fragments. |
| | | | | | | 10 | | | |
| SS-1 | 24/6 | 17 | 50+ | 7 | | | | | Wood, SS-1 had hydrocarbon sheer, slag, odor in wood (creosote?). |
| SS-2 | 24/2 | 9 | 8 | 50+ | | 15 | | | Wood, yellow, tough, unweathered appearance. |
| | | | | | | | | | TD @ 13'. Spooned to 15'. |
| | | | | | | 20 | | | |
| | | | | | | 25 | | | |
| | | | | | | 30 | | | |

SS = Split Spoon
ST = Shelby Tube

Screened Interval
Bentonite and Sand Slurry
Bentonite Slurry w/ Tremie Hose
Cement Slurry w/ Tremie Hose
Sand Screen Pack
~~Other Material~~ ~~Backfill~~ BENTONITE
Static Water Level
Shale Packer

# MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard & Howard | Amdura, Bay City, MI | MW-4 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-7-89 | 4 of 7 | Hollow Stem | T. Ramos |

Surface Elevation | Top of Casing | Potentiometric (Date)

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 10.5' | 8" | 2" Sch 80 PVC | 2" 304-SS 7-Slot |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1, 2 | | | Dark Brown sand, fine-med. grained, no odor, dry. | |
| | | | | | | 3, 4 | | | Gray clay with silt, no odor, moist. | |
| | | | | | | 5, 6 | | BENT. | Gray, sandy clay, no odor, moist. | |
| | 18/24 | 5 | 7 | 9 | | 7, 8 | ▽ | | Dark gray silt and sand, fine-med. grained, no odor, very moist. | |
| | | | | | | 9, 10, 11 | | | T.D. @ 10.5' | |

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

# MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Project | Location | Boring No. |
|---|---|---|
| Howard and Howard | Amdura, Bay City, MI | MW-5 |

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-7-89 | 5 of 7 | Hollow Stem | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 13 ft. | 8 in. | 2" Sch 80 pvc | 2" 304-ss 7-slot |

| Soil Sample No. | Penetration & Recovery (Inches) | Split Spoon Blow Counts 6" Intervals 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks | USCS Class |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Dark Black, fine-med. grained sand, no odor, moist. | |
| | | | | | | | | | Dark brown, fine to med. grained sand, no odor, wet. | |
| | | | | | | | | | Grey, fine grained sand, no odor, wet. | |
| | | | | | | 5 | | | Brown sandy clay, moist no odor. | |
| | | | | | | | | | Brown clay with some silt and sand (10-20%), very dry, very hard, no odor. | |
| | 18/24 | 15 | 15 | 20 | | | | | | |
| | 18/24 | 10 | 9 | 13 | | 10 | | | | |
| | | | | | | | | | light brown, sandy, silty zone, very wet. | |
| | | | | | | 15 | | | T.D. @ 13'. | |
| | | | | | | 20 | | | | |

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

# RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Howard & Howard | Amdura, Bay City, MI | MW-6 |
|---|---|---|

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-9-89 | 6 of 7 | Hollow Stem | T. Ramos |

Surface Elevation | Top of Casing | Potentiometric (Date)

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 22' | 4" | 2" Sch 80 PVC | 2" 304-SS 7-Slot |

| Soil Sample No. | Penetration & Recovery (inches) | Split Spoon Blow Counts 6" Intervals -- 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Fill material. |
| | | | | | | 5 | | | Brown clay with silt, no odor, dry. |
| | | | | | | 10 | | | |
| | | | | | | 15 | | | Blue clay, very little silt, hard, dry. |
| | | | | | | 20 | | | |
| | 18/24 | 18 | 20 | 21 | | | | | T.D. @ 22'. |
| | | | | | | 25 | | | |
| | | | | | | 30 | | | |

SS = Split Spoon
ST = Shelby Tube

Screened Interval
Bentonite and Sand Slurry
Bentonite Slurry w/ Tremie Hose
Cement Slurry w/ Tremie Hose
Sand Screen Pack
~~Native Material~~
~~Back-fill~~ BENTONITE
Static Water Level
Shale Packer

# MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

## Soil Boring/Well Log

| Howard & Howard | Amdura, Bay City, MI | MW-7 |
|---|---|---|

| Date Drilled | Sheet | Drilling Method | Geologist |
|---|---|---|---|
| 8-9-89 | 7 of 7 | Hollow Stem | T. Ramos |

| Surface Elevation | Top of Casing | Potentiometric (Date) |
|---|---|---|
| | | |

| Hole Depth | Diameter | Casing Type | Screen Type |
|---|---|---|---|
| 22' | 4" | 2" Sch 80 PVC | 2" 304-SS 7-Slot |

| Soil Sample No. | Penetration & Recovery (inches) | Split Spoon Blow Counts 6" Intervals -- 1st | 2nd | 3rd | PID/OVA (ppm) | Depth Below Surface (ft.) | Static Water Level | Well Completion | Lithologic Description and Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 5 | | | Dark Brown Sand, fine-med. grained, no odor, dry. |
| | | | | | | | | | Gray sand, fine grained, very wet. |
| | | | | | | | | | Dark brown sand, fine-med. grained, no odor, dry. |
| | 18/24 | 13 | 15 | 24 | | 10 | | | Brown clay, very hard & dry, little to no silt. |
| | 18/24 | 23 | 30 | 35 | | | | | |
| | 18/24 | 25 | 21 | 31 | | | | | |
| | 18/24 | 11 | 15 | 30 | | 15 | | | Blue clay, very little silt, hard, dry. |
| | 18/24 | 12 | 16 | 23 | | | | | |
| | 18/24 | 10 | 12 | 17 | | 20 | | | |
| | 18/24 | 8 | 11 | 12 | | | | | T.D. @ 22' |
| | | | | | | 25 | | | |
| | | | | | | 30 | | | |

SS = Split Spoon

ST = Shelby Tube

Screened Interval

Bentonite and Sand Slurry

Bentonite Slurry w/ Tremie Hose

Cement Slurry w/ Tremie Hose

Sand Screen Pack

~~Native Material~~ ~~Back-fill~~ BENTONITE

Static Water Level

Shale Packer

# APPENDIX B

HEAD-SPACE ANALYSIS OF SAMPLE BORINGS AT AMDURA

| Soil Boring | Soil Sample No. | HNU-101 Reading |
|---|---|---|
| SB-1 | SS-1 | 45 |
| SB-2 | SS-2 | 1 |
| | SS-3 | 1 |
| SB-3 | SS-4 | NDT |
| | SS-5 | NDT |
| SB-4 | SS-6 | NDT |
| | SS-7 | NDT |
| SB-5 | SS-8 | NDT |
| | SS-9 | NDT |
| SB-6 | SS-10 | NDT |
| | SS-11 | NDT |
| SB-7 | SS-12 | NDT |
| | SS-13 | NDT |
| SB-8 | SS-14 | NDT |
| | SS-15 | NDT |
| SB-9 | SS-16 | NDT |
| | SS-17 | NDT |
| SB-10 | SS-18 | NDT |
| | SS-19 | NDT |
| SB-11 | SS-20 | NDT |
| | SS-21 | NDT |
| SB-12 | SS-22 | NDT |
| | SS-23 | NDT |
| SB-13 | SS-24 | NDT |
| | SS-25 | NDT |
| SB-14 | SS-26 | NDT |
| | SS-27 | NDT |
| SB-15 | SS-28 | NDT |
| | SS-29 | NDT |
| SB-16 | SS-30 | NDT |
| | SS-31 | NDT |

i. HNU readings are in parts per million (ppm).
ii. Non-dectectable

# APPENDIX C

**Fire & Environmental Consulting Laboratories, Inc.**

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167

RECEIVED
SEP 1 1989
MIDWEST WATER RESOURCE INCORPORATED

August 29, 1989
(Revised Report Replaces Report of August 24, 1989)

Midwest Water Resource
615 W. Shepard St.
P.O. Box 10
Charlotte, MI 48813

Attention: Mr. Joel Schaeffer

# Analytical Laboratory Report

**FECL #:** 02894-89-E1-27

Samples analyzed by: M. Murshak, P. Roettger
Analyses requested by: Joel Schaeffer
PO#: Verbal

Samples collected by :
T. Ramos
Date/time samples submitted:
08-03-89 12:15 p.m.

**Submitting company:** Midwest Water Resource
615 W. Shepard, P.O. Box 10
Charlotte, MI 48813

**Project description:** Amdura Howard & Howard

**Samples collected:**

**FECL #: 02894-89-E1**
Tag: SB-1 3.5
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E2**
Tag: SB-2 0.2
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E3**
Tag: SB-2 4.6
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E4**
Tag: SB-3 SS4
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E5**
Tag: Sb-3 SS-5
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E6**
Tag: SB-4 SS-6
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E7**
Tag: SB-4 SS-7
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E8**
Tag: SB-5 SS-8
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E9**
Tag: SB-5 SS-9
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E10**
Tag: SB-6 SS-10
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E11**
Tag: SB-6 SS-11
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E12**
Tag: SB-7 SS-12
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E13**
Tag: SB-7 SS-13
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

**FECL #: 02894-89-E14**
Tag: SB-8 SS-14
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E15**
Tag: SB-8 SS-15
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E16**
Tag: SB-9 SS-16
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E17**
Tag: SB-9 SS-17
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E18**
Tag: SB-10 SS-18
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E19**
Tag: SB-10 SS-19
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E20**
Tag: SB-11 SS-20
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E21**
Tag: SB-11 SS-21
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E22**
Tag: SB-12 SS-22
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E23**
Tag: SB-12 SS-23
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E24**
Tag: SB-13 SS-24
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E25**
Tag: SB-13 SS-25
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E26**
Tag: SB-14 SS-26
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

**FECL #: 02894-89-E27**
Tag: SB-14 SS-27
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

Analytical Laboratory Report
Midwest Water Resource
FECL #: 2894-89-E1-27
August 29, 1989 (Revised Report)
Page Four

| FECL #: | 02894-89-E1 | | 02894-89-E2 | | 02894-89-E3 | |
|---|---|---|---|---|---|---|
| Tag: | SB-1 3-5 | | SB-2 0-2 | | SB-2 4-6 | |
| **Purgeable Halocarbons** | | | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |

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| FECL #: | 02894-89-E1 | | 02894-89-E2 | | 02894-89-E3 | |
|---|---|---|---|---|---|---|
| Tag: | SB-1 3-5 | | SB-2 0-2 | | SB-2 4-6 | |
| **Priority Pollutant Metals** | | | | | | |
| Antimony | <0.5 | mg/kg | 0.7 | mg/kg | <0.5 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | 0.4 | mg/kg | <0.3 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 7.1 | mg/kg | 3.3 | mg/kg | 5.9 | mg/kg |
| Copper | 23.8 | mg/kg | 49.6 | mg/kg | 145 | mg/kg |
| Lead | 56.2 | mg/kg | 60.6 | mg/kg | 35.5 | mg/kg |
| Mercury | <0.10 | mg/kg | <0.10 | mg/kg | <0.10 | mg/kg |
| Nickel | 5.3 | mg/kg | 4.0 | mg/kg | 10.6 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 54.7 | mg/kg | 74.4 | mg/kg | 57.0 | mg/kg |
| **Solids** | | | | | | |
| Total Solids | 94.0 | % | 94.1 | % | 86.7 | % |

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| FECL #: | 02894-89-E4 | | 02894-89-E5 | | 02894-89-E6 | |
|---|---|---|---|---|---|---|
| Tag: | SB-3 SS-4 | | SB-3 SS-5 | | SB-4 SS-6 | |
| **Purgeable Halocarbons** | | | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | 0.14 | mg/kg | 0.21 | mg/kg | 0.21 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |

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| FECL #: | 02894-89-E4 | | 02894-89-E5 | | 02894-89-E6 | |
|---|---|---|---|---|---|---|
| Tag: | SB-3 SS-4 | | SB-3 SS-5 | | SB-4 SS-6 | |
| **Priority Pollutant Metals** | | | | | | |
| Antimony | <0.5 | mg/kg | <0.5 | mg/kg | <0.5 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | 0.5 | mg/kg | 0.4 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 6.3 | mg/kg | 7.6 | mg/kg | 9.0 | mg/kg |
| Copper | 39.7 | mg/kg | 40.6 | mg/kg | 42.8 | mg/kg |
| Lead | 58.4 | mg/kg | 54.1 | mg/kg | 53.2 | mg/kg |
| Mercury | <0.10 | mg/kg | <0.10 | mg/kg | <0.10 | mg/kg |
| Nickel | 6.1 | mg/kg | 8.0 | mg/kg | 8.2 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 85.0 | mg/kg | 90.7 | mg/kg | 86.5 | mg/kg |
| **Solids** | | | | | | |
| Total Solids | 86.0 | % | 95.0 | % | 92.2 | % |

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| FECL #: | 02894-89-E7 | | 02894-89-E8 | | 02894-89-E9 | |
|---|---|---|---|---|---|---|
| Tag: | SB-4 SS-7 | | SB-5 SS-8 | | SB-5 SS-9 | |
| **Purgeable Halocarbons** | | | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | 0.20 | mg/kg | 0.27 | mg/kg | 0.18 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |

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| FECL #: | 02894-89-E7 | | 02894-89-E8 | | 02894-89-E9 | |
|---|---|---|---|---|---|---|
| Tag: | SB-4 SS-7 | | SB-5 SS-8 | | SB-5 SS-9 | |
| **Priority Pollutant Metals** | | | | | | |
| Antimony | <0.5 | mg/kg | <0.5 | mg/kg | <0.5 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | <0.3 | mg/kg | 0.7 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 1.2 | mg/kg | 5.0 | mg/kg | 7.4 | mg/kg |
| Copper | 6.6 | mg/kg | 50.0 | mg/kg | 28.6 | mg/kg |
| Lead | 15.2 | mg/kg | 50.5 | mg/kg | 38.9 | mg/kg |
| Mercury | <0.10 | mg/kg | <0.10 | mg/kg | <0.10 | mg/kg |
| Nickel | 2.4 | mg/kg | 6.6 | mg/kg | 12.1 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 63.0 | mg/kg | 79.2 | mg/kg | 145 | mg/kg |
| **Solids** | | | | | | |
| Total Solids | 57.5 | % | 91.0 | % | 85.0 | % |

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| FECL #: | 02894-89-E10 | | 02894-89-E11 | | 02894-89-E12 | |
|---|---|---|---|---|---|---|
| Tag: | SB-6 SS-10 | | SB-6 SS-11 | | SB-7 SS-12 | |
| **Purgeable Halocarbons** | | | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | 0.13 | mg/kg | 0.15 | mg/kg | 0.09 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |

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| FECL #: | 02894-89-E10 | | 02894-89-E11 | | 02894-89-E12 | |
|---|---|---|---|---|---|---|
| Tag: | SB-6 SS-10 | | SB-6 SS-11 | | SB-7 SS-12 | |
| **Priority Pollutant Metals** | | | | | | |
| Antimony | <0.5 | mg/kg | <0.5 | mg/kg | 1.3 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | 1.0 | mg/kg | <0.3 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 13.4 | mg/kg | 61.5 | mg/kg | 178 | mg/kg |
| Copper | 28.3 | mg/kg | 39.8 | mg/kg | 438 | mg/kg |
| Lead | 10.9 | mg/kg | 27.0 | mg/kg | 110 | mg/kg |
| Mercury | <0.10 | mg/kg | <0.10 | mg/kg | <0.10 | mg/kg |
| Nickel | 15.4 | mg/kg | 27.5 | mg/kg | 126 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | 0.3 | mg/kg | 1.2 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 46.0 | mg/kg | 109 | mg/kg | 219 | mg/kg |
| **Solids** | | | | | | |
| Total Solids | 96.0 | % | 93.0 | % | 96.2 | % |

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| FECL #: | 02894-89-E13 | | 02894-89-E14 | | 02894-89-E15 | |
|---|---|---|---|---|---|---|
| Tag: | SB-7 SS-13 | | SB-8 SS-14 | | SB-8 SS-15 | |
| **Purgeable Halocarbons** | | | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | 0.11 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | 0.03 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | 0.08 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |

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|---|---|---|---|---|---|---|
| Tag: | SB-7 SS-13 | | SB-8 SS-14 | | SB-8 SS-15 | |
| **Priority Pollutant Metals** | | | | | | |
| Antimony | 4.2 | mg/kg | <0.5 | mg/kg | <0.5 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | 0.4 | mg/kg | 0.7 | mg/kg | <0.3 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 23.5 | mg/kg | 39.4 | mg/kg | 5.9 | mg/kg |
| Copper | 930 | mg/kg | 109 | mg/kg | 32.4 | mg/kg |
| Lead | 388 | mg/kg | 35.3 | mg/kg | 7.8 | mg/kg |
| Mercury | <0.10 | mg/kg | <0.10 | mg/kg | <0.10 | mg/kg |
| Nickel | 58.5 | mg/kg | 24.6 | mg/kg | 7.0 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <1.0 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 462 | mg/kg | 76.2 | mg/kg | 25.0 | mg/kg |
| **Solids** | | | | | | |
| Total Solids | 90.0 | % | 96.0 | % | 94.0 | % |

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| FECL #: | 02894-89-E16 | | 02894-89-E17 | | 02894-89-E18 | |
|---|---|---|---|---|---|---|
| Tag: | SB-9 SS-16 | | SB-9 SS-17 | | SB-10 SS-18 | |
| **Purgeable Halocarbons** | | | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |

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| FECL #: | 02894-89-E16 | | 02894-89-E17 | | 02894-89-E18 | |
|---|---|---|---|---|---|---|
| Tag: | SB-9 SS-16 | | SB-9 SS-17 | | SB-10 SS-18 | |
| **Priority Pollutant Metals** | | | | | | |
| Antimony | <0.5 | mg/kg | <0.5 | mg/kg | <0.5 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | 1.5 | mg/kg | <1.0 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 10.7 | mg/kg | 32.1 | mg/kg | 4.9 | mg/kg |
| Copper | 55.4 | mg/kg | 166 | mg/kg | 17.2 | mg/kg |
| Lead | 19.5 | mg/kg | 38.1 | mg/kg | 14.3 | mg/kg |
| Mercury | <0.10 | mg/kg | <0.10 | mg/kg | <0.10 | mg/kg |
| Nickel | 15.1 | mg/kg | 31.6 | mg/kg | 3.0 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 36.9 | mg/kg | 58.5 | mg/kg | 18.0 | mg/kg |
| **Solids** | | | | | | |
| Total Solids | 89.2 | % | 93.3 | % | 95.0 | % |

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| FECL #: | 02894-89-E19 | | 02894-89-E20 | | 02894-89-E21 | |
|---|---|---|---|---|---|---|
| Tag: | SB-10 SS-19 | | SB-11 SS-20 | | SB-11 SS-21 | |
| **Purgeable Halocarbons** | | | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |

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| FECL #: | 02894-89-E19 | | 02894-89-E20 | | 02894-89-E21 | |
|---|---|---|---|---|---|---|
| Tag: | SB-10 SS-19 | | SB-11 SS-20 | | SB-11 SS-21 | |
| **Priority Pollutant Metals** | | | | | | |
| Antimony | 0.7 | mg/kg | <0.5 | mg/kg | <0.5 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 4.9 | mg/kg | 2.0 | mg/kg | 2.8 | mg/kg |
| Copper | 62.2 | mg/kg | 12.4 | mg/kg | 13.4 | mg/kg |
| Lead | 38.8 | mg/kg | 4.7 | mg/kg | 7.1 | mg/kg |
| Mercury | <0.10 | mg/kg | <0.10 | mg/kg | <0.10 | mg/kg |
| Nickel | 4.4 | mg/kg | 1.0 | mg/kg | 2.8 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 45.9 | mg/kg | 11.1 | mg/kg | 12.1 | mg/kg |
| **Solids** | | | | | | |
| Total Solids | 89.7 | % | 92.5 | % | 95.5 | % |

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| FECL #: | 02894-89-E22 | | 02894-89-E23 | | 02894-89-E24 | |
|---|---|---|---|---|---|---|
| Tag: | SB-12 SS-22 | | SB-12 SS-23 | | SB-13 SS-24 | |
| **Purgeable Halocarbons** | | | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |

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| FECL #: | 02894-89-E22 | | 02894-89-E23 | | 02894-89-E24 | |
|---|---|---|---|---|---|---|
| Tag: | SB-12 SS-22 | | SB-12 SS-23 | | SB-13 SS-24 | |
| **Priority Pollutant Metals** | | | | | | |
| Antimony | 1.6 | mg/kg | <0.5 | mg/kg | 37.5 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | <0.3 | mg/kg | 0.8 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | 0.8 | mg/kg |
| Chromium | 70.1 | mg/kg | 5.2 | mg/kg | 13.6 | mg/kg |
| Copper | 176 | mg/kg | 37.7 | mg/kg | 22,300 | mg/kg |
| Lead | 30.6 | mg/kg | 13.4 | mg/kg | 1,580 | mg/kg |
| Mercury | <0.10 | mg/kg | <0.10 | mg/kg | <0.10 | mg/kg |
| Nickel | 106 | mg/kg | 8.5 | mg/kg | 26.3 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 12.1 | mg/kg | 27.7 | mg/kg | 15.5 | mg/kg |
| **Solids** | | | | | | |
| Total Solids | 95.6 | % | 92.1 | % | 93.8 | % |

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| FECL #: | 02894-89-E25 | | 02894-89-E26 | | 02894-89-E27 | |
|---|---|---|---|---|---|---|
| Tag: | SB-13 SS-25 | | SB-14 SS-26 | | SB-14 SS-27 | |
| **Purgeable Halocarbons** | | | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropen | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | 0.04 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |

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| FECL #: | 02894-89-E25 | | 02894-89-E26 | | 02894-89-E27 | |
|---|---|---|---|---|---|---|
| Tag: | SB-13 SS-25 | | SB-14 SS-26 | | SB-14 SS-27 | |
| **Priority Pollutant Metals** | | | | | | |
| Antimony | 0.8 | mg/kg | <0.5 | mg/kg | 4.4 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 10.0 | mg/kg | 2.5 | mg/kg | 146 | mg/kg |
| Copper | 102 | mg/kg | 11.3 | mg/kg | 226 | mg/kg |
| Lead | 14.6 | mg/kg | 6.4 | mg/kg | 29.0 | mg/kg |
| Mercury | <0.10 | mg/kg | <0.10 | mg/kg | <0.10 | mg/kg |
| Nickel | 62.9 | mg/kg | 11.9 | mg/kg | 135 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 20.6 | mg/kg | 10.0 | mg/kg | 52.7 | mg/kg |
| **Solids** | | | | | | |
| Total Solids | 90.8 | % | 90.5 | % | 95.8 | % |

Violetta F. Murshak
Laboratory Manager

VFM/ab

Fire & Environmental
Consulting Laboratories, Inc.

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167

September 5, 1989
(Revised Report replaces report of August 25, 1989)

Midwest Water Resource
615 W. Shepard St.
P.O. Box 10
Charlotte, MI 48813

Attention: Mr. Joel Schaeffer

# Analytical Laboratory Report

FECL #: 02924-89-E1,3,5
02925-89-E1-6
Samples analyzed by: V. Murshak
Analyses requested by: Joel Schaeffer
PO#: Verbal

Samples collected by :
Unknown
Date/time samples submitted:
08-10-89 2:00 p.m.

Submitting company: Midwest Water Resource
615 W. Shepard, P.O. Box 10
Charlotte, MI 48813

Project description: Amdura Howard & Howard

Samples collected:

FECL #: 02924-89-E1
Tag: MW-6 8-10
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02924-89-E5
Tag: Pit
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02924-89-E3
Tag: MW-7 7.5-9.5
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

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**FECL #: 02925-89-E1**
Tag: SB-15 SS-28
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

**FECL #: 02925-89-E2**
Tag: SB-15 SS-29
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

**FECL #: 02925-89-E3**
Tag: SB-16 SS-30
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

**FECL #: 02925-89-E4**
Tag: SB-16 SS-31
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

**FECL #: 02925-89-E5**
Tag: Subsurface 1S
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

**FECL #: 02925-89-E6**
Tag: Subsurface 2N
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

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| FECL #: | 02924-89-E1 | | 02924-89-E3 | |
|---|---|---|---|---|
| Tag: | MW-6 8-10 | | MW-7 7.5-9.5 | |
| **Purgeable Halocarbons** | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg |

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| FECL #: | 02924-89-E1 | | 02924-89-E3 | |
|---|---|---|---|---|
| Tag: | MW-6 8-10 | | MW-7 7.5-9.5 | |
| **Metals** | | | | |
| Antimony | <0.8 | mg/kg | <0.8 | mg/kg |
| Arsenic | <1.3 | mg/kg | <1.3 | mg/kg |
| Beryllium | <0.3 | mg/kg | <0.3 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 5.5 | mg/kg | 8.2 | mg/kg |
| Copper | 5.5 | mg/kg | 4.8 | mg/kg |
| Lead | <1.0 | mg/kg | <1.0 | mg/kg |
| Mercury | <0.05 | mg/kg | <0.05 | mg/kg |
| Nickel | 4.2 | mg/kg | 4.1 | mg/kg |
| Selenium | <1.3 | mg/kg | <1.3 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 15.0 | mg/kg | 17.6 | mg/kg |

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| FECL #: | 2947-89-E5 | | 2947-89-E6 | |
|---|---|---|---|---|
| Tag: | MW-5 | | MW-6 | |
| **Purgeable Halocarbons** | | | | |
| Chloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Trichlorofluoromethane | <0.01 | mg/l | <0.01 | mg/l |
| 1,1-Dichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| Methylene chloride | <0.01 | mg/l | <0.01 | mg/l |
| trans-1,2-Dichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| 1.1-Dichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Chloroform | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,1-Trichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Carbon tetrachloride | <0.01 | mg/l | <0.01 | mg/l |
| 1,2-Dichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Trichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| 1,2-Dichloropropane | <0.01 | mg/l | <0.01 | mg/l |
| Bromodichloromethane | <0.01 | mg/l | <0.01 | mg/l |
| 2-Chloroethylvinyl ether | <0.01 | mg/l | <0.01 | mg/l |
| cis-1,3-Dichloropropene | <0.01 | mg/l | <0.01 | mg/l |
| trans-1,3-Dichloropropene | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,2-Trichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Tetrachloroethene | <0.01 | mg/l | <0.01 | mg/l |
| Dibromochloromethane | <0.01 | mg/l | <0.01 | mg/l |
| Chlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| Bromoform | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/l | <0.01 | mg/l |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| **Purgeable Aromatics** | | | | |
| Benzene | <0.01 | mg/l | <0.01 | mg/l |
| Toluene | <0.01 | mg/l | <0.01 | mg/l |
| Ethyl Benzene | <0.01 | mg/l | <0.01 | mg/l |
| p,m-Xylene | <0.01 | mg/l | <0.01 | mg/l |
| o-Xylene | <0.01 | mg/l | <0.01 | mg/l |

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| FECL #: | 02924-89-E5 | | 02925-89-E1 | |
|---|---|---|---|---|
| Tag: | Pit | | SB-15 SS-28 | |
| **Metals** | | | | |
| Antimony | <0.03 | mg/l | <0.5 | mg/kg |
| Arsenic | <0.05 | mg/l | <1.0 | mg/kg |
| Beryllium | <0.01 | mg/l | <0.3 | mg/kg |
| Cadmium | <0.01 | mg/l | <0.3 | mg/kg |
| Chromium | <0.02 | mg/l | 24.2 | mg/kg |
| Copper | <0.02 | mg/l | 30.0 | mg/kg |
| Lead | <0.04 | mg/l | 57.0 | mg/kg |
| Mercury | <0.005 | mg/l | <0.02 | mg/kg |
| Nickel | <0.02 | mg/l | 18.5 | mg/kg |
| Selenium | <0.05 | mg/l | <1.0 | mg/kg |
| Silver | <0.01 | mg/l | <0.3 | mg/kg |
| Thallium | <0.04 | mg/l | <0.5 | mg/kg |
| Zinc | <0.02 | mg/l | 336 | mg/kg |

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| FECL #: | 02925-89-E2 | | 02925-89-E3 | | 02925-89-E4 | |
|---|---|---|---|---|---|---|
| Tag: | SB-15 SS-29 | | SB-16 SS-30 | | SB-16 SS-31 | |
| **Purgeable Halocarbons** | | | | | | |
| Chloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | | | |
| Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Toluene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/kg | <0.01 | mg/kg | <0.01 | mg/kg |

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| FECL #: | 02925-89-E2 | | 02925-89-E3 | | 02925-89-E4 | |
|---|---|---|---|---|---|---|
| Tag: | SB-15 SS-29 | | SB-16 SS-30 | | SB-16 SS-31 | |
| **Metals** | | | | | | |
| Antimony | <0.5 | mg/kg | <0.5 | mg/kg | <0.5 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 12.9 | mg/kg | 9.8 | mg/kg | 9.8 | mg/kg |
| Copper | 46.9 | mg/kg | 314 | mg/kg | 25.0 | mg/kg |
| Lead | 22.8 | mg/kg | 61.0 | mg/kg | 14.0 | mg/kg |
| Mercury | <0.02 | mg/kg | <0.02 | mg/kg | <0.02 | mg/kg |
| Nickel | 20.4 | mg/kg | 6.0 | mg/kg | 11.1 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <0.5 | mg/kg | <0.5 | mg/kg | <0.5 | mg/kg |
| Zinc | 25.8 | mg/kg | 30.0 | mg/kg | 21.0 | mg/kg |

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| FECL #: | 02925-89-E5 | | 02925-89-E6 | |
|---|---|---|---|---|
| Tag: | Subsurface 1S | | Subsurface 2N | |
| **Metals** | | | | |
| Antimony | <0.5 | mg/kg | <0.5 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | <0.3 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 7.3 | mg/kg | 41.7 | mg/kg |
| Copper | 22.1 | mg/kg | 78.2 | mg/kg |
| Lead | 39.2 | mg/kg | 270 | mg/kg |
| Mercury | <0.02 | mg/kg | <0.02 | mg/kg |
| Nickel | 6.4 | mg/kg | 18.0 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <1.0 | mg/kg | <1.0 | mg/kg |
| Zinc | 221 | mg/kg | 698 | mg/kg |

V. F. Murshak

Violetta F. Murshak
Laboratory Manager

VFM/ab

# APPENDIX D

**Fire & Environmental Consulting Laboratories, Inc.**

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167

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MIDWEST WATER RESOURCE INCORPORATED

August 22, 1989

Midwest Water Resource
615 W. Shepard St.
P.O. Box 10
Charlotte, MI 48813

Attention: Mr. Joel Schaeffer

# Analytical Laboratory Report

**FECL #:** 2947-89-E1-7

Samples analyzed by:
Analyses requested by: Joel Schaeffer
PO#: Verbal

Samples collected by :
Tom Ramos
Date/time samples submitted:
08-15-89 2:30 p.m.

**Submitting company:** Midwest Water Resource
615 W. Shepard, P.O. Box 10
Charlotte, MI 48813

**Project description:** Howard & Howard

**Samples collected:**

**FECL #: 2947-89-E1**
Tag: MW-1
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

**FECL #: 2947-89-E2**
Tag: MW-2
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

**FECL #: 2947-89-E3**
Tag: MW-3
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08/14/89

**FECL #: 2947-89-E4**
Tag: MW-4
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08/14/89

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**FECL #: 2947-89-E5**
Tag: MW-5
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

**FECL #: 2947-89-E6**
Tag: MW-6
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

**FECL #: 2947-89-E7**
Tag: MW-7
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

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| FECL #: | 2947-89-E1 | | 2947-89-E2 | |
|---|---|---|---|---|
| Tag: | MW-1 | | MW-2 | |
| **Purgeable Halocarbons** | | | | |
| Chloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Trichlorofluoromethane | <0.01 | mg/l | <0.01 | mg/l |
| 1,1-Dichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| Methylene chloride | <0.01 | mg/l | <0.01 | mg/l |
| trans-1,2-Dichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| 1.1-Dichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Chloroform | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,1-Trichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Carbon tetrachloride | <0.01 | mg/l | <0.01 | mg/l |
| 1,2-Dichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Trichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| 1,2-Dichloropropane | <0.01 | mg/l | <0.01 | mg/l |
| Bromodichloromethane | <0.01 | mg/l | <0.01 | mg/l |
| 2-Chloroethylvinyl ether | <0.01 | mg/l | <0.01 | mg/l |
| cis-1,3-Dichloropropene | <0.01 | mg/l | <0.01 | mg/l |
| trans-1,3-Dichloropropene | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,2-Trichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Tetrachloroethene | <0.01 | mg/l | <0.01 | mg/l |
| Dibromochloromethane | <0.01 | mg/l | <0.01 | mg/l |
| Chlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| Bromoform | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/l | <0.01 | mg/l |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| **Purgeable Aromatics** | | | | |
| Benzene | <0.01 | mg/l | <0.01 | mg/l |
| Toluene | <0.01 | mg/l | <0.01 | mg/l |
| Ethyl Benzene | <0.01 | mg/l | <0.01 | mg/l |
| p,m-Xylene | <0.01 | mg/l | <0.01 | mg/l |
| o-Xylene | <0.01 | mg/l | <0.01 | mg/l |

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| FECL #: | 2947-89-E3 | | 2947-89-E4 | |
|---|---|---|---|---|
| Tag: | MW-3 | | MW-4 | |
| **Purgeable Halocarbons** | | | | |
| Chloroethane | 0.02 | mg/l | <0.01 | mg/l |
| Trichlorofluoromethane | <0.01 | mg/l | <0.01 | mg/l |
| 1,1-Dichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| Methylene chloride | <0.01 | mg/l | <0.01 | mg/l |
| trans-1,2-Dichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| 1.1-Dichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Chloroform | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,1-Trichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Carbon tetrachloride | <0.01 | mg/l | <0.01 | mg/l |
| 1,2-Dichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Trichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| 1,2-Dichloropropane | <0.01 | mg/l | <0.01 | mg/l |
| Bromodichloromethane | <0.01 | mg/l | <0.01 | mg/l |
| 2-Chloroethylvinyl ether | <0.01 | mg/l | <0.01 | mg/l |
| cis-1,3-Dichloropropene | <0.01 | mg/l | <0.01 | mg/l |
| trans-1,3-Dichloropropene | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,2-Trichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Tetrachloroethene | <0.01 | mg/l | <0.01 | mg/l |
| Dibromochloromethane | <0.01 | mg/l | <0.01 | mg/l |
| Chlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| Bromoform | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/l | <0.01 | mg/l |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| **Purgeable Aromatics** | | | | |
| Benzene | <0.01 | mg/l | <0.01 | mg/l |
| Toluene | <0.01 | mg/l | <0.01 | mg/l |
| Ethyl Benzene | <0.01 | mg/l | <0.01 | mg/l |
| p,m-Xylene | <0.01 | mg/l | <0.01 | mg/l |
| o-Xylene | <0.01 | mg/l | <0.01 | mg/l |

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| FECL #: | 2947-89-E5 | | 2947-89-E6 | |
|---|---|---|---|---|
| Tag: | MW-5 | | MW-6 | |
| **Purgeable Halocarbons** | | | | |
| Chloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Trichlorofluoromethane | <0.01 | mg/l | <0.01 | mg/l |
| 1,1-Dichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| Methylene chloride | <0.01 | mg/l | <0.01 | mg/l |
| trans-1,2-Dichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| 1.1-Dichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Chloroform | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,1-Trichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Carbon tetrachloride | <0.01 | mg/l | <0.01 | mg/l |
| 1,2-Dichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Trichloroethene | <0.01 | mg/l | <0.01 | mg/l |
| 1,2-Dichloropropane | <0.01 | mg/l | <0.01 | mg/l |
| Bromodichloromethane | <0.01 | mg/l | <0.01 | mg/l |
| 2-Chloroethylvinyl ether | <0.01 | mg/l | <0.01 | mg/l |
| cis-1,3-Dichloropropene | <0.01 | mg/l | <0.01 | mg/l |
| trans-1,3-Dichloropropene | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,2-Trichloroethane | <0.01 | mg/l | <0.01 | mg/l |
| Tetrachloroethene | <0.01 | mg/l | <0.01 | mg/l |
| Dibromochloromethane | <0.01 | mg/l | <0.01 | mg/l |
| Chlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| Bromoform | <0.01 | mg/l | <0.01 | mg/l |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/l | <0.01 | mg/l |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/l |
| **Purgeable Aromatics** | | | | |
| Benzene | <0.01 | mg/l | <0.01 | mg/l |
| Toluene | <0.01 | mg/l | <0.01 | mg/l |
| Ethyl Benzene | <0.01 | mg/l | <0.01 | mg/l |
| p,m-Xylene | <0.01 | mg/l | <0.01 | mg/l |
| o-Xylene | <0.01 | mg/l | <0.01 | mg/l |

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|---|---|
| **FECL #:** | 2947-89-E7 |
| Tag: | MW-7 |

**Purgeable Halocarbons**

| | | |
|---|---|---|
| Chloroethane | <0.01 | mg/l |
| Trichlorofluoromethane | <0.01 | mg/l |
| 1,1-Dichloroethene | <0.01 | mg/l |
| Methylene chloride | <0.01 | mg/l |
| trans-1,2-Dichloroethene | <0.01 | mg/l |
| 1.1-Dichloroethane | <0.01 | mg/l |
| Chloroform | <0.01 | mg/l |
| 1,1,1-Trichloroethane | <0.01 | mg/l |
| Carbon tetrachloride | <0.01 | mg/l |
| 1,2-Dichloroethane | <0.01 | mg/l |
| Trichloroethene | <0.01 | mg/l |
| 1,2-Dichloropropane | <0.01 | mg/l |
| Bromodichloromethane | <0.01 | mg/l |
| 2-Chloroethylvinyl ether | <0.01 | mg/l |
| cis-1,3-Dichloropropene | <0.01 | mg/l |
| trans-1,3-Dichloropropene | <0.01 | mg/l |
| 1,1,2-Trichloroethane | <0.01 | mg/l |
| Tetrachloroethene | <0.01 | mg/l |
| Dibromochloromethane | <0.01 | mg/l |
| Chlorobenzene | <0.01 | mg/l |
| Bromoform | <0.01 | mg/l |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/l |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/l |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/l |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/l |

**Purgeable Aromatics**

| | | |
|---|---|---|
| Benzene | <0.01 | mg/l |
| Toluene | <0.01 | mg/l |
| Ethyl Benzene | <0.01 | mg/l |
| p,m-Xylene | <0.01 | mg/l |
| o-Xylene | <0.01 | mg/l |

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V. F. Murshak

Violetta F. Murshak
Laboratory Manager

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**Fire & Environmental Consulting Laboratories, Inc.**

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167

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Midwest Water Resource
615 W. Shepard St.
P.O. Box 10
Charlotte, MI 48813

Attention: Mr. Joel Schaeffer

# Analytical Laboratory Report

**FECL #:** 2947-89-E1-7

Samples analyzed by: P. Roettger
Analyses requested by: Joel Schaeffer
PO#: Verbal

Samples collected by :
Tom Ramos
Date/time samples submitted:
08-15-89 2:30 p.m.

**Submitting company:** Midwest Water Resource
615 W. Shepard, P.O. Box 10
Charlotte, MI 48813

Project description: Howard & Howard

**Samples collected:**

**FECL #:** 2947-89-E1
Tag: MW-1
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

**FECL #:** 2947-89-E2
Tag: MW-2
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

**FECL #:** 2947-89-E3
Tag: MW-3
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08/14/89

**FECL #:** 2947-89-E4
Tag: MW-4
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08/14/89

**FECL #: 2947-89-E5**
Tag: MW-5
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

**FECL #: 2947-89-E6**
Tag: MW-6
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

**FECL #: 2947-89-E7**
Tag: MW-7
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

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| FECL #: | 2947-89-E1 | | 2947-89-E2 | |
|---|---|---|---|---|
| Tag: | MW-1 | | MW-2 | |
| **Priority Pollutant Metals** | | | | |
| Antimony | <0.05 | mg/l | <0.05 | mg/l |
| Arsenic | <0.05 | mg/l | <0.05 | mg/l |
| Beryllium | <0.01 | mg/l | <0.01 | mg/l |
| Cadmium | <0.01 | mg/l | <0.01 | mg/l |
| Chromium | <0.02 | mg/l | <0.02 | mg/l |
| Copper | <0.02 | mg/l | <0.02 | mg/l |
| Lead | <0.04 | mg/l | <0.04 | mg/l |
| Mercury | <0.005 | mg/l | <0.005 | mg/l |
| Nickel | 0.04 | mg/l | <0.02 | mg/l |
| Selenium | <0.05 | mg/l | <0.05 | mg/l |
| Silver | <0.01 | mg/l | <0.01 | mg/l |
| Thallium | <0.05 | mg/l | <0.05 | mg/l |
| Zinc | 0.06 | mg/l | 0.06 | mg/l |

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| FECL #: | 2947-89-E3 | | 2947-89-E4 | |
|---|---|---|---|---|
| Tag: | MW-3 | | MW-4 | |
| **Priority Pollutant Metals** | | | | |
| Antimony | <0.05 | mg/l | <0.05 | mg/l |
| Arsenic | <0.05 | mg/l | <0.05 | mg/l |
| Beryllium | <0.01 | mg/l | <0.01 | mg/l |
| Cadmium | <0.01 | mg/l | <0.01 | mg/l |
| Chromium | <0.02 | mg/l | <0.02 | mg/l |
| Copper | <0.02 | mg/l | <0.02 | mg/l |
| Lead | <0.04 | mg/l | <0.04 | mg/l |
| Mercury | <0.005 | mg/l | <0.005 | mg/l |
| Nickel | <0.02 | mg/l | <0.02 | mg/l |
| Selenium | <0.05 | mg/l | <0.05 | mg/l |
| Silver | <0.01 | mg/l | <0.01 | mg/l |
| Thallium | <0.05 | mg/l | <0.05 | mg/l |
| Zinc | 0.04 | mg/l | 0.02 | mg/l |

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| FECL #: | 2947-89-E5 | | 2947-89-E6 | |
|---|---|---|---|---|
| Tag: | MW-5 | | MW-6 | |
| **Priority Pollutant Metals** | | | | |
| Antimony | <0.05 | mg/l | <0.05 | mg/l |
| Arsenic | <0.05 | mg/l | <0.05 | mg/l |
| Beryllium | <0.01 | mg/l | <0.01 | mg/l |
| Cadmium | <0.01 | mg/l | <0.01 | mg/l |
| Chromium | <0.02 | mg/l | <0.02 | mg/l |
| Copper | <0.02 | mg/l | <0.02 | mg/l |
| Lead | <0.04 | mg/l | <0.04 | mg/l |
| Mercury | <0.005 | mg/l | <0.005 | mg/l |
| Nickel | 0.06 | mg/l | 0.02 | mg/l |
| Selenium | <0.05 | mg/l | <0.05 | mg/l |
| Silver | <0.01 | mg/l | <0.01 | mg/l |
| Thallium | <0.05 | mg/l | <0.05 | mg/l |
| Zinc | 0.08 | mg/l | 0.05 | mg/l |

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| | |
|---|---|
| FECL #: | 2947-89-E7 |
| Tag: | MW-7 |

## Priority Pollutant Metals

| | | |
|---|---|---|
| Antimony | <0.05 | mg/l |
| Arsenic | <0.05 | mg/l |
| Beryllium | <0.01 | mg/l |
| Cadmium | <0.01 | mg/l |
| Chromium | <0.02 | mg/l |
| Copper | <0.02 | mg/l |
| Lead | <0.04 | mg/l |
| Mercury | <0.005 | mg/l |
| Nickel | 0.07 | mg/l |
| Selenium | <0.05 | mg/l |
| Silver | <0.01 | mg/l |
| Thallium | <0.05 | mg/l |
| Zinc | 0.03 | mg/l |

V. F. Murshak

Violetta F. Murshak
Laboratory Manager

VFM/ab

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| FECL #: | 02925-89-E2 | | 02925-89-E3 | | 02925-89-E4 | |
|---|---|---|---|---|---|---|
| Tag: | SB-15 SS-29 | | SB-16 SS-30 | | SB-16 SS-31 | |
| **Metals** | | | | | | |
| Antimony | <0.5 | mg/kg | <0.5 | mg/kg | <0.5 | mg/kg |
| Arsenic | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Beryllium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Cadmium | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Chromium | 12.9 | mg/kg | 9.8 | mg/kg | 9.8 | mg/kg |
| Copper | 46.9 | mg/kg | 314 | mg/kg | 25.0 | mg/kg |
| Lead | 22.8 | mg/kg | 61.0 | mg/kg | 14.0 | mg/kg |
| Mercury | <0.02 | mg/kg | <0.02 | mg/kg | <0.02 | mg/kg |
| Nickel | 20.4 | mg/kg | 6.0 | mg/kg | 11.1 | mg/kg |
| Selenium | <1.0 | mg/kg | <1.0 | mg/kg | <1.0 | mg/kg |
| Silver | <0.3 | mg/kg | <0.3 | mg/kg | <0.3 | mg/kg |
| Thallium | <0.5 | mg/kg | <0.5 | mg/kg | <0.5 | mg/kg |
| Zinc | 25.8 | mg/kg | 30.0 | mg/kg | 21.0 | mg/kg |

# APPENDIX E

**FECL #: 02925-89-E1**
Tag: SB-15 SS-28
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

**FECL #: 02925-89-E2**
Tag: SB-15 SS-29
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

**FECL #: 02925-89-E3**
Tag: SB-16 SS-30
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

**FECL #: 02925-89-E4**
Tag: SB-16 SS-31
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

**FECL #: 02925-89-E5**
Tag: Subsurface 1S
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

**FECL #: 02925-89-E6**
Tag: Subsurface 2N
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

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| FECL #: | 02924-89-E5 | | 02925-89-E1 | |
|---|---|---|---|---|
| Tag: | Pit | | SB-15 SS-28 | |
| **Purgeable Halocarbons** | | | | |
| Chloroethane | <0.01 | mg/l | <0.01 | mg/kg |
| Trichlorofluoromethane | <0.01 | mg/l | <0.01 | mg/kg |
| 1,1-Dichloroethene | <0.01 | mg/l | <0.01 | mg/kg |
| Methylene chloride | <0.01 | mg/l | <0.01 | mg/kg |
| trans-1,2-Dichloroethene | <0.01 | mg/l | <0.01 | mg/kg |
| 1,1-Dichloroethane | <0.01 | mg/l | <0.01 | mg/kg |
| Chloroform | <0.01 | mg/l | <0.01 | mg/kg |
| 1,1,1-Trichloroethane | <0.01 | mg/l | <0.01 | mg/kg |
| Carbon tetrachloride | <0.01 | mg/l | <0.01 | mg/kg |
| 1,2-Dichloroethane | <0.01 | mg/l | <0.01 | mg/kg |
| Trichloroethene | <0.01 | mg/l | <0.01 | mg/kg |
| 1,2-Dichloropropane | <0.01 | mg/l | <0.01 | mg/kg |
| Bromodichloromethane | <0.01 | mg/l | <0.01 | mg/kg |
| 2-Chloroethylvinyl ether | <0.01 | mg/l | <0.01 | mg/kg |
| cis-1,3-Dichloropropene | <0.01 | mg/l | <0.01 | mg/kg |
| trans-1,3-Dichloropropene | <0.01 | mg/l | <0.01 | mg/kg |
| 1,1,2-Trichloroethane | <0.01 | mg/l | <0.01 | mg/kg |
| Tetrachloroethene | <0.01 | mg/l | <0.01 | mg/kg |
| Dibromochloromethane | <0.01 | mg/l | <0.01 | mg/kg |
| Chlorobenzene | <0.01 | mg/l | <0.01 | mg/kg |
| Bromoform | <0.01 | mg/l | <0.01 | mg/kg |
| 1,1,2,2-Tetrachloroethane | <0.01 | mg/l | <0.01 | mg/kg |
| (m)-1,3-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/kg |
| (p)-1,4-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/kg |
| (o)-1,2-Dichlorobenzene | <0.01 | mg/l | <0.01 | mg/kg |
| **Purgeable Aromatics** | | | | |
| Benzene | <0.01 | mg/l | <0.01 | mg/kg |
| Toluene | <0.01 | mg/l | <0.01 | mg/kg |
| Ethyl Benzene | <0.01 | mg/l | <0.01 | mg/kg |
| p,m-Xylene | <0.01 | mg/l | <0.01 | mg/kg |
| o-Xylene | <0.01 | mg/l | <0.01 | mg/kg |

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| FECL #: | 02924-89-E5 | | 02925-89-E1 | |
|---|---|---|---|---|
| Tag: | Pit | | SB-15 SS-28 | |
| **Metals** | | | | |
| Antimony | <0.03 | mg/l | <0.5 | mg/kg |
| Arsenic | <0.05 | mg/l | <1.0 | mg/kg |
| Beryllium | <0.01 | mg/l | <0.3 | mg/kg |
| Cadmium | <0.01 | mg/l | <0.3 | mg/kg |
| Chromium | <0.02 | mg/l | 24.2 | mg/kg |
| Copper | <0.02 | mg/l | 30.0 | mg/kg |
| Lead | <0.04 | mg/l | 57.0 | mg/kg |
| Mercury | <0.005 | mg/l | <0.02 | mg/kg |
| Nickel | <0.02 | mg/l | 18.5 | mg/kg |
| Selenium | <0.05 | mg/l | <1.0 | mg/kg |
| Silver | <0.01 | mg/l | <0.3 | mg/kg |
| Thallium | <0.04 | mg/l | <0.5 | mg/kg |
| Zinc | <0.02 | mg/l | 336 | mg/kg |

# APPENDIX F

**Fire & Environmental Consulting Laboratories, Inc.**

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167

September 5, 1989

Midwest Water Resource
615 W. Shepard St.
P.O. Box 10
Charlotte, MI 48813

Attention: Mr. Joel Schaeffer

# Analytical Laboratory Report

FECL #: 02894-89-E12, 13, 24, 27

Samples analyzed by: P. Roettger
Analyses requested by: Joel Schaeffer
PO#: Verbal

Samples collected by :
T. Ramos
Date/time samples submitted:
08-03-89 12:15 p.m.

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Submitting company: Midwest Water Resource
615 W. Shepard, P.O. Box 10
Charlotte, MI 48813

Project description: Amdura Howard & Howard

Samples collected:

FECL #: 02894-89-E12
Tag: SB-7 SS-12
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E13
Tag: SB-7 SS-13
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E24
Tag: SB-13 SS-24
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E27
Tag: SB-14 SS-27
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

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| FECL #: | 2894-89-E12 | 2894-89-E13 | 2894-89-E24 | 2894-89-E27 |
|---|---|---|---|---|
| Tag: | SB-7 SS-12 | SB-7 SS-13 | SB-13 SS-24 | SB-14 SS-27 |
| **EP Toxicity** | | | | |
| % Solids | 100 % | 100 % | 100 % | 100 % |
| Sample Weight | 50 g | 50 g | 50 g | 50 g |
| Final Extract Volume | 1000 ml | 1000 ml | 1000 ml | 1000 ml |
| Final Extract pH | 5.10 | 5.07 | 4.95 | 5.06 |
| Chromium | <0.02 mg/l | ——— | ——— | ——— |
| Copper | ——— | ——— | 5.64 mg/l | ——— |
| Lead | ——— | ——— | <0.04 mg/l | ——— |
| Nickel | ——— | ——— | ——— | 0.10 mg/l |
| Zinc | ——— | 2.12 mg/l | ——— | ——— |

V. F. Murshak

Violetta F. Murshak
Laboratory Manager

VFM/ab

# APPENDIX G

SOIL GAS SURVEY SAMPLING LOC. JNS AND FIELD OBSERVATIONS

| Date | (X) | (Y) | (PPM) | Sample Depth | Soil Types | No. of Strokes | Comments |
|---|---|---|---|---|---|---|---|
| 10-Aug-89 | 250 | 865 | 0 | 3.0 | BLACK SAND | 17 | UST AREA, FILL CLEAN |
| 10-Aug-89 | 250 | 900 | 10 | 3.0 | BLACK SAND | 12 | UST PERIMETER, LOW PPM HITS |
| 10-Aug-89 | 225 | 900 | 0 | 3.0 | BLACK SAND | 20 | UST PERIMETER, LOW PPM HITS |
| 10-Aug-89 | 225 | 875 | 2 | 3.0 | BLACK SAND | 15 | UST PERIMETER, LOW PPM HITS |
| 10-Aug-89 | 210 | 925 | 0 | 3.0 | BLACK SAND | 7 | UST PERIMETER, LOW PPM HITS |
| 10-Aug-89 | 100 | 925 | 10 | 3.0 | BLACK SAND | 19 | BY DUMPSTER NEAR FENCE |
| 10-Aug-89 | 115 | 1055 | 8 | 3.0 | BLACK SAND | 14 | |
| 10-Aug-89 | 240 | 925 | 22 | 3.0 | MOIST BLACK SAND | 19 | BY DUMPSTER WITH NO BOTTOM |
| 10-Aug-89 | 50 | 1055 | 4 | 3.0 | MOIST SANDY BLK CLAY | 24 | |
| 10-Aug-89 | 50 | 1140 | 10 | 3.0 | FINE BRN SAND | 8 | |
| 10-Aug-89 | 225 | 1190 | 9 | 3.0 | VERY DRY | 10 | |
| 10-Aug-89 | 0 | 815 | 9 | 3.0 | VERY DRY | 13 | NEAR WHT DOOR 2' F/ WALL |
| 10-Aug-89 | | | | | | | NO READING |
| 10-Aug-89 | 400 | 435 | 17 | 3.0 | LIGHT SAND | 7 | NEAR WINDOWS AND RAILINGS |
| 10-Aug-89 | 325 | 460 | 90 | 3.0 | WET BLK SAND | 8 | NEAR FUEL TANK SIGN |
| 10-Aug-89 | 350 | 225 | 1000 | 3.0 | GRY CHLKY WET SAND | | STRONG FUEL ODOR |
| 10-Aug-89 | | | | | | | |
| 11-Aug-89 | 375 | 260 | 400 | 1.0 | MUCKY | 6 | BETWEEN RAILROAD TRACKS STRONG ODOR |
| 11-Aug-89 | 390 | 190 | 10 | 3.0 | DRY SOIL | 14 | 10' SOUTH OF FENCE |
| 11-Aug-89 | 300 | 200 | 7 | 3.0 | MOIST | 16 | 15' EAST OF GARAGE TYPE DOOR |
| 11-Aug-89 | 350 | 200 | 25 | 3.0 | FINE MOIST SAND | 60 | |
| 11-Aug-89 | 340 | 215 | 1000 | 2.0 | | 15 | OILY SMELL AT CORNER OF BUILDING |
| 11-Aug-89 | | | | | | | |
| 11-Aug-89 | 125 | 350 | 12 | 3.0 | | 23 | NEAR 3RD CRANE SUPPORT 20' F/ BUILDING |
| 11-Aug-89 | | | | 3.0 | WET MUCK SAND | 14 | CORD 125X525, OIL SMELL, TOO WET |
| 11-Aug-89 | 120 | 585 | 700 | 1.0 | WET MUCKY SAND | 5 | |
| 11-Aug-89 | 140 | 525 | 60 | 2.0 | WET MUCKY SAND | 12 | OILY BLK DIRT STRONG SMELL |
| 11-Aug-89 | 50 | 525 | 9 | 3.0 | LIGHT DRY SOIL | 10 | NEAR 3RD CRANE SUPPORT |
| 11-Aug-89 | 50 | 575 | 2 | 3.0 | DK STAIN LT SOIL | 9 | NEAR 2ND CRANE SUPPORT |
| 11-Aug-89 | 50 | 585 | 15 | 2.0 | | 8 | 10' WEST OF 1ST CRANE SUPPORT |
| 11-Aug-89 | 50 | 600 | 2 | 3.0 | DRY POWDERY | 15 | |
| 11-Aug-89 | 50 | 615 | 0 | 3.0 | MOIST LT SOIL | 10 | RUSTY SOIL APPEARANCE |
| 11-Aug-89 | 100 | 600 | 4 | 1.0 | DK, DRY | 4 | |
| 11-Aug-89 | 25 | 650 | 3 | 3.0 | | 14 | |
| 11-Aug-89 | 75 | 625 | 5 | 3.0 | DRY, POWDERY | 11 | NEAR FOUNDATION |
| 11-Aug-89 | | | | | | | BLK, DENSE SOIL, NR |
| 11-Aug-89 | 110 | 635 | 1000 | 1.0 | OILY | 2 | UNDER CRANE |

SOIL GAS SURVEY SAMPLING LOCATIONS AND FIELD OBSERVATIONS

| Date | (X) | (Y) | (PPM) | Sample Depth | Soil Types | No. of Strokes | Comments |
|---|---|---|---|---|---|---|---|
| 11-Aug-89 | 75 | 700 | 1000 | 3.0 | SWAMPY | 15 | CATTAIL PATCH, NO ODOR |
| 11-Aug-89 | 50 | 710 | 10 | 3.0 | GRY, WHT CLAY | 14 | |
| 15-Aug-89 | 400 | 25 | 4 | 3.0 | BRN, DRY | 15 | HIT BURIED WOOD |
| 15-Aug-89 | 425 | 25 | 18 | 2.0 | BLK SOIL | 20 | |
| 15-Aug-89 | 400 | 150 | 4 | 3.0 | DRY BLK SOIL | 19 | |
| 15-Aug-89 | 600 | 0 | 15 | 2.0 | | 15 | HIT FOUNDATION? |
| 15-Aug-89 | 475 | 25 | 60 | 2.0 | | 15 | |
| 15-Aug-89 | 50 | 125 | 80 | 2.0 | BLK PARTICLES | 20 | HARD STRATA AT 2' IN AREA |
| 15-Aug-89 | 650 | 150 | 200 | 3.0 | BLK PARTICLES | 30 | BETWEEN 3 PYLONS |
| 15-Aug-89 | 700 | 125 | 20 | 3.0 | BLK PARTICLES | 15 | LOW SPOT |
| 15-Aug-89 | 400 | 0 | 4 | 2.0 | BLK PARTICLES | 8 | HIT FOUNDATION |
| 15-Aug-89 | 450 | 0 | 15 | 3.0 | BLK PARTICLES | 9 | |
| 15-Aug-89 | 475 | 0 | 7 | 3.0 | BLK PARTICLES | 13 | SANDY |
| 15-Aug-89 | 550 | 0 | 3 | 4.0 | SANDY | 18 | |
| 15-Aug-89 | 490 | 0 | 1 | 3.0 | SANDY | 8 | |
| 15-Aug-89 | 575 | 0 | 80 | 3.0 | DRY BRN | 16 | |
| 15-Aug-89 | 450 | 75 | 120 | 2.0 | | 15 | |
| 15-Aug-89 | 750 | 125 | 30 | 2.0 | | 12 | LOW, CEMENT |
| 15-Aug-89 | 850 | 100 | 15 | 3.0 | | 35 | LOW AREA |
| 15-Aug-89 | 950 | 100 | 200 | 3.0 | | 40 | |
| 15-Aug-89 | 825 | 100 | 90 | 2.0 | RUSTY APPR | 35 | VERY HARD CASTING SAND PILE |
| 15-Aug-89 | 850 | 300 | 15 | 2.0 | | 20 | VERY HARD |
| 15-Aug-89 | 800 | 300 | 20 | 2.0 | SANDY | 10 | |
| 15-Aug-89 | 800 | 400 | 15 | 2.0 | | 20 | VERY HARD |
| 15-Aug-89 | 950 | 600 | 110 | 3.0 | ROCKY, RUSTY | 30 | |
| 15-Aug-89 | 1050 | 700 | 200 | 2.0 | | 30 | MIDDLE OF TRACKS |
| 15-Aug-89 | 850 | 550 | 45 | 3.0 | DRY HARD | 30 | SE OF PUMP SATION |
| 15-Aug-89 | 775 | 500 | 10 | 3.0 | | 35 | NEXT TO MOTOR |
| 15-Aug-89 | 650 | 625 | 15 | 3.0 | DK SAND | 30 | |
| 15-Aug-89 | 550 | 550 | 30 | 3.0 | | 47 | PARKING AREA, HARD PAD UNDERNEATH |
| 15-Aug-89 | 650 | 500 | 100 | 2.0 | | 38 | |
| 15-Aug-89 | 650 | 425 | 40 | 3.0 | | 22 | NEAR DRUM PAD |
| 15-Aug-89 | 660 | 350 | 20 | 2.0 | HARD GRAVEL | 40 | DRUM PAD FRONT |
| 15-Aug-89 | 675 | 250 | 200 | 2.0 | | 23 | |
| 15-Aug-89 | 650 | 810 | 20 | 3.0 | | 22 | PAINT SHOP WALL., RESIDUE ON PROBE |
| 15-Aug-89 | 700 | 810 | 10 | 3.0 | POWDERY SOIL | 15 | PAINT SHOP, SOFT |

S AS SURVEY SAMPLING LOCATIONS AND FIELD OBSERVATIONS

| Date | (X) | (Y) | (PPM) | Sample Depth | Soil Types | No. of Strokes | Comments |
|---|---|---|---|---|---|---|---|
| 15-Aug-89 | 750 | 810 | 75 | 3.0 | | 33 | |
| 15-Aug-89 | 850 | 850 | 2 | 3.0 | WET SANDY SOIL | 18 | |
| 17-Aug-89 | 900 | 850 | 23 | 3.0 | SANDY | 29 | |
| 17-Aug-89 | 1075 | 975 | 4 | 3.0 | SANDY | 16 | |
| 17-Aug-89 | 1075 | 1090 | 300 | 3.0 | CLAY AND SAND | 20 | DENSE WHT DEAD BETWEEN MONITOR WELL AND RIVER |
| 17-Aug-89 | 950 | 1075 | 3 | 3.0 | ASHY CLAY | 14 | NEAR FOUNDATION, FULL OF TAR |
| 17-Aug-89 | 825 | 1075 | 4 | 3.0 | DRY | 14 | |
| 17-Aug-89 | 850 | 1090 | 20 | 2.0 | | 45 | |
| 17-Aug-89 | 700 | 1125 | 25 | 3.0 | | 17 | NEXT TO GATE OF CEMENT PLACE |
| 17-Aug-89 | 600 | 1100 | 15 | 3.0 | WET SAND | 16 | |
| 17-Aug-89 | 525 | 1125 | 20 | 1.0 | | 22 | HIT WOOD, PUMP PIT |
| 17-Aug-89 | 525 | 1100 | 15 | 2 | | 14 | PUMP PIT |
| 17-Aug-89 | | | | | ASH TYPE | | NR |
| 17-Aug-89 | 540 | 990 | 10 | 2.0 | BLK, BRN SOIL | 8 | |
| 17-Aug-89 | 560 | 1050 | 20 | 1.0 | BRN SOIL | 23 | |
| 17-Aug-89 | 555 | 1050 | 15 | 3.0 | | 43 | TOILET ODOR |
| 17-Aug-89 | 460 | 1060 | 5 | 4.0 | LOOSE SOIL | 8 | |
| 17-Aug-89 | 400 | 1050 | 4 | 3.0 | RUSTY, DRY SOIL | 8 | |
| 17-Aug-89 | 400 | 1000 | 15 | 4.0 | DRY SOIL | 30 | |
| 17-Aug-89 | 400 | 950 | 6 | 3.0 | DRY, SANDY | 9 | |
| 17-Aug-89 | 380 | 1000 | 4 | 4.0 | | 21 | |
| 17-Aug-89 | 375 | 1100 | 5 | 4.0 | | 20 | |
| 17-Aug-89 | 300 | 1100 | 25 | 3.0 | | 25 | |
| 17-Aug-89 | 300 | 1150 | 6 | 3.0 | DK SANDY SOIL | 11 | |
| 17-Aug-89 | 350 | 975 | 6 | 3.0 | | 30 | |
| 17-Aug-89 | 350 | 950 | 7 | 3.0 | ASHY CLAY | 40 | |
| 17-Aug-89 | 450 | 925 | 11 | 3.0 | RUSTY SOIL | 13 | |
| 17-Aug-89 | 475 | 900 | 14 | 3.0 | DRY SOIL | 24 | |
| 17-Aug-89 | 500 | 950 | 18 | 3.0 | | 23 | |
| 17-Aug-89 | 600 | 850 | 16 | 2.0 | RUSTY CLAY | 20 | |
| 17-Aug-89 | 625 | 950 | 7 | 2.0 | | 25 | |
| 17-Aug-89 | 475 | 850 | 0 | 3.0 | | 9 | |
| 17-Aug-89 | 325 | 825 | 2 | 3.0 | BLK SOIL | 15 | |
| 17-Aug-89 | 325 | 800 | 20 | 3.0 | | 14 | |
| 17-Aug-89 | 325 | 750 | 2 | 3.0 | DK SOIL | 8 | |
| 17-Aug-89 | 340 | 700 | 50 | 3.0 | DK SANDY SOIL | 30 | |

SOIL GAS SURVEY SAMPLING LOCATIONS AND FIELD OBSERVATIONS

| Date | (X) | (Y) | (PPM) | Sample Depth | Soil Types | No. of Strokes | Comments |
|---|---|---|---|---|---|---|---|
| 17-Aug-89 | 345 | 650 | 6 | 3.0 | BRN SOIL | 20 | |
| 17-Aug-89 | 400 | 600 | 55 | 3.0 | | 10 | PARKING LOT |
| 17-Aug-89 | 525 | 620 | 300 | 2.0 | SANDY SOIL | 23 | PARKING LOT |
| 17-Aug-89 | 425 | 525 | 2 | 4.0 | SANDY SOIL | 10 | |
| 18-Aug-89 | 600 | 500 | 2 | 4.0 | SANDY SOIL | 10 | |
| 18-Aug-89 | 600 | 400 | 3 | 3.0 | DK SAND | 15 | |
| 18-Aug-89 | 625 | 350 | 150 | 3.0 | LOOSE DRY SOIL | 10 | STAINED CEMENT |
| 18-Aug-89 | | | | | | | CEMENT OVER 2' DEEP |
| 18-Aug-89 | 525 | 350 | 15 | 3.0 | SANDY | 3 | NEAR SEWER LINE |
| 18-Aug-89 | 375 | 425 | 5 | 3.0 | | 8 | |
| 18-Aug-89 | 425 | 375 | 20 | 2.0 | | 15 | |
| 18-Aug-89 | 425 | 200 | 4 | 3.0 | VERY LOOSE SOIL | 4 | |
| 19-Aug-89 | | | | | | | VERY WET NEAR MACHINERY |
| 19-Aug-89 | 125 | 700 | 8 | 3.0 | DAMP DK SAND | 7 | |
| 19-Aug-89 | 175 | 500 | 4 | 3.0 | BRN DRY SOIL | 4 | |
| 19-Aug-89 | 275 | 475 | 56 | 3.0 | BRN DRY SOIL | 4 | |
| 19-Aug-89 | 300 | 275 | 5 | 3.0 | SANDY CLAY | 12 | |
| 19-Aug-89 | | | | | | | NR |
| 19-Aug-89 | 375 | 800 | 3 | 2.0 | | 3 | |
| 19-Aug-89 | 425 | 825 | 1 | 4.0 | DIRTY SAND | 3 | |
| 19-Aug-89 | | | | | | | TOO WET FOR READING |
| 19-Aug-89 | 430 | 725 | 3 | 2.0 | RUSTY SAND | 3 | |
| 19-Aug-89 | | | | | | | TOO WET FOR READING |
| 19-Aug-89 | 575 | 750 | 25 | 3.0 | BLK SAND | 12 | |
| 19-Aug-89 | | | | | | | TOO WET FOR READING |
| 19-Aug-89 | | | | | | | TOO WET FOR READING |
| 19-Aug-89 | 475 | 675 | 20 | 2.0 | | 10 | |
| 19-Aug-89 | | | | | | | TOO WET |
| 19-Aug-89 | | | | | | | TOO WET |
| 19-Aug-89 | 200 | 275 | 1 | 2.0 | BRN SAND | 10 | |
| 19-Aug-89 | | | | | | | TOO WET |
| 19-Aug-89 | 335 | 325 | 20 | 4.0 | | 4 | |
| 19-Aug-89 | 325 | 400 | 5 | 3.0 | | 3 | |
| 19-Aug-89 | | | | | WET GRY CLAY | | OIL SMELL |
| 19-Aug-89 | 675 | 875 | 10 | 3.0 | WET GRY CLAY | 3 | |
| 19-Aug-89 | 655 | 840 | 200 | 3.0 | SANDY CLAY | 10 | |

;AS SURVEY SAMPLING LOCATIONS AND FIELD OBSERVATIONS

| Date | (X) | (Y) | (PPM) | Sample Depth | Soil Types | No. of Strokes | Comments |
|---|---|---|---|---|---|---|---|
| 19-Aug-89 | 700 | 840 | 100 | 2.0 | BRN SAND | 18 | |
| 19-Aug-89 | 740 | 840 | 80 | 3.0 | BRN SAND | 15 | |
| 19-Aug-89 | 655 | 825 | 20 | 2.0 | BRN SAND | 15 | |
| 19-Aug-89 | | | | | | | |
| 19-Aug-89 | | | | | | | WET SAND |
| 19-Aug-89 | 700 | 900 | 7 | 3.0 | GRITTY CLAY | 15 | HOLE BLOCKED |
| 19-Aug-89 | | | | | | | |
| 19-Aug-89 | 1075 | 925 | 6 | 4.0 | SANDY SOIL | | NR |
| 19-Aug-89 | | | | | DEEP CEMENT | | |
| 19-Aug-89 | 655 | 740 | 15 | 2.0 | WET CLAY | 8 | OILY ROOM<br>DRUM STORAGE, SAND BLASTING BUILDING |

# APPENDIX H

PCB Sampling locations

| Date Collected | Sample Id. | Location |
|---|---|---|
| 8/02/89 | Pad-1-1 | West side of pad, outside of the concrete containment berm |
| 8/02/89 | Pad-1-2 | North side of pad at low spot of concrete containment berm |
| 8/02/89 | Pad-1-3 | Composit scrapings and pulverized concrete from around the PCB labeled transformers (4) |
| 8/02/89 | Pad-2-1 | Scraping and shavings from flooring immediately underneath the transformer |
| 8/02/89 | Pad-3-1 | Immediately below transformer to the left |
| 8/02/89 | Pad-3-2 | Immediately below transformer to the right |
| 8/02/89 | Pad-4-1 | Immediately east of pad |
| 8/02/89 | Pad-4-2 | Immediately north of pad |
| 8/02/89 | Pad-4-3 | Scrapings of oil soaked oil from under the drain cock of Transformer 11 |
| 8/02/89 | Pad-5-1 | Immediately north of pad outside fence |
| 8/02/89 | Pad-5-2 | Immediately east of pad ouside fence |
| 8/02/89 | Pad-6-1 | South of leaking transformer |
| 8/02/89 | Pad-6-2 | North of leaking transformer |
| 8/02/89 | Pad-7-1 | Scrapings and pulverized concrete from underneath the north end of the transformer bank |
| 8/02/89 | Pad-7-2 | Scrapings and pulverized concrete from underneath the south end of the transformer bank |
| 8/02/89 | Pad-8-1 | Immediately west of pad outside concrete containment berm |

| | |
|---|---|
| Pad-8-2 | Immediately east of pad outside concrete containment berm |
| Pad-9-1 | Immediately south of pad outside concrete containment berm |
| Pad-9-2 | Immediately east of pad outside concrete containment berm |
| Pad-9-3 | Scrapings of oil soaked soils, pulverized concrete, and lose paint from around base of several of the transformers |

**FECL #: 02892-89-E7**
Tag: Pad-6-1
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E8**
Tag: Pad-6-2
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E9**
Tag: Pad-7-1
Container: Glass Vial
Sample Type: Scraping
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E10**
Tag: Pad-7-2
Container: Glass Vial
Sample Type: Scraping
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E11**
Tag: Pad-8-1
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E12**
Tag: Pad-8-2
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E13**
Tag: Pad-9-1
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E14**
Tag: Pad-9-2
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E15**
Tag: Pad-9-3
Container: Glass Vial
Sample Type: Scraping
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E16**
Tag: Pad-4-1
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E17**
Tag: Pad-4-2
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E18**
Tag: Pad-4-3
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT MATTER**

**FECL #: 02892-89-E19**
Tag: Pad-5-1
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**FECL #: 02892-89-E20**
Tag: Pad-5-2
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT

**FECL #:** 02892-89-E1
Tag: Pad-3-1

PCB <1.0 mg/kg

**FECL #:** 02892-89-E2
Tag: Pad-3-2

PCB <1.0 mg/kg

**FECL #:** 02892-89-E3
Tag: Pad-1-1

PCB <1.0 mg/kg

**FECL #:** 02892-89-E4
Tag: Pad-1-2

PCB <1.0 mg/kg

**FECL #:** 02892-89-E5
Tag: Pad-1-3

PCB <1.0 mg/kg

**FECL #:** 02892-89-E6
Tag: Pad-2-1

PCB <1.0 mg/kg

**FECL #:** 02892-89-E7
Tag: Pad-6-1

PCB <1.0 mg/kg

CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT MATTER

**FECL #:** 02892-89-E8
Tag: Pad-6-2

PCB <1.0 mg/kg

**FECL #:** 02892-89-E9
Tag: Pad-7-1

PCB <1.0 mg/kg

**FECL #:** 02892-89-E10
Tag: Pad-7-2

PCB <1.0 mg/kg

**FECL #:** 02892-89-E11
Tag: Pad-8-1

PCB <1.0 mg/kg

**FECL #:** 02892-89-E12
Tag: Pad-8-2

PCB <1.0 mg/kg

**FECL #:** 02892-89-E13
Tag: Pad-9-1

PCB <1.0 mg/kg

**FECL #:** 02892-89-E14
Tag: Pad-9-2

PCB <1.0 mg/kg

CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT MATTER

**FECL #:** 02892-89-E15
Tag: Pad-9-3

PCB <1.0 mg/kg

**FECL #:** 02892-89-E16
Tag: Pad-4-1

PCB <1.0 mg/kg

**FECL #:** 02892-89-E17
Tag: Pad-4-2

PCB <1.0 mg/kg

**FECL #:** 02892-89-E18
Tag: Pad-4-3

PCB <1.0 mg/kg

**FECL #:** 02892-89-E19
Tag: Pad-5-1

PCB <1.0 mg/kg

**FECL #:** 02892-89-E20
Tag: Pad-5-2

PCB <1.0 mg/kg

CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT MATTER

V. F. Murshak

Violetta F. Murshak
Laboratory Manager

VFM/ab

CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT MATTER

# APPENDIX J

Midwest Water Resources, Inc.
615 West Shepherd
Charlotte, Michigan 48813

# SAMPLE ANALYSIS FOR THE PRESENCE OF FIBROUS ASBESTOS

RECEIVED
AUG 28 1989
MIDWEST WATER RESOURCE
INCORPORATED

By

TESTING ENGINEERS & CONSULTANTS, INC.
3985 Varsity Drive
P.O. Box 2179
Ann Arbor, Michigan 48108

DATE: 21 August 1989

# Testing Engineers & Consultants, Inc.

P.O. Box 2179 • 3700 Carpenter Rd. • Ann Arbor, Michigan 48106

313-971-0030 or Dial 313-T-E-S-T-I-N-G

John Banicki, P.E.
Kenneth Cummins, L.S., P.E.
Gerald M. Belian, P.E.
Elihu Geer, PhD, P.E.
(1902-1985)
Michael Davinich, P.E.


T.E.C. Report Number: 18296-1
Date Issued: 21 August 1989

Midwest Water Resources, Inc.
615 West Shepherd
Charlotte, Michigan 48813

Attention: Ms. Dawn Brennan

Re: Analysis of Submitted Bulk Samples for Presence of Fibrous Asbestos

Dear Ms. Brennan:

Herein presented are the analytical results of the tests performed to determine the presence of fibrous asbestos in the submitted samples. The method of analysis used was the EPA's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" using polarized light microscopy. The lower limit of detection of asbestos is 1% of the sample. Testing Engineers and Consultants, Inc. is accredited by the Environmental Protection Agency (Laboratory Number 5312) and the National Voluntary Laboratory Accreditation Program (Laboratory Number 1489) to perform these analyses.

The tests results are as follows:

| DATE AND LABORATORY SAMPLE # | SAMPLE LOCATION | TYPE | ASBESTOS PRESENT | APPROXIMATE PERCENT COMPOSITION |
|---|---|---|---|---|
| 8-4-89<br>A-6804<br>AM-1 | Lower Level, Boiler Room; Inside Boiler #1 | Fire Brick | No | LAYER 1: (75%)<br>100% NFP *<br><br>LAYER 2: (25%)<br>5% COTTON<br>95% NFP |
| 8-4-89<br>A-6805<br>AM-2 | Lower Level, Boiler Room; Outside Boiler #1 | Fire Brick/ Debris | No | 75% NFP<br>20% FIBERGLASS/ MINERAL WOOL<br>5% CELLULOSE |

*Non-Fibrous Particulates

.....continued


50 years

COUNCIL OF INDEPENDENT LABORATORIES

...ING THE TEST OF TIME

All services undertaken subject to the following general policy. Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and to the comprehensiveness of the tests, examinations and surveys made. No quotations from reports or use of TEC'S name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION

OFFICES IN ANN ARBOR, DETROIT, FLINT, LANSING AND TROY

MEMBER

Ms. Dawn Brennan
#18296-1
21 August 1989


| DATE AND LABORATORY SAMPLE # | SAMPLE LOCATION | TYPE | ASBESTOS PRESENT | APPROXIMATE PERCENT COMPOSITION |
|---|---|---|---|---|
| 8-4-89<br>A-6806<br>AM-3 | Lower Level, Boiler Room; Debris North of Boiler #2 | Straight Pipe Insulation | Yes | 25% CHRYSOTILE ASBESTOS<br>20% NFP/PERLITE<br>55% NFP |
| 8-4-89<br>A-6807<br>AM-4 | Lower Level, Boiler Room; Inside North Door of Boiler #2 | Fire Brick/ Debris | No | LAYER 1: (20%)<br>100% NFP B<br><br>LAYER 2: (80%)<br>3% CELLULOSE<br>97% NFP |
| 8-4-89<br>A-6808<br>AM-5 | Lower Level, Boiler Room; North Side of Boiler #3 | Boiler Gasket | Yes | 40% CHRYSOTILE ASBESTOS<br>10% CELLULOSE<br>50% NFP |
| 8-4-89<br>A-6809<br>AM-6 | Powerhouse, Main Level; 10" Vertical Steam Pipe | Straight Pipe Insulation | Yes | LAYER 1: (10%)<br>100% COTTON<br><br>LAYER 2: (20%)<br>30% CHRYSOTILE ASBESTOS<br>5% CELLULOSE<br>65% NFP<br><br>LAYER 3: (70%)<br>40% CHRYSOTILE ASBESTOS<br>5% COTTON<br>55% NFP |
| 8-4-89<br>A-6810<br>AM-7 | Powerhouse, Basement; North Side of Tank | Tank Insulation | Yes | 10% CHRYSOTILE ASBESTOS<br>10% CROCIDOLITE ASBESTOS<br>10% AMOSITE ASBESTOS<br>70% NFP |
| 8-4-89<br>A-6811<br>AM-8 | Powerhouse, Basement; 6" Horizontal Domestic Water Pipe | Straight Pipe Insulation | Yes | 50% CHRYSOTILE ASBESTOS<br>50% NFP |

| DATE AND LABORATORY SAMPLE # | SAMPLE LOCATION | TYPE | ASBESTOS PRESENT | APPROXIMATE PERCENT COMPOSITION |
|---|---|---|---|---|
| 8-4-89<br>A-6812<br>AM-9 | Powerhouse, Basement; 2" Vertical Domestic Water Pipe | Straight Pipe Insulation | Yes | 2% CHRYSOTILE ASBESTOS<br>15% GLASS SCRIM<br>83% NFP/PERLITE |
| 8-4-89<br>A-6813<br>AM-10 | Powerhouse, Basement; South Side Floor | Straight Pipe Insulation | Yes | 55% CHRYSOTILE ASBESTOS<br>45% NFP |
| 8-4-89<br>A-6814<br>AM-11 | 1st Floor, Pattern Repair Office; 3" Vertical Heating Water Return, South Side | Straight Pipe Insulation | Yes | 55% CHRYSOTILE ASBESTOS<br>45% NFP |
| 8-4-89<br>A-6815<br>AM-12 | 1st Floor, Pattern Repair Office; 3" Vertical Heating Water Supply | Straight Pipe Insulation | Yes | LAYER 1: (10%)<br>90% COTTON<br>10% NFP<br>LAYER 2: (20%)<br>30% CHRYSOTILE ASBESTOS<br>70% NFP<br>LAYER 3: (70%)<br>50% CHRYSOTILE ASBESTOS<br>50% NFP |
| 8-4-89<br>A-6816<br>AM-13 | 2nd Floor, Pattern Repair; South Side Office | Wall Plaster | No | LAYER 1: (50%)<br>5% CELLULOSE<br>95% NFP<br>LAYER 2: (50%)<br>25% CELLULOSE<br>75% NFP |
| 8-4-89<br>A-6817<br>AM-14 | Roof Pattern Repair; Outside Stairway Door | Roofing Tar Paper | Yes | 35% CHRYSOTILE ASBESTOS<br>15% CELLULOSE<br>50% NFP |

| DATE AND LABORATORY SAMPLE # | SAMPLE LOCATION | TYPE | ASBESTOS PRESENT | APPROXIMATE PERCENT COMPOSITION |
|---|---|---|---|---|
| 8-4-89<br>A-6818<br>AM-15 | Roof, Pattern Repair; Outside Stairway Door | Roofing Tar/ Asphalt | No | Layer 1: (40%)<br>100% NFP<br><br>LAYER 2: (60%)<br>15% CELLULOSE<br>85% NFP |
| 8-4-89<br>A-6819<br>AM-16 | Basement, Pattern Storage; 3" Horizontal Pipe | Straight Pipe Insulation | Yes | Layer 1:(10%):<br>1% CHRYSOTILE ASBESTOS<br>9% NFP<br>90% COTTON<br><br>Layer 2: (90%)<br>20% CHRYSOTILE ASBESTOS<br>50% CELLULOSE<br>30% NFP |
| 8-4-89<br>A-6820<br>AM-17 | Foundry, Main Level; 2" Vertical Pipe, South of Door | Straight Pipe Insulation | Yes | LAYER 1: (10%)<br>30% CHRYSOTILE ASBESTOS<br>5% ANIMAL HAIR<br>5% CELLULOSE<br>60% NFP<br><br>LAYER 2: (90%)<br>10% CHRYSOTILE ASBESTOS<br>90% CELLULOSE |
| 8-4-89<br>A-6821<br>AM-18 | Foundry, Main Level; 2" Horizontal Pipe, North of Door | Straight Pipe Insulation | Yes | LAYER 1: (10%)<br>20% CHRYSOTILE ASBESTOS<br>10% CELLULOSE<br>70% NFP<br><br>LAYER 2: (90%)<br>5% CHRYSOTILE ASBESTOS<br>95% CELLULOSE |
| 8-4-89<br>A-6822<br>AM-19 | Foundry, Main Level; 3" Horizontal Pipe | Straight Pipe Insulation | Yes | 70% CHRYSOTILE ASBESTOS<br>5% CELLULOSE<br>25% NFP |

| DATE AND LABORATORY SAMPLE # | SAMPLE LOCATION | TYPE | ASBESTOS PRESENT | APPROXIMATE PERCENT COMPOSITION |
|---|---|---|---|---|
| 8-4-89<br>A-6823<br>AM-20 | Foundry, Main Level; Office, Southeast Corner | Floor Tile | Yes | LAYER 1: (98%)<br>5% CHRYSOTILE ASBESTOS<br>95% NFP<br><br>LAYER 2: (2%)<br>10% CELLULOSE<br>90% NFP |
| 8-4-89<br>A-6824<br>AM-21 | Foundry, Main Level; Office A, Southeast Corner | Floor Tile | Yes | LAYER 1: (95%)<br>5% CHRYSOTILE ASBESTOS<br>95% NFP<br><br>LAYER 2: (5%)<br>100% NFP |
| 8-4-89<br>A-6825<br>AM-22 | Foundry, Main Level; Office B, Southwest Corner | Floor Tile | Yes | LAYER 1: (95%)<br>7% CHRYSOTILE ASBESTOS<br>93% NFP<br><br>LAYER 2: (5%)<br><1% CHRYSOTILE ASBESTOS<br>>99% NFP |
| 8-4-89<br>A-6826<br>AM-23 | Foundry, Main Level; Office B, Southwest Corner | Floor Tile | Yes | LAYER 1: (95%)<br>5% CHRYSOTILE ASBESTOS<br>95% NFP<br><br>LAYER 2: (5%)<br><1% CHRYSOTILE ASBESTOS<br>>99% NFP |
| 8-4-89<br>A-6827<br>AM-24 | Foundry, Main Level; Office B, Southwest Corner | Floor Tile | No | LAYER 1: (85%)<br>15% CELLULOSE<br>85% NFP<br><br>LAYER 2: (15%)<br>100% CELLULOSE |
| 8-4-89<br>A-6828<br>AM-25 | Foundry, Main Level; Conference Room, Central | Suspended Ceiling Tile | No | 35% CELLULOSE<br>35% FIBERGLASS/ MINERAL WOOL<br>30% NFP |

| DATE AND LABORATORY SAMPLE # | SAMPLE LOCATION | TYPE | ASBESTOS PRESENT | APPROXIMATE PERCENT COMPOSITION |
|---|---|---|---|---|
| 8-4-89<br>A-6829<br>AM-26 | Foundry, Main Level; Conference Room, Central | Glued-On Ceiling Tile | No | 100% CELLULOSE |
| 8-4-89<br>A-6830<br>AM-27 | Foundry, Main Level; Office B, Southwest Corner | Baseboard Molding | Yes | 4% CHRYSOTILE ASBESTOS<br>96% NFP |
| 8-4-89<br>A-6831<br>AM-28 | Foundry, Main Level; Office B, South Side | Ceiling Plaster | No | 15% CELLULOSE<br>85% NFP |
| 8-4-89<br>A-6832<br>AM-29 | Foundry, Main Level; Non-existing Northwest Structure | Roofing Paper | No | LAYER 1: (50%)<br>45% CELLULOSE<br>55% NFP<br>LAYER 2: (50%)<br>50% CELLULOSE<br>50% NFP |
| 8-4-89<br>A6833<br>AM-30 | Foundry, Main Level; 2nd Floor Platform, North of Air Handler | Debris | No | 25% FIBERGLASS/ MINERAL WOOL<br>75% NFP |
| 8-4-89<br>A6834<br>AM-31 | Maintenance Building, Main Level; 4" Horizontal Pipe Debris Northside | Straight Pipe Insulation Debris | Yes | 50% CHRYSOTILE ASBESTOS<br>50% NFP |
| 8-4-89<br>A6835<br>AM-32 | Maintenance Building, Main Level; West Section, Central | Floor Tile | Yes | LAYER 1: (95%)<br>100% NFP<br>LAYER 2: (5%)<br>25% CELLULOSE<br>75% NFP |
| 8-4-89<br>A6836<br>AM-33 | Maintenance Building, Main Level; Northside, Central | Roofing Tar/Asphalt | Yes | 25% CHRYSOTILE ASBESTOS<br>75% NFP |

| DATE AND LABORATORY SAMPLE # | SAMPLE LOCATION | TYPE | ASBESTOS PRESENT | APPROXIMATE PERCENT COMPOSITION |
|---|---|---|---|---|
| 8-4-89<br>A6837<br>AM-34 | Maintenance Building, Main Level; 4" Vertical Pipe, South-west Corner | Straight Pipe Insulation | Yes | 50% CHRYSOITLE ASBESTOS<br>50% NFP |
| 8-4-89<br>A6838<br>AM-35 | Maintenance Building, Main Level, Office South-east Corner | Floor Tile | Yes | LAYER 1: (95%)<br><1% CHRYSOTILE ASBESTOS<br>>99% NFP<br><br>LAYER 2: (5%)<br>20% CELLULOSE<br>80% NFP |
| 8-4-89<br>A6839<br>AM-36 | Maintenance Building, Main Level; Office, South-east Corner | Floor Tile | Yes | LAYER 1: (95%)<br>3% CHRYSOTILE ASBESTOS<br>97% NFP<br><br>LAYER 2: (5%)<br>20% CELLULOSE<br><1% CHRYSOTILE ASBESTOS<br>>79% NFP |
| 8-4-89<br>A6840<br>AM-37 | Maintenance Building, Main Level; North Side, Central | Glued-On Ceiling Tile | No | 100% CELLULOSE |
| 8-4-89<br>A6841<br>AM-38 | Maintenance Building, Main Level; Office B, East Wall | Suspended Ceiling Tile | No | 45% FIBERGLASS/ MINERAL WOOL<br>55% CELLULOSE |
| 8-4-89<br>A6842<br>AM-39 | Maintenance Building, Main Level; Office B East Wall | Floor Tile | No | 100% NFP |
| 8-4-89<br>A6843<br>AM-40 | Maintenance Building, Main Level; Office C, Central | Floor Tile | No | LAYER 1: (95%)<br>100% NFP<br><br>LAYER 2: (5%)<br>100% NFP |

| DATE AND LABORATORY SAMPLE # | SAMPLE LOCATION | TYPE | ASBESTOS PRESENT | APPROXIMATE PERCENT COMPOSITION |
|---|---|---|---|---|
| 8-4-89<br>A6844<br>AM-41 | Maintenance Building, 2nd Floor; Outside South Door | Roofing Tar/Asphalt | No | LAYER 1: (95%)<br>25% CELLULOSE<br>75% NFP<br><br>LAYER 2: (35%)<br>10% GLASS SCRIM<br>30% CELLULOSE<br>60% NFP<br><br>LAYER 3: (30%)<br>20% CELLULOSE<br>80% NFP |
| 8-4-89<br>A6945<br>AM-42 | Maintenance Building, 2nd Floor; East Wall | Wall Plaster | No | 5% SYNTHETIC FIBERS<br>95% NFP |
| 8-4-89<br>A6946<br>AM-43 | Building 41, Northwest Corner, 4" Horizontal Pipe | Straight Pipe Insulation | Yes | 55% CHRYSOTILE ASBESTOS<br>45% NFP |
| 8-4-89<br>A6947<br>AM-44 | Building 41, Northwest Corner Office, Southeast Corner | Suspended Ceiling Tile | No | 45% FIBERGLASS/ MINERAL WOOL<br>40% CELLULOSE<br>15% NFP |
| 8-4-89<br>A6948<br>AM-45 | Building 41, Northwest Corner Office, Southeast Corner | Floor Tile | Yes | LAYER 1: (95%)<br>2% CHRYSOTILE ASBESTOS<br>98% NFP<br><br>LAYER 2: (5%)<br>15% CELLULOSE<br>85% NFP |
| 8-4-89<br>A6949<br>AM-46 | Maintenance Basement, 3" Horizontal Pipe | Straight Pipe Insulation | Yes | 65% CHRYSOTILE ASBESTOS<br>35% NFP |
| 8-4-89<br>A6850<br>AM-47 | Maintenance Basement, East Expansion Tank | Tank Insulation | Yes | 50% CHRYSOTILE ASBESTOS<br>50% NFP |

| DATE AND LABORATORY SAMPLE # | SAMPLE LOCATION | TYPE | ASBESTOS PRESENT | APPROXIMATE PERCENT COMPOSITION |
|---|---|---|---|---|
| 8-4-89<br>A6851<br>AM-48 | Maintenance Basement, 8" Vertical Pipe, Northwest Corner | Pipe Joint Insulation | Yes | LAYER 1: (10%)<br>100% COTTON<br><br>LAYER 2: (90%)<br>15% CHRYSOTILE ASBESTOS<br>5% COTTON<br>80% NFP |
| 8-4-89<br>A6852<br>AM-49 | Building 41, 4" Vertical Domestic Water Pipe, East Side, Central | Straight Pipe Insulation | Yes | LAYER 1: (10%)<br>40% CHRYSOTILE ASBESTOS<br>30% CELLULOSE<br>30% NFP<br><br>LAYER 2: (90%)<br>10% CHRYSOTILE ASBESTOS<br>80% COTTON<br>10% NFP |
| 8-4-89<br>A6853<br>AM-50 | Building 41, Southeast Corner of New Section | Ceiling Board | Yes | 30% CHRYSOTILE ASBESTOS<br>70% NFP |
| 8-4-89<br>A6854<br>AM-51 | Building 41, Southeast Corner of New Section | Roofing Tar Paper | No | LAYER 1: (70%)<br>40% CELLULOSE<br>60% NFP<br><br>LAYER 2: (30%)<br>100% NFP |
| 8-4-89<br>A6855<br>AM-52 | Building 41, Southeast Corner Office, Central | Floor Tile | No | LAYER 1: (95%)<br>10% CELLULOSE<br>90% NFP<br><br>LAYER 2: (5%)<br>5% CELLULOSE<br>95% NFP |
| 8-4-89<br>A6856<br>AM-53 | Building 41, West Bathroom, Central | Floor Tile | Yes | LAYER 1: (95%)<br>2% CHRYSOTILE ASBESTOS<br>98% NFP<br><br>LAYER 2: (5%)<br>100% NFP |
| 8-4-89<br>A6857<br>AM-54 | Building 41, West Bathroom, Central | Floor Tile | No | 15% CELLULOSE<br>85% NFP |

| DATE AND LABORATORY SAMPLE # | SAMPLE LOCATION | TYPE | ASBESTOS PRESENT | APPROXIMATE PERCENT COMPOSITION |
|---|---|---|---|---|
| 8-4-89<br>A6858<br>AM-55 | Building 41, Outside East Second Floor Window | Roofing Tar/Asphalt | Yes | LAYER 1: (50%)<br>100% NFP<br><br>LAYER 2: (50%)<br>4% CHRYSOTILE ASBESTOS<br>96% NFP |
| 8-4-89<br>A6859<br>AM-56 | Building 41, 3rd Floor, North of Stairs | Floor Tile | Yes | LAYER 1: (95%)<br>2% CHRYSOTILE ASBESTOS<br>98% NFP<br><br>LAYER 2: (5%)<br>10% CELLULOSE<br>90% NFP |
| 8-4-89<br>A6860<br>AM-57 | Building 42, 4" Vertical Pipe, East Side Central | Straight Pipe Insulation | Yes | LAYER 1: (10%)<br>30% CHRYSOTILE ASBESTOS<br>60% COTTON<br>10% NFP<br><br>LAYER 2: (90%)<br>15% AMOSITE ASBESTOS<br>10% CHRYSOTILE ASBESTOS<br>75% NFP |
| 8-4-89<br>A6861<br>AM-58 | Powerhouse Basement, Above Light | Transite Board | Yes | 80% CHRYSOTILE ASBESTOS<br>20% NFP |
| 8-4-89<br>A6862<br>AM-59 | Outside Building 41, Field | Roofing Tar Paper | No | 50% CELLULOSE<br>50% NFP |

We are pleased to have been of service to you. If you have any questions or require further information, please contact this office at your earliest convenience.

Respectfully Submitted:

TESTING ENGINEERS & CONSULTANTS, INC.

Jessica A. Kastler

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Interim Supervisor, Asbestos Services

PLS/amf

# ADDENDUM
# to
# ENVIRONMENTAL INVESTIGATION
# of the
# AMDURA SITE
# BAY CITY, MICHIGAN

for
Howard & Howard Attorneys
Lansing, Michigan

by
MWR, Incorporated
Charlotte, Michigan

October 8, 1990

This addendum is attached to the report entitled "Environmental Investigation of the Amdura Site, Bay City, Michigan". It is in response to points 1, 2, 3, 7, 15, and 20 contained in a letter dated August 2, 1990, to Frederick C. Payne, Ph.D. of MWR, Inc., a copy of which is attached to this document. The propose of this addendum is to provide additional information which became available since the issuance of the original report (September, 1989), and to clarify points raised during review. Also attached to this document under a separate cover are copies of all aerial photography of the Bay City site reviewed during the compilation of the "AERIAL PHOTOGRAPHY" section of the original report.

For the areas addressed in this document, the text has been reprinted from the original report, and modifications are included as underlined bold print.

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Point 1. **AERIAL PHOTOGRAPHY**

A review of historic aerial photography of the site can yield past land use practices and may reveal areas of possible environmental contamination. Aerial photography of the Amdura site was secured from the Michigan Dept. of Natural Resources, Land and Water Management Division. Flights available were flown in 1977 and 1987. Stereoscopic pairs with a scale of 1" = 200 feet of the site were reviewed.

Additional photography was available from the U.S. Dept. of Agriculture, Agriculture Stabilization and Conservation Service. Flights available from the ASCS were flown in 1950, 1955, 1963, 1969, 1977, and 1988. Prints from the first four flights were ordered in stereoscopic pairs at a scale of 1' = 400'. At the present time this order has been not been received. ASCS has indicated that it will require approximately three more weeks to research and complete the order.

Aerial photography was also reviewed at the Center For Remote Sensing, Michigan State University to secure additional flights. The Center is a repository for old ASCS photography and they had aerial coverage from 1938, 1950, 1955, 1963, 1969, and 1978. A check of the files revealed that there were no prints available for any of the flight years except 1978. However, the photomosaics were available for 1938, 1950, 1955, and 1963. These prints are very small scaled and serve as an index for the entire flight series. The appropriate mosaics from the four years were enlarged sufficiently to yield a photo with a scale of approximately 1" = 400'. This technique yielded photographs of poor quality. Although the site, major building, and other landmarks are discernable, the finer details are lost in the grain of the print.

As a result of the above activities aerial photography from 1938, 1950, 1955, 1963, 1977, and 1987 were analyzed to determine the historical land-use activities. As mentioned above the photography from the photomosaics yielded little information. The following observations were made from the photography.

**1938:**

- The physical size of the site is much as it is today
- Sites north and south of the Amdura site are undeveloped
- The Storage Building is in two independent sections, the center section has not been built
- There is no 120,000 gallon water storage tank at the northeast corner of the site
- There is no evidence of the water intake channel along the north boundary of the site (however, it is present on 1921 blueprints of the site)
- There is no evidence of any large pit in the vacant portion of the site (southwest corner)
- Building 41, west portion of Building 42, the Foundry, Pattern Repair building, the Pattern Shop, and the Power House are all visible

**1950:**

- Sections of the Storage Building are joined into one building
- The Foundry, Building 41, Building 42, the Pattern Repair building, the Pattern Shop, and the Powerhouse are all visible
- The 120,000 gallon storage tank is not present
- Water intake channel present
- No evidence of any large pit

**1955:**

- The Foundry, Building 41, Building 42, the Pattern Repair, Pattern Storage, Pattern Shop, and the Powerhouse are visible (expansion to Building 42 complete extending the size of the building to its present day dimensions)
- Water intake channel visible
- No 120,000 gallon water storage tank
- No evidence of any large pit

**1963:**

- All major buildings are visible
- Sand Blasting and Paint Buildings are not visible (have yet to be erected
- Water intake channel visible
- 120,000 gallon water storage tank may be present
- No evidence of any large pit

**1977:**

- 120,000 gallon water storage tank present
- All major buildings present (Paint Shop and Sandblasting Building visible next to old foundry)
- Water intake channel filled
- Vacant area covered with storage sheds and stacks of stock materials
- Many railroad tracks crisscross the site
- The soils around the foundry are dark (foundry sands)
- No evidence of any large pit

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1987

- o Asphalt plant in the center of the vacant area
- o Several large piles of aggregate near the asphalt plant
- o Remnants of the railroad tracks on portions of the site
- o No evidence of any large pit

Review of the available aerial photography indicate no major areas of possible environmental contamination on the Amdura site. The general appearance of the site was one of orderliness. There was no indication of any plant operations that would suggest anything less than industry standards.

MWRI will submit an Addendum to this report as soon the additional air photography from the ASCS arrives and has been analyzed. This photography will be on a scale sufficient to better interpret the site activities during the periods the flights were flown.

**ADDENDUM**

**Photographs from the Agricultural Stabilization and Conservation Service for the 1950, 1055, 1963, and 1969 flights were reviewed. These photographs have a scale of approximately 1"=400'. The following conditions were observed:**

**1950:**

- **Intake channel and intake structure present, this channel provided make-up water for the steam boilers in the Power House**
- **Building present in the area of the spent solvent storage area**
- **Carpenter shop attached to the south side of the Pattern Storage Building**
- **No paint shop present south of the Boom Shop**
- **No sand blasting building south of the Boom Shop**
- **Small building along the west side of Building 42**
- **Small building along the Saginaw River**
- **West yard vacant (to the west of Building 42 to the river**
- **Several large cranes present around the site**
- **Railroad cars present on site along with several storage containers**
- **No large pit present in the southwest portion of the site**

**1955:**

- **Same buildings in the same arrangement as in the 1950 photograph**
- **Several cranes on site**
- **Several railroad cars on site**
- **Very little outside storage**
- **No large pit present in the southwest portion of the site**

**1963:**

- **Large 120,000 gal water tank present at the northeast corner of the site**
- **Very little outside storage**
- **Site looks much as in the 1955 photo**
- **No large pit present in the southwest portion of the site**

1969:

- Intake channel partially filled
- Building in the spent solvent area behind the Power House now gone
- The carpenter shop south of the pattern storage building now gone
- Building along the Saginaw River and west of Building 42 now gone
- A lot of outside storage around Building 42 and 9 in the west storage yard
- Sandblasting Building present south of the Boom Shop
- Storage east of Building 41
- No large pit present in the southwest portion of the site

The following table indexes the aerial photography supplied to the MDNR under a separate cover

| Year Flown | App. Scale | Frame Number | Repository Agency |
|---|---|---|---|
| 1950 | 1"≈400' | BDC-2G-104 | ASCS[1] |
| 1955 | 1"≈400' | BDC-1P-101 | ASCS |
| 1963 | 1"≈400' | BDC-2DD-19 | ASCS |
| 1969 | 1"≈400' | BDC-1KK-40 | ASCS |
| 1977 | 1"≈200' | MDNR 3-88-53 | MDNR[2] |
| 1987 | 1"≈200' | MDNR341-86A-165 | MDNR |
| 1938 | 1"≈400' | Mosaic | CRS-MSU[3] |
| 1950 | 1"≈400' | Mosaic | CRS-MSU |
| 1955 | 1"≈400' | Mosaic | CRS-MSU |
| 1963 | 1"≈400' | Mosaic | CRS-MSU |

[1] U.W. Dept. of Agriculture, Agricultural Stabilization and Conservation Service

[2] Michigan Dept. of Natural Resources

[3] Center for Remote Sensing-Michigan State University

Point 2 SOIL QUALITY

Page 8, paragraph one should read:

1,1,1-trichloroethane (TCA) was found down-gradient of the water storage tank, SB-3 and SB-4 at both depths; in the vicinity of the spent solvent storage area, SB-5 and SB-6 at both depths; and at SB-7 near the waste loading area of Building 42 at both depths (Table 1 and Figure 2). 1,1,2,2-tetrachlorethane was found at SB-8 in the surface sample and at SB-14 also in the surface sample. Bromoform was also found at SB-8 at the surface.

**Point 3** **SOIL QUALITY**

Page 7, last paragraph should read:

Thirty-one samples were collecteded and analyzed from the sixteen soil boring locations. Only one sample was collected at SB-1 due to the proximity of the ground water. **Drilling went to the 6.5 foot depth which was into the saturated zone. No sample was collected at that depth as a result physical characteristics of the soils. SB-2 was placed immediately west of SB-1 (hydraulically down-gradient) and sampled at both shallow and deep depths. The resulting analyses showed no VOC's present in any of the samples collected around the site of the removed UST.** A total of four samples were collected for analysis from MW-1, MW-2, SS-1, and SS-2. The analytical results from the 601 and 602 scans for all soil samples are tabulated in Table 1. The total heavy metal analytical results from all the sampling locations are tabulated in Table 2.

**Point 7** **GROUND WATER QUALITY**

Page 10, first full paragraph should read:

Seven monitor wells (MW) were installed, located in Figure 2, on the property to document the quality of the ground water as it entered the site (hydraulically up-gradient) and as it exited (hydraulically down-gradient). Monitor wells **MW-5, MW-6, and MW-7** were installed up-gradient of the site along Saginaw Street, and monitor wells **MW-1, MW-2, MW-3 and MW-4** were installed along the Saginaw River (Figure 2). The samples recovered from these seven monitor wells were analyzed for purgeable halocarbons and purgeable aromatics using EPA scans 601 and 602 and total heavy metals (for the 13 priority pollutant metals), using EPA scan 200.7.

**Point 15** **POLYCHLORINATED BIPHENYLS (PCB'S)**

On August 2, 1989, employees from MWR, Inc. and ACES, Inc. conducted an inspection of nine transformer locations at the Bay City Industrial Complex (formerly the AMDURA facility). Each location had at least one oil-filled transformer.

The purpose of the site visit was to collect samples from the immediate environment to ascertain the release of PCB containing oils. Each transformer was labeled with a label indicating the PCB content of the core oil. Twenty samples were collected and analyzed using EPA Method 608. The samples were run through a methylene chloride extraction to mobilize any PCB's. The extraction was analyzed using a gas chromatography looking for the presence of the PCB isomers: 1016, 1221, 1223, 1242, 1248, 1254, and 1260. All sample were reported with below detectable limits of PCB's. The detection limit was 1 mg/kg.

The exact sampling locations of the PCB samples were given in Appendix H of the report to which this addendum is attached to. To clarify the data requested in point 15 of the above referenced letter, Appendix H of the original report is included in its entirety along with Figure 4 from the same report.

If the information contained in the following table does not answer the MDNR's request for the exact sampling locations, then MWR recommends a site visit with a representative of the MDNR for more explicit documentation.

PCB Sampling locations

| Date Collected | Sample Id. | Location |
|---|---|---|
| 8/02/89 | Pad-1-1 | West side of pad, outside of the concrete containment berm |
| 8/02/89 | Pad-1-2 | North side of pad at low spot of concrete containment berm |
| 8/02/89 | Pad-1-3 | Composite scrapings and pulverized concrete from around the PCB labeled transformers (4) |
| 8/02/89 | Pad-2-1 | Scraping and shavings from flooring immediately underneath the transformer |
| 8/02/89 | Pad-3-1 | Immediately below transformer to the left |
| 8/02/89 | Pad-3-2 | Immediately below transformer to the right |
| 8/02/89 | Pad-4-1 | Immediately east of pad |
| 8/02/89 | Pad-4-2 | Immediately north of pad |
| 8/02/89 | Pad-4-3 | Scrapings of oil soaked oil from under the drain cock of Transformer 11 |
| 8/02/89 | Pad-5-1 | Immediately north of pad outside fence |
| 8/02/89 | Pad-5-2 | Immediately east of pad outside fence |
| 8/02/89 | Pad-6-1 | South of leaking transformer |
| 8/02/89 | Pad-6-2 | North of leaking transformer |

| | | |
|---|---|---|
| 8/02/89 | Pad-7-1 | Scrapings and pulverized concrete from underneath the north end of the transformer bank |
| 8/02/89 | Pad-7-2 | Scrapings and pulverized concrete from underneath the south end of the transformer bank |
| 8/02/89 | Pad-8-1 | Immediately west of pad outside concrete containment berm |
| 8/02/89 | Pad-8-2 | Immediately east of pad outside concrete containment berm |
| 8/02/89 | Pad-9-1 | Immediately south of pad outside concrete containment berm |
| 8/02/89 | Pad-9-2 | Immediately east of pad outside concrete containment berm |
| 8/02/89 | Pad-9-3 | Scrapings of oil soaked soils, pulverized concrete, and lose paint from around base of several of the transformers |

**Point 20** **SITE BASE MAP**

A site base map has been drafted showing sampling locations for monitoring wells, soil borings, PCB samples, and building locations. The maps in the report were drafted to highlight the results of specific tasks completed at the site. The full-scale site base map is incorporated in a letter dated October 18, 1990 from Fred Payne to Rhonda Klann.

*ATTACHMENT 5*

# *ETG ENVIRONMENTAL FIELD REPORT DOCUMENTING REMOVAL OF PCB-CONTAINING MATERIALS*

# FIELD REPORT
# for the
# TRANSFORMER REMOVAL AND PCB REMEDIATION
# at the
# BAY CITY INDUSTRIAL COMPLEX
# BAY CITY, MICHIGAN
# Supplement 1

for

Woodman of the World
Life Insurance Society

by

MWR, Inc.
Charlotte

November 26, 1990

**Background:**

This report supplements a report entitled "FIELD REPORT for the TRANSFORMER REMOVAL AND PCB REMEDIATION at the BAY CITY INDUSTRIAL COMPLEX, BAY CITY, MICHIGAN, which was issued September 28, 1990. The original report documented activities in the removal of polychlorinated biphenyls (PCB) containing electrical equipment and the subsequent remediation of seven location at the Bay City site on August 13 and 14, 1990. These activities and the resultant report were in response to cited discrepancies contained in a "Notice of Inspection" issued at the completion of an on-site inspection conducted by members of the staff of the Michigan Dept. of Natural Resources (MDNR) on February 14, 1990, to ensure compliance with the Toxic Substance Control Act (TSCA). The reader is requested to review the above mentioned report for a detailed discussion of the tasks and results of the initial on-site activities which were in response to the "Notice of Inspection".

After the removal of the scheduled oil-filled electrical equipment in mid-August, seven locations (Figure 1) were remediated in accordance with the requirements put forth in 40 CFR 761. Subsequent confirmatory sampling indicated that PCB concentrations remained above 10 $\mu g/100\ cm^2$ action level at five of the seven locations. At this point the decision was made to reenter the locations with elevated PCB concentrations and further remediate these area until subsequent confirmatory sampling indicated concentrations below 10 $\mu g/100\ cm^2$.

Table 1 indicates that further activities were needed at locations 1, 2, 3, 5, and 7, however, the data also indicates that the soils under the concrete pads at locations 1 had 3 had PCB concentrations below detection. As a result remediation activities were scheduled to remove concrete at the above five locations.

**Field Activities:**

The additional PCB site remediation was completed on November 15 and 16, 1990. As all the visually stained concrete was removed during the August period, the five locations were further subjected to concrete removal with either jack-hammers or shot scarification.

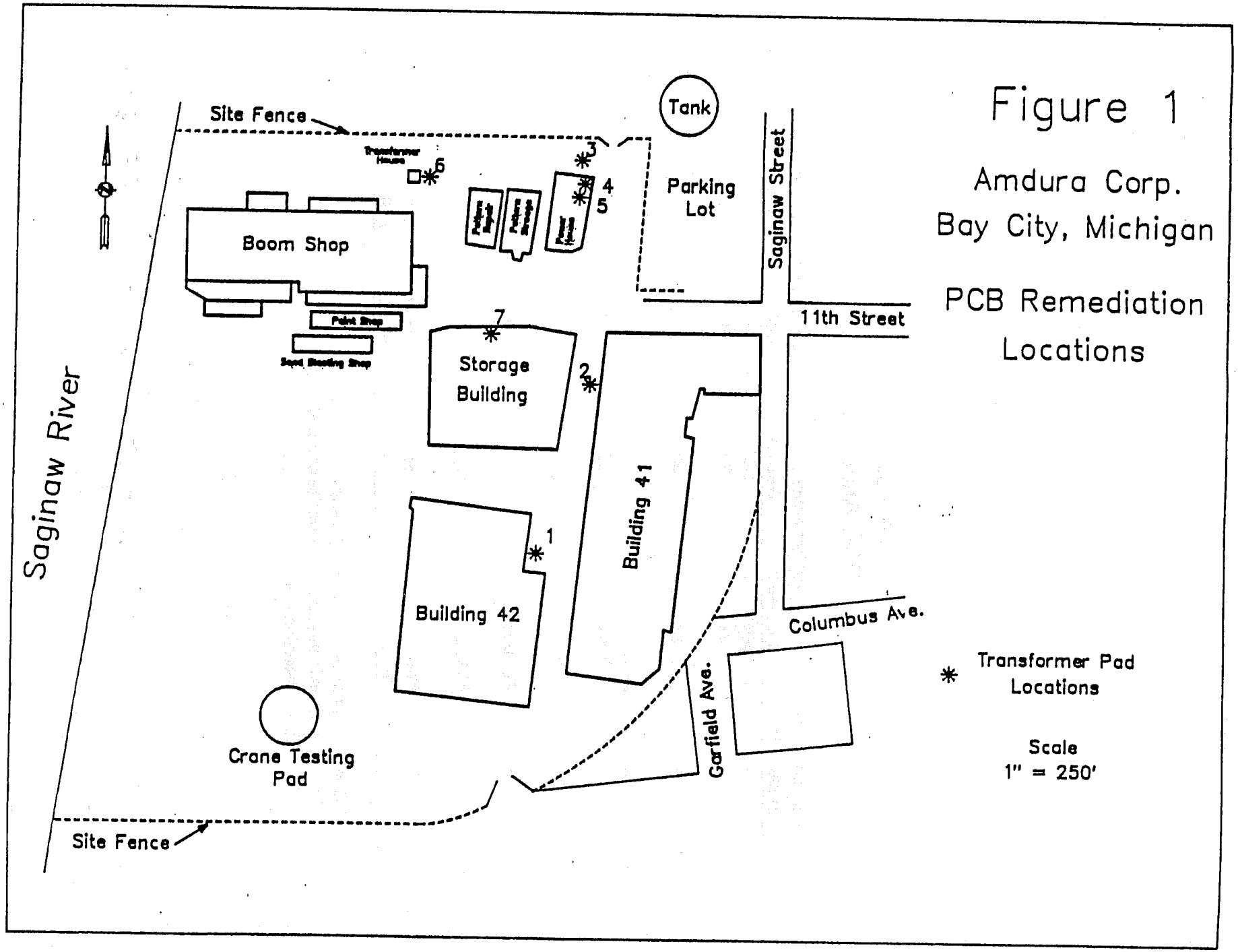


Figure 1
Amdura Corp.
Bay City, Michigan
PCB Remediation
Locations
Site Fence
Tank
Parking
Lot
Saginaw Street
11th Street
Boom Shop
Paint Shop
Sand Blasting Shop
Storage
Building
Building 41
Building 42
Saginaw River
Columbus Ave.
Garfield Ave.
Crane Testing
Pad
Site Fence
1
2
3
4
5
6
7
Transformer Pad
Locations
Scale
1" = 250'
PCBMAP.DRW

# TABLE 1
## PCB Analyses

| Map Location (Figure 1) | August '90 Activity Sample Id. | Results* | November '90 Activity Sample Id. | Results* |
|---|---|---|---|---|
| 1 | Composite #24 | BDL | – | – |
| | Wipe #24 | 39 | 24–2 | BDL |
| 2 | Wipe Sample #15 | 48 | 15–2 | BDL |
| 3 | #1 Composite | BDL | – | – |
| | #1 Wipe | 68 | 1–2 | BDL |
| 4 | #5 Inside | BDL | – | – |
| 5 | #10 Basement | 39 | 10–2 | BDL |
| 6 | #36 soil | BDL | – | – |
| 7 | #14F | 38 | 14F–2 | BDL |
| | #14W | 48 | 14W–2 | BDL |

* Concentrations in ug/100 cm2 for wipe samples
Concentrations in mg/kg for composite and soil samples
BDL = below detection limit

The services of Westinghouse Electric Corporation were again secured to preform the remediation activities. Westinghouse's vendor contact was:

Mr. Bill Cusick
Westinghouse Electric Corporation
24700 Eleven Mile Rd.
Southfield, Michigan 48037

On-site activities were again completed by:

Westinghouse Environmental and Geotechnical services, Inc.
5000 Angola Road
Toledo, Ohio 43615

Site power was secured by:

Affleck Electric Co.
205 Third Street
Bay City, Michigan 48706

Work progressed at each location in generally the same sequence. The following is a synopsis of the tasks completed at each location and presented in chronological order of completion. The referenced pictures can be found in Attachment 3.

**Location 3 (Picture 1)**

Location 3 is located on the north side of the Power House (Figure 1). Originally Transformers 1 and 2 were removed from the substation and the greater portion of the concrete pad was also removed. The resultant confirmatory samples indicated PCB concentrations at 68 $\mu g/100\ cm^2$ from the surface of the remaining concrete and below detection level in the exposed soils (Table 1). The present activities removed the remaining concrete at the location of Transformers 1 and 2. These activities generated approximately two drums (55 gallon capacity, D.O.T. approved for hazardous waste containment) of hazardous wastes. A confirmatory composite soil sample was collected from the exposed soils (labeled "1-2") and submitted to Biological & Environmental Control Laboratories, Inc. of Toledo, Ohio, the contract laboratory, for analysis.

Picture 1 (Attachment 3) shows location 1 after the removal of the contaminated concrete.

**Location 5 (Picture 2)**

Location 5 is located in the basement of the Power House (Figure 1). Originally the oiled filled circuit breaker No. 10 was removed from the overhead. The concrete floor immediately below the breaker was scarified to remove the top layer of contaminated concrete. Confirmatory sampling of the remediated area indicated PCB concentrations of 39 $\mu g/100\ cm^2$ (Table 1). Secondary activities concentrated on shot scarification of the effected area. After the scarification the concrete was then triple washed with a mixture of kerosene, penetone, and water. These activities generated less than 1/4 of a drum of hazardous materials. A confirmatory wipe sample (labeled 10-2) was taken from the remediated area and submitted to the contract laboratory for analysis.

Picture 2 (Attachment 3) shows location 5 after shot scarification of the contaminated area.

**Location 7 (Pictures 3 & 4)**

Location 7 is located inside the Storage Building (Building 9) along the north wall (Figure 1). The original efforts removed the oil filled circuit breaker No. 14 from a short stub wall. The concrete floor was shot scarified and the brick wall behind the breaker was scarified with a hand held unit. The area was then triple washed. Two confirmatory samples were taken, one from the wall behind the breaker and one from the floor immediately below the breaker location. These data indicated that PCB's remained as the wall sample had concentrations of 48 $\mu g/100\ cm^2$ and the floor sample had concentrations of 38 $\mu g/100\ cm^2$ (Table 1). The present activities removed the brick from the contaminated portion of the stub wall and shot scarified the floor immediately below the breaker location. These activities generated about 1/2 drum of hazardous material. Confirmatory wipe samples (labeled; 14F-2 from the floor and 14W-2 from the wall) were taken from the remediated areas and submitted to the contract laboratory for analysis.

Pictures 3 and 4 (Attachment 3) show the floor and wall after the removal of the contaminated materials.

**Location 2 (Picture 5)**

Location 2 is located at the west end of Building 41A (Figure 1). Originally transformer 15 was removed from the substation, and the concrete pad in that location was shot scarified. Confirmatory sampling of the remediated area indicated PCB concentrations of 48 $\mu g/100\ cm^2$ (Table 1). Secondary activities concentrated on jack-hammering the remaining concrete in the effected area. The area was then triple washed. These activities generated about 1/2 of a drum of hazardous materials. A confirmatory sample wipe sample (labeled 15-2) was then taken from the remediated area and submitted to the contract laboratory for analysis.

Picture 5 (Attachment 5) shows the concrete pad at location 2 after the shot scarification.

**Location 1 (Picture 6)**

Location 1 is located at the northeast corner of Building 42 (Figure 1). The original efforts removed transformer 24 from the substation and removed a portion of the concrete pad and stained soil. The two confirmatory samples indicated that PCB's were present at 39 $\mu g/100\ cm^2$ on the surface of the concrete in the remediated area, and below detection limit in the adjoining soils. The present activities removed additional concrete in the effected area with a jack-hammer along with a portion of the exposed soils. These activities generated approximately two drums of hazardous material. A confirmatory soil sample (labeled 24-2) was taken from the remediated area and submitted to the contract laboratory for analysis.

The present remediation activities generated an additional five drums of hazardous materials. These wastes were properly labeled and placed into storage with the 14 drums generated during the August efforts. Tri-State Motor Transit Co. (U.S. E.P.A. ID No.: MOD-095038998) picked up all 19 drums for transit to the Aptus TDS facility (U.S. E.P.A. ID No.: KSD-980964993) in Coffeeville, Kansas on Saturday, November 17, 1990. A copy of the Uniform Hazardous Waste Manifest for these materials is attached to this report as Attachment 1. The top copy of the manifest was submitted

by mail to the Waste Management Division of the MDNR on November 29, 1990 within the mandated time frame.

**Analytical Results**

A total of six confirmatory samples were collected in accordance with the requirements stated in 40 CFR 761. Four were wipe samples and two were composite soil samples. The location and results of the analysis are tabulated in Table 1 and the laboratory reporting sheets are in Attachment 2. All samples had PCB concentrations below the detection limit set forth in the above mentioned regulations of 10 $\mu g/100\ cm^2$ for the wipe samples and 1 mg/kg for the soil samples. These data indicate that the five locations have been successfully remediated.

**Summary:**

The activities on November 15 and 16, 1990, successfully removed all remaining PCB contaminated concrete from five locations at the Bay City Industrial Complex. With the success of these remedial efforts, Woodman of the World Life Insurance Society has responded to and corrected all discrepancies listed in the "Notice of Inspection" issued in February of 1990.

**ATTACHMENT 1**

DNR
MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

1979, as amended and Act 136, PA 1969.

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, PA 1969

Please print or type

Form Approved. OMB No. 2050-0039 Expires 9-30

# UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. M I D 0 8 6 7 4 4 2 0 8 — Manifest Document No. 2 6 6 Y A

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
American Hoist
Bay City Industrial Complex
112 S. Water St.
Bay City, MI 48708

4. Generator's Phone ( ) 419-389-0150

A. State Manifest Document Number MI 1898119

B. State Generator's ID

5. Transporter 1 Company Name: Tri-State Motor Transit CO.
6. US EPA ID Number: M O D 0 9 5 0 3 8 9 9 8

C. State Transporter's ID

D. Transporter's Phone 417-624-3131

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Aptus
P.O. Box 1328/Hwy. 169 North
Coffeyville, KS 67337
10. US EPA ID Number: K S D 9 8 0 9 6 4 9 9 3

G. State Facility's ID

H. Facility's Phone 316-251-6380

| | 11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER). | 12. Containers No. | Type | 13. Total Quantity | 14. Unit Wt/Vol | I. Waste No. | N/H |
|---|---|---|---|---|---|---|---|
| a. | RQ HAZARDOUS SUBSTANCE, SOLID, N.O.S., ORM-E, NA 9188(POLYCHLORINATED BIPHENYLS) | 001 | DM | 02227 | K | 026L | N |
| b. | RQ HAZARDOUS SUBSTANCE, SOLID, N.O.S., ORM-E, NA 9188(POLYCHLORINATED BIPHENYLS) | 016 | DM | 03636 | K | 026L | N |
| c. | RQ HAZARDOUS SUBSTANCE, SOLID, N.O.S., ORM-E, NA 9188(POLYCHLORINATED BIPHENYLS) | 002 | DM | 00454 | K | 026L | N |
| d. | ~~RQ HAZARDOUS SUBSTANCE, SOLID, N.O.S., ORM-E, NA 9188(POLYCHLORINATED BIPHENYLS)~~ | | ~~DM~~ | | ~~K~~ | ~~026L~~ | ~~N~~ |

J. Additional Descriptions for Materials Listed Above
a. drums of debris (soil) Storage Dates 8-14-90
b. drums of debris (concrete) Storage Dates 8-14-90
c. drums of debris (wood/debris) Storage Dates 8-14-90
~~d. drum of debris (soil/debris) Storage Date~~

K. Handling Codes for Wastes Listed Above
a/s /
b/s /
c/s /
~~d/s~~

15. Special Handling Instructions and Additional Information
See Enclosed Contingency Plan Work Order #67814 1-800-292-2558

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR; if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Charles R. Hayward
Signature: Charles R. Hayward
Date (Month Day Year): 1 1 1 7 9 0

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: GARY D. GREGOR
Signature: Gary D. Gregor
Date (Month Day Year): 1 1 1 7 9 0

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Charles Hay
Signature:
Date (Month Day Year):

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name:
Signature:
Date (Month Day Year):

GENERATOR
TRANSPORTER
FACILITY

EPA Form 8700-22 (Rev. 9/88) To be mailed by Michigan DNR

PR 5110

**ATTACHMENT 2**

estinghouse Environmental &
eotechnical Services, Inc.
000 Angola Road
oledo, OH 43615

TTN: Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

[redacted]

ample
escription: American Hoist - Project # 121 - Station # 1-2 - under transformer # 1-2 - 11/16/90 @ 0930

sults:

| Analyte | Method | Result |
|---|---|---|
| PCBs | SW-846, 8080 | less than 1 mg/Kg |

Surrogate Recovery: Decachlorobiphenyl 70%

RECEIVED
NOV 30 1990
MIDWEST WATER RESOURCE
INCORPORATED

NOV 1990
RECEIVED

[redacted]

estinghouse Environmental &
eotechnical Services, Inc.
00 Angola Road
ledo, OH 43615

Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

lab no. 90113449
p.o. no. 23650

mple
scription: American Hoist - Project # 121 - Station # 10-2 - basement floor - 11/16/90 @ 11:00

sults:

| Analyte | Method | Result |
|---|---|---|
| PCBs - wipe sample | SW-846, 8080 | less than 1 ug/wipe |

Surrogate Recovery: Decachlorobiphenyl 52%

NOV 1990
RECEIVED

pleted: /90 tech: KRH/JH/JP approved by:

estinghouse Environmental &
eotechnical Services, Inc.
000 Angola Road
oledo, OH 43615

TTN: Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

lab no. 90T13450
bio no. 23650

mple
escription: American Hoist - Project # 121 - Station # 14W-2 - wall wipe 14 - 11/16/90 @ 11:30

sults:

| Analyte | Method | Result |
|---|---|---|
| PCBs - wipe sample | SW-846, 8080 | less than 1 ug/wipe |

Surrogate Recovery: Decachlorobiphenyl 51%

NOV 1990
RECEIVED

mpleted: 20/90 tech: ERM/JH/JP approved by:

estinghouse Environmental &
eotechnical Services, Inc.
)00 Angola Road
do, OH 43615

Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

lab no. 90113451
p.o. no. 23650

ample
escription: American Hoist - Project # 121 - Station # 14F-2 - floor wipe 14 - 11/16/90 @ 12:00

esults:

| Analyte | Method | Result |
|---|---|---|
| PCBs - wipe sample | SW-846, 8080 | less than 1 ug/wipe |

Surrogate Recovery: Decachlorobiphenyl 62%

NOV 1990
RECEIVED

mpleted: 20/90 | tech: ERM/JH/JP | approved by:

tinghouse Environmental &
technical Services, Inc.
0 Angola Road
edo, OH 43615

N: Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307
1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

lab no. 90113448
p.o. no. 23650

ple
cription: American Hoist - Project # 121 - Station # 15-2 - under transformer # 15 - 11/16/90 @ 10:30

ults:

| Analyte | Method | Result |
|---|---|---|
| PCBs - wipe sample | SW-846, 8080 | less than 1 ug/wipe |

Surrogate Recovery: Decachlorobiphenyl 56%

NOV 1990
RECEIVED

mpleted: 20/90 | ech: FRM/JH/JP | approved by:

stinghouse Environmental &
otechnical Services, Inc.
00 Angola Road
ledo, OH 43615

Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

mple
scription: American Hoist - Project # 121 - Station # 24-2 - under transformer # 24 - 11/16/90 @ 10:00

sults:

| Analyte | Method | Result |
|---|---|---|
| PCBs | SW-846, 8080 | less than mg/Kg |

Surrogate Recovery: Decachlorobiphenyl 83%

RECEIVED
NOV 1990

**ATTACHMENT 3**

*ATTACHMENT 6*

*1992 ADL REPORT*

Arthur D Little

# Preliminary Environmental Assessment, for EPA Bay City, MI CERT Project

## Draft Report

Submitted to
Odell Associates

January 27, 1992

Arthur D. Little, Inc.
Acorn Park
Cambridge, Massachusetts
02140

ADL Reference 40291

## 5.0 Site Specific Setting and History

The Industrial Brownhoist (IB) property, which occupies 31 acres, is located on the Saginaw River and to the west of Saginaw Street, between 11th and 13th Streets, (number 7, Figure B-2). The vacant lot immediately north of the guard house is also part of the property. The IB site is a former foundry and manufacturing facility for large cranes and hoists. Crane manufacturing activities ceased in 1983 when the plant operations were moved to North Carolina. The foundry operations were shut down in the early 1960's. Much of the site (buildings and land) is currently leased to smaller companies. Operations presently on site include metal fabrication and sheetwork (KAI), rebar form fabrication and storage (Whaley Steel), and aggregate storage (Janet Sand and Gravel). Warehouse space is leased to various companies for storage of surplus goods, scrap machinery, cars, and foundry patterns. Present activities on the site are not likely to have significant impact on the environmental condition of the property.

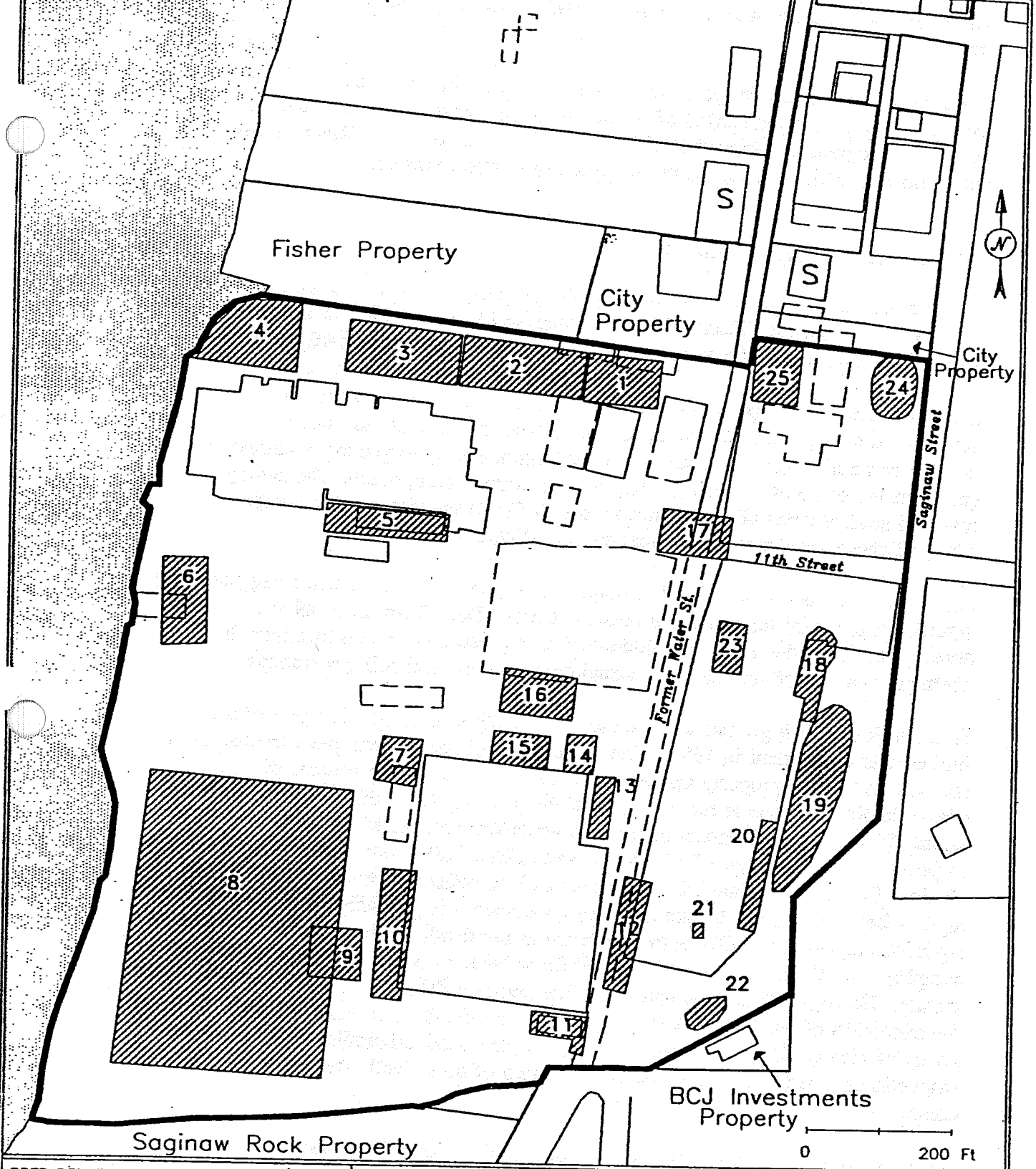
A limited site assessment was performed in 1989 by MWR, Inc. and included a soil and ground water investigation, as well as sampling of transformers and suspected asbestos containing materials. Figure F-1 shows twenty-five locations that Arthur D. Little feels warrants additional attention.

Former operations at the IB property such as foundry operations, metal painting, plating, cleaning, machining, hydraulic testing, and equipment maintenance, included the use of hazardous materials and petroleum products. Hazardous waste management practices are poorly documented; however, the facility applied for a RCRA generator permit in 1980. At least two areas were known to have been used as hazardous waste accumulation areas. Both were located outside and did not appear to be paved or bermed. A Michigan Department of Natural Resources (MDNR) Waste Management inspection in early 1989, after the plant had closed, revealed several violations of waste storage and characterization including leaking drums and potentially contaminated soil.

A 350 by 350 foot section of the property adjacent to the river was leased to Saginaw Asphalt for use as an asphalt plant in the middle to late 1980s.

Review of historical records, maps, and photographs indicate that at least 50,000 gallons of petroleum product was stored above ground at more than six locations in the past. Tanks located near the river were used to fuel the forges throughout the site. One tank, built between 1955 and 1963 and located at the north end of the former Mac Kinnon site, was used to store unknown materials.

The 1906 Raschers map identifies a small tar well (presumably associated with manufactured gas) under what is presently building 41, near the northwest corner.




| PREPARED FOR: Odell Associates | | | Contaminant source | TITLE: Industrial Brownhoist Property: Potential Contaminant Source Areas |
|---|---|---|---|---|
| DATE: Jan. 1992 | SCALE: As shown | DWG. NO.: 40291-010 | S Electrical Substation | |
| | | | Location of structures now removed | |
| | | | Property boundary | |

Arthur D Little

The map also identifies a large gas holder and an above ground oil [illegible] area.

Used foundry sand, which typically contains above-background levels of heavy metals, was reportedly disposed of on site to fill low areas. This was a common practice throughout the industrialized sections along the Saginaw River. Disposal of solid waste at various locations on the property is also reported.

## 6.0 Observations and Operations

Painting was done at several locations on the property. Evidence of paint disposal on the ground is recorded. Paint odors were observed in the vicinity of the present paint shop at the time of the site visit, although no painting was being performed.

A soil gas survey was performed as part of the limited assessment in 1989. Soil gas surveys are a rapid, cost effective method to identify potential locations of volatile organic contamination in shallow soil over large areas by extracting a sample of pore gas from the soil and analyzing it for volatile organic compounds. The survey revealed several areas of high concentrations of total volatile organic compounds. Many of these areas are located near suspected contaminant sources.

Former site operations identified in maps, photographs, and documents suggest that a significant potential for soil contamination exists. Data from the 1989 site assessment concludes that soil contamination is present at several locations, based on chemical analysis of soil samples, visual observations, and soil gas surveys.

A network of seven ground water monitoring wells was installed as part of the limited site assessment in 1989. The wells were located in two linear trends, one at the east end of the property upgradient of the potential on-site sources of contamination and one at the west end of the property (hydraulically downgradient), within 50 feet of the Saginaw River. No wells were placed in the suspected waste disposal or storage areas. Well screens were placed below the water table in fill or shallow fine sands but not within the clay and no wells penetrated the confined aquifer below the clay. In fact, the clay encountered is probably not the local aquiclude reported by MDNR to be present at the depth of about 60 feet. Water samples from these wells were analyzed for volatile organics and priority pollutant metals. No organic contaminants were detected at a detection level of 10 ug/L, with the exception of chloroethane at 20 ug/L in well MW-3. All wells contained low levels of zinc (0.02 - 0.08 mg/L), and four wells contained similar levels of nickel. Inspection by Arthur D. Little indicate that two of these wells are not in operating condition.

Old maps and interviews with site personnel indicate that there may be at least three abandoned underground storage tanks on the site. Information from the Bay City Fire Chief and State Fire Marshall's Office provided no further information on the presence or location of these tanks. The 1989 report indicated that an underground tank had been removed from the northeast corner of the property in 1983 or 1984; however, no details on the removal or soil conditions were provided.

electric cranes to lift and move large equipment. As part of the 1989 assessment, a PCB sampling program was initiated. Samples were collected from the concrete and the soil near the transformer pads. No PCBs were detected in soil above detection limits of 1 mg/kg. As a result of the PCB sampling, several transformers and associated materials (concrete and wood) were removed.

An asbestos assessment and sampling program was performed as a part of the 1989 assessment. Review of the assessment indicates that asbestos is present in many forms in several buildings. Our visual observations confirmed the presence of the asbestos containing materials.

Three properties adjacent to the IB site, at the intersection of Columbus and 14th Streets, contained gasoline service stations prior to and subsequent to 1952, based on Sanborn maps and city directories. One of the service stations was located at the present Easy Handling property, adjacent to the southeast corner of the site.

## 7.0 Issues

### 7.1 Waste Storage and Characterization

Present waste storage and characterization activities are minimal and do not appear to pose a liability. Former waste storage and handling issues are of concern and are discussed under Potential Soil and Ground Water Contamination.

### 7.2 Potential Soil and Ground Water Contamination

Issue: The historic use of the property includes many operations and processes which have significant potential for contamination of soil and ground water. These include foundry operations, metal working, vehicle maintenance, fuel distribution, asphalt processing, painting, and power generation and distribution. Preliminary investigation of the soil and ground water quality revealed several locations where release of oil or hazardous materials is confirmed or suspected. Through our research and review of previous investigations, we have identified additional areas that may have been impacted. The MDNR has placed the property on the state 307 list and requested that additional investigations be performed to identify the nature and extent of the known contamination and to assess additional areas which may be contaminated.

Actions: We recommend that soil and ground water investigations be performed to verify the nature and extent of contamination in several areas of known contamination (how deep is the contamination at the former above ground tank locations?) and to determine if contaminants are present in areas where no investigations have been performed (the vehicle maintenance pit in building 42, the plating and hydraulic shops, etc.). The information provided by this sampling effort will provide guidance to the extent of future actions required to adequately remediate the site.

Associated costs: There is a high likelihood that the preliminary sampling program will be necessary. It is also highly likely that additional investigations will be necessary to characterize the site for future remedial actions (risk assessment,

feasibility studies). There is a moderate to high likelihood that some soil remediation will be necessary. There is a low to moderate likelihood that ground water remediation will be necessary. The following costs are based on our professional judgement and experience with large complex sites such as the Industrial Brownhoist. Information obtained from file reviews revealed an estimate for site remediation exclusive of ground water remediation.

Preliminary sampling

Additional investigations

Soil remediation (2000 yds RCRA)(A)

Ground water remediation

**7.3 Underground Storage Tanks**

Issue: Based on interviews with former site personnel, engineering drawings, and reviews of regulatory files, we believe that there may be at least three inactive underground storage tanks on the property. Michigan laws regulating the use of underground storage tanks require that tanks not in service for 12 months be closed.

Actions: We recommend that the suspected tank locations be investigated to determine if the tanks are still in place and to identify the condition of the soil and the ground water. If tanks are identified they will need to be closed (removed). If soil and groundwater contamination is identified, additional actions will be required under Michigan laws to assess and remediate the contamination.

Associated costs: There is a high likelihood that investigation will be necessary to verify the presence of the tanks. There is a moderate likelihood that three tanks are present and will have to be removed. The expected cost for tank removals is approximately There is a low likelihood that additional action will be required to further assess and remediate the tank areas.

Tank verification/Preliminary assessment

Tank removals (3 at $20,000 each)

Further assessment and remediation

Issue: Nine transformer locations were identified at the Industrial Brownhoist property during previous investigations by Woodmen of the World. Each location was tested and remediated where necessary. Based on the results of the investigation and remediation, there appears to be little liability associated with the transformers. There are, however, other areas on the property which may constitute liability for PCB contamination. These areas include: stressed vegetation (PCB contaminates oils were often used for weed and dust control), former waste storage areas, filled areas, former hydraulic test area, leaking underground drains, and used oil disposal areas.

Actions: We recommend that these areas be sampled to determine if PCBs are present above state action level of 1 mg/kg.

Associated costs: There is a high likelihood that preliminary soil sampling will be required. There is a low likelihood that remedial actions for PCB contaminated material will be required. The cost for preliminary soil sampling is included under Potential Soil and Ground Water Contamination.

PCB sampling program

Remedial actions (disposal of 10 tons of PCB material)

**7.5 Asbestos**

Issue: Numerous areas of asbestos containing materials were identified during a previous survey by Woodmen of the World. Regulations require that asbestos containing materials be properly handled and disposed of during building demolition.

Actions: Prior to demolition we recommend that asbestos containing material be removed and disposed of in accordance with prevailing regulations.

Associated costs: There is a high likelihood that the asbestos containing material will have to be removed before building demolition. We have estimated the asbestos removal costs based on the survey performed for Woodmen of the World.

Asbestos removal (A)

### 7.6 Pollution Control Systems

At the time of the site visit there were no pollution control systems in use. Therefore, there is a low likelihood of liabilities associated with this issue. Issues associated with former pollution control systems (baghouse, drains) are discussed under Potential Soil and Ground Water Contamination.

### 7.7 Off Site Liability

Issue: Review of maps and plans indicate that there may be as many as five tile drains which discharge to the Saginaw River. The status of the drains are unknown. No discharge permits are recorded at the MDNR.

Actions: We recommend that if the five drains can be located they be dye tested to determine if they are actively discharging to the river. If they are discharging, we recommend that they be sampled and plugged.

Associated cost: There is a high likelihood that the drains will require dye testing and a moderate probability that they are still active.

*ATTACHMENT 7*

*1995 ROY F. WESTON SUMMARY REPORT*

# PROPERTY OWNER COPY - INDUSTRIAL BROWNHOIST SITE SUMMARY REPORT CENTER FOR ECOLOGICAL RESEARCH AND TRAINING BAY CITY, MICHIGAN

October 1993

This document was prepared in accordance with U.S. EPA Contract No. 68-W8-0089, WESTON Region V Alternative Remedial Contract Strategy (ARCS).

Work Assignment No.: 55-5AED Document Control No.: 4500-55-AHXB

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A Soil Boring Logs

B Geophysical Survey Results

C Monitoring Well Construction Diagrams

D Data Validation Discussion

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# SECTION 1

## INTRODUCTION

The U.S. Environmental Protection Agency (U.S. EPA) has been authorized by Congress to purchase property for the construction of a Center for Ecological Research and Training (CERT) in Bay City, Bay County, Michigan. Prior to acquiring the property an environmental assessment of the approximate 90 acres (25 parcels) is required. Roy F. Weston, Inc. (WESTON®) was authorized under the U.S. EPA Region V Alternative Remedial Contract Strategy (ARCS) contract to perform a preliminary site characterization of one, 31-acre parcel known as the Industrial Brownhoist (IB) property. Following completion of the preliminary site characterization, WESTON was requested to perform additional site characterization activities at 11 other parcels and to conduct Phase I assessments of six previously unaddressed parcels.

The CERT site contains properties that are currently listed on the Michigan Act 307 List (the State's Superfund equivalent), and as such, all CERT activities were conducted in accordance with Michigan Department of Natural Resources (MDNR) requirements.

The project objectives were as follows:

- Determine whether site activities (past and current) have impacted the soil and groundwater at the CERT site.
- Determine the preliminary extent of contamination in the soil and groundwater by conducting field sampling at the IB property.
- Provide additional limited characterization of the overall CERT site.
- Provide a site summary report and associated cost estimate for remediation of potential liabilities associated with the CERT site.

WESTON submitted a Work Plan, Sampling and Analysis Plan (SAP) Modifications, Quality Assurance Project Plan (QAPP) Modifications and a Health and Safety Plan (HASP) to the U.S. EPA in October 1992. Following approval of these plans, WESTON initiated field activities at the IB site in October 1992 and completed the activities in December 1992. The Work Plan, SAP, QAPP, and HASP were modified in April 1993 to include the additional CERT site characterization activities and submitted to the U.S. EPA. Following U.S. EPA approval, WESTON initiated a second field effort in May 1993 and completed the activities in August 1993.

Section 2 of this report provides information regarding the CERT site location and history. Section 3 presents site geology and hydrogeology. Sections 4 and 5 describe the field activities and analytical results of the investigation.



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# SECTION 2

# SITE LOCATION AND HISTORY

## 2.1 SITE LOCATION

The CERT site is located west of Saginaw Street, between 18th and 9th Streets in Bay City, Bay County, Michigan (Figure 2-1). The site is bordered to the north by the Consumers Power property, to the west by the Saginaw River, to the south by the Bay City Department of Public Works, and to the east by Saginaw Street. Current activities at the CERT site include: asphalt manufacturing (Midland Contracting); aggregate storage and transfer (Fisher Brothers, IB, Saginaw Rock, Midland Contracting); and various small companies that own or lease buildings and land.

## 2.2 PROJECT DESCRIPTION

The Saginaw River valley has a long history of industrial activity dating back to the early to middle 1800s. Early industries on the Saginaw River included lumber, fishing and trapping. The area of investigation was originally occupied by a number of sawmills and storage yards. In the 1800s, numerous industrial operations were present, including the Industrial Works (later IB), several small foundries, a manufactured gas plant, and a grain mill. These operations were dependent on the river for the transportation of raw and finished products, as well as for a source of process water.

As the lumber industry slowed down, the log booms and boat slips were filled to create room for growing industrial operations. Early maps of the area show that the edge of the river was approximately 100 feet from Water Street. By 1950, the distance between the river and Water Street was over 700 feet and no boat slips or log booms were present. The fill material used to create the new land was a mixture of dredged material from the channel, waste from industrial operations (sawdust, wood, and foundry sand), and material brought in from local sources (demolition debris, foundry sands, and domestic trash). Evidence of these materials was identified in soil borings and excavations near the river.

The current environmental condition of the Saginaw River Valley in Bay City is a result of its long history. The MDNR has identified numerous properties along the Saginaw River in Bay City as known or suspected hazardous material release sites. These sites include gas stations, foundries, landfills, tank farms, large manufacturing facilities, and utilities. They contain a wide variety of environmental pollutants including polychlorinated biphenyls (PCBs), metals, volatile organic compounds (VOCs), and petroleum compounds that have been released to the soil, groundwater and surface water. State regulations require notification of releases and also require that investigations and cleanups be performed. The Saginaw River has been designated as an area of concern by the MDNR because of poor water quality and sediment contamination. Primary contaminants include PCBs, metals, and phenols. A remedial action plan has been developed for the river.



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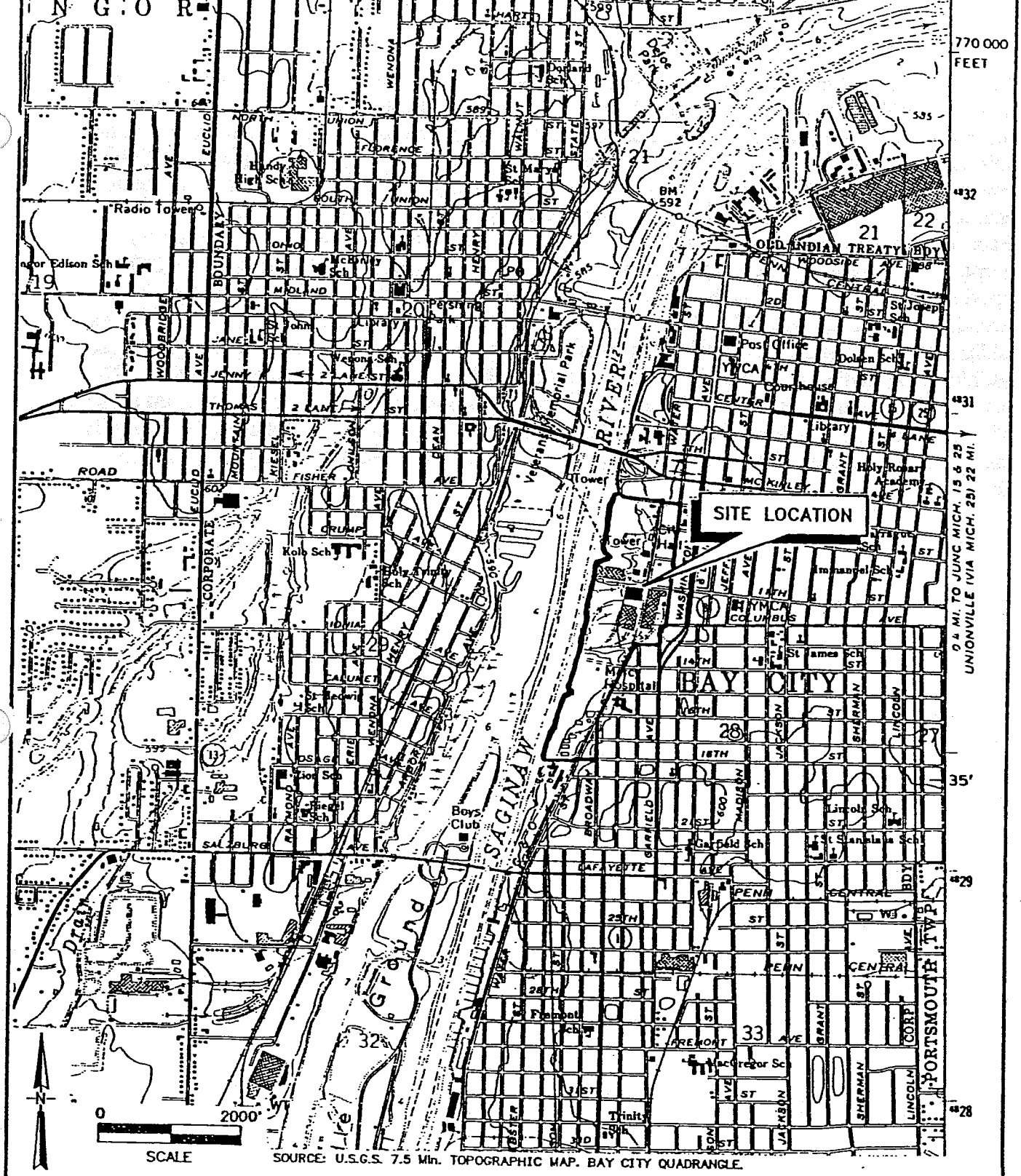


SOURCE: U.S.G.S. 7.5 Min. TOPOGRAPHIC MAP. BAY CITY QUADRANGLE.

FIGURE 2-1

ALTERNATIVE REMEDIAL CONTRACTING STRATEGY
U.S. EPA CONTRACT No. 68-W8-0089
WORK ASSIGNMENT No. 55-5AED
DOCUMENT CONTROL No. 4500-55-AHUE

AREA LOCATION MAP

BAY CITY CERT SITE
Bay City, Michigan

Results from audits conducted by Arthur D. Little, Inc. (ADL) between December 1991, and May 1992 indicated the potential for soil and groundwater contamination at many of the properties. Substantial information on the presence or absence of contamination in the soil and groundwater of the CERT site was provided through investigative activities conducted by WESTON during November and December 1992, at the twenty five potential source areas (Figure 2-2) on the IB property and by ADL at the other properties. The U.S. EPA determined that the CERT site would be considered as one large parcel for the purpose of environmental assessment activities. Following this approach, WESTON provided a review of the ADL reports and the IB report and identified data gaps for the overall CERT site. The U.S. EPA provided WESTON with a Scope of Work to conduct additional investigative activities to address only a portion of the identified data gaps. These additional activities were not intended to fill all of the data gaps identified by WESTON. It is also important to note that this investigation is not intended to encompass the full scope of a remedial investigation, but the validity and quality of the data collected during this phase should be such that it will be acceptable by state and federal agencies in support of additional investigations.



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# SECTION 3

# GEOLOGY & HYDROGEOLOGY

## 3.1 REGIONAL GEOLOGY

The Bay City area lies within the Great Central Lowland Physiographic Province. The landscape of this province was dominated by the effects of Pleistocene glacial processes when the Lake Huron Lobe of the Wisconsin Ice sheet retreated from the area during the Wisconsin stage between 15,000 and 12,000 years ago. The dominant unconsolidated sediments in Bay County were deposited as glacial till, lacustrine material, and alluvium. Some of this material has been reworked by the subsequent action of water and wind. The glacial till is calcareous and is friable or firm in consistence. The lacustrine material was deposited in still or ponded glacial melt water and consists of fine grain materials such as fine sand and silt. The alluvium material was recently deposited by the flood water of streams and rivers, and varies in texture depending on the stream characteristics. Giacial deposits in the area range from 50 to 100 feet in thickness.

Native modern soils in the area belong to the Tappan-Belleville association, characterized by nearly level, poorly drained soils that formed in loamy and sandy material on till plains modified by lake water (Soil Survey of Bay County, Michigan, USDA, 1980).

The bedrock underlying the region is composed of Pennsylvanian age shale and sandstone of the Saginaw Formation. Also present within this formation are coal beds and the Verne Limestone.

## 3.2 SITE GEOLOGY

The local geology for the CERT site is based on field observations made by WESTON during the installation of soil borings and monitoring wells. Soil was continuously sampled using 2-foot long split-spoon samplers. The soil was classified according to the Unified Soil Classification System (USCS) and logged by WESTON. The soil boring logs are presented in Appendix A.

Three basic stratigraphic units were identified during the subsurface soils investigation: fill material, alluvial deposits, and glacial till. Generally, the fill material thickens closer to the river; the alluvial material (river sediments) also thickens toward the river and seems to pinch out on the eastern side of the site. The glacial till is present at greater depths toward the river where it underlies the alluvium, but on the eastern side of the site, the till is found at shallower depths and often underlies the fill material directly.

The fill varies from silty sand to sand. Its color ranges from dark olive gray to black to brown. Although the fill is primarily granular, it can contain cinders, brick, wood or glass, along with foundry sand. Organic odors were noted in the fill at the IB, Fisher Brothers, Cnudde, and Midland Contracting properties. The fill material sampled in soil borings CS-



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SB-33 and CS-SB-36 at Fisher Brothers was extremely organic and contained abundant debris material. Petroleum odors were noted in the fill at the IB, Midland Contracting, and Fisher Brothers properties. Creosote-like odors were noted at the IB property, and ammonia-like odors were observed at the Switching Station property. In boreholes drilled near the river the fill generally extends to 12 to 14 feet below the ground surface. On the eastern side of the site the fill is up to 8 feet thick.

The alluvium consists of mixed or interbedded sand, silty sand, and clay, with finer grained units becoming more prevalent at depth. All of these units contain organic material. Pieces of wood and shells are often mixed into the alluvium. Sand units vary from gray to brown with well sorted subangular grains. Bedding thickness varies significantly from less than .25 inches to 1 to 2 feet. The organic clay is generally soft and very dark gray. Near the river the clay unit is approximately 24 feet below the ground surface and tends to pinch out eastward. The sand and silt units also pinch out away from the river.

The lowermost clay till is firm to stiff with some angular gravel and sand. The clay till is mottled and has a massive structure. Its color varies from grayish brown to dark gray. Site drilling activities characterized the lithology to a maximum depth of 60 feet. No other stratigraphic units were identified.

**Industrial Brownhoist Site Geology**

The three stratigraphic units described above are also present at the IB property. The texture and thickness of the fill varies greatly at IB. Near the river the fill extends to 14 feet bgs. On the eastern side of the site the thickness of the fill decreases. In soil boring CS-SB-03, 10 feet of fill overlies the clay till unit. Inside Building 41 (Area 18A) the fill thickness ranges from 0 to 8 feet thick. The fill in Building 41 directly overlies the till except in soil boring CS-SB-13 where 6 feet of alluvial deposits were found. In soil borings CS-SB-04 and CS-SB-06 alluvial deposits were observed. In these boreholes, sand and silty sand extended to approximately 25 feet below the ground surface and overlie a soft highly organic clay.

## 3.3 SITE HYDROGEOLOGY

The site is located within the Saginaw River drainage basin. The groundwater monitoring wells installed at IB in November of 1992 indicated that groundwater flow within the unconsolidated soils at the site was toward the west and the Saginaw River. As shown in Figure 3-1, the potentiometric surface measured on 30 November through 1 December 1992 (Table 3-1) was between 580 and 585 feet above mean sea level (MSL), with a horizontal gradient of approximately 0.01 feet/foot toward west. Data collected from monitoring well MW-4 was not used due to the apparent anomalous value of 575.43 feet. The river stage elevation for 1 December 1992 was approximately 578.5 feet. This value was estimated based on river stage measurements of 579.12 feet at the upstream Saginaw gauge and 578.37 feet at the downstream Essexville gauge. The potentiometric surfaces within the heterogeneous fill material tended to be irregularly shaped due to variations in flow caused



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## ABLE 3-1
## WELL CONSTRUCTION SUMMARY
## CERT SITE, BAY CITY, MICHIGAN

| WELL | DATE INSTALLED | TOP OF CASING ELEVATION | GROUND ELEVATION | TOP OF SCREEN ELEVATION | BOTTOM OF SCREEN ELEVATION | SCREEN INTERVAL (FEET BELOW GRADE) | DEPTH TO WATER (11/30 – 12/1/92) | WATER ELEVATION (11/30 – 12/1/92) |
|---|---|---|---|---|---|---|---|---|
| IB-MW-01 | 11-18-92 | 590.163 | 590.8 | 581.2 | 576.2 | 9-14 | 7.00 | 583.16 |
| IB-MW-02 | 11-18-92 | 588.553 | 588.9 | 581.6 | 576.6 | 7-12 | 5.39 | 583.16 |
| IB-MW-03 | 11-18-92 | 587.060 | 587.6 | 578.1 | 573.1 | 9-14 | 6.33 | 580.73 |
| IB-MW-04 | 11-18-92 | 586.175 | 586.5 | 577.2 | 572.2 | 9-14 | 10.75 | 575.43 |
| IB-MW-05 | 11-18-92 | 591.973 | 592.4 | 581.0 | 576.0 | 11-16 | 5.19 | 586.78 |
| IB-MW-06 | 11-19-92 | 591.306 | 598.8 | 582.3 | 577.3 | 9-14 | 10.00 | 581.31 |
| IB-MW-07 | 11-19-92 | 592.704 | 593.2 | 585.7 | 580.7 | 7-12 | 9.47 | 583.23 |
| IB-MW-08 | 11-19-92 | 589.183 | 589.6 | 581.2 | 576.2 | 8-13 | 8.30 | 580.88 |
| IB-MW-09 | 11-19-92 | 593.360 | 593.9 | 586.4 | 581.4 | 7-12 | 6.60 | 586.76 |
| IB-MW-10 | 11-19-92 | 592.549 | 593.2 | 584.5 | 579.5 | 8-13 | 6.80 | 585.75 |
| IB-MW-11 | 11-19-92 | 589.668 | 590.0 | 576.7 | 571.7 | 13-18 | 8.53 | 581.14 |
| IB-MW-12 | 11-20-92 | 589.356 | 589.7 | 578.4 | 573.4 | 11-16 | 7.25 | 582.11 |
| IB-MW-13 | 11-20-92 | 588.851 | 589.3 | 577.8 | 572.8 | 11-16 | 7.20 | 581.65 |
| IB-MW-14 | 11-20-92 | 592.615 | 593.1 | 587.6 | 582.6 | 5-10 | 8.13 | 584.49 |
| | | | | | | | (6/8/93) | |
| CS-MW-01 | 05-22-93 | 593.497 | 593.76 | 590.9 | 585.9 | 2.5-7.5 | 4.76 | 588.74 |
| CS-MW-02 | 06-03-93 | 586.570 | 595.24 | 581.6 | 576.6 | 5-10 | 4.97 | 581.60 |
| CS-MW-03 | 06-03-93 | 587.463 | 587.75 | 582.5 | 577.5 | 5-10 | 4.79 | 582.67 |

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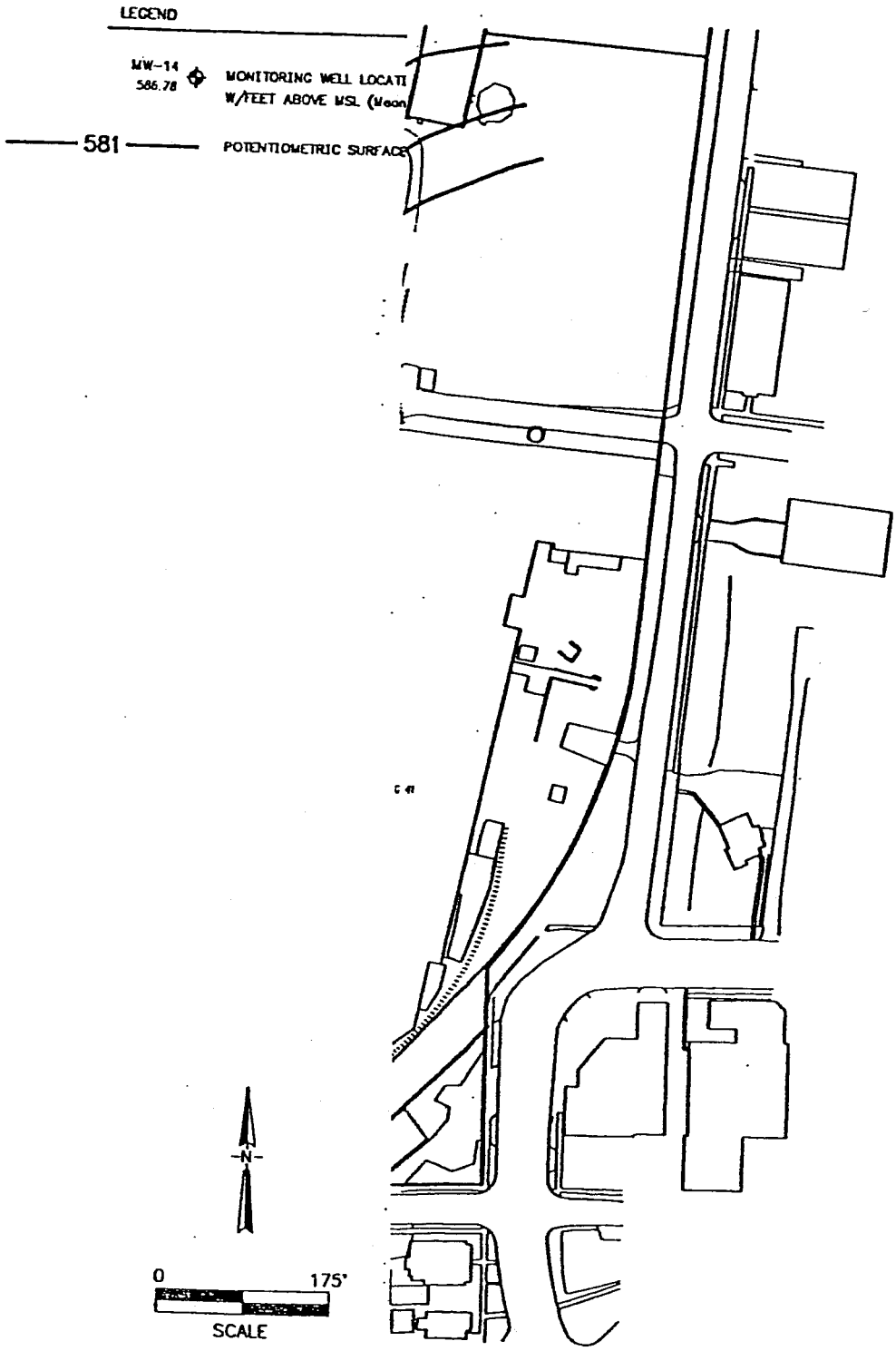


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FIGURE 3-1

POTENTIOMETRIC SURFACE CONTOUR MAP
30 NOV - 1 DEC 92

BAY CITY CERT SITE
Bay City, Michigan

by spacial differences in porosity and permeability. Such irregularities are depicted in Figure 3-1.



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# SECTION 4

# FIELD INVESTIGATION

WESTON initiated the field investigation at the IB site in October 1992. Field activities were completed in December 1992. Also in December 1992, additional PCB sampling activities were conducted. Following additional authorization from the U.S.EPA, WESTON conducted additional field activities for the CERT project area between May 1993 and September 1993. These additional field activities included: a geophysical survey, a radiation survey and sampling, a soil quality assessment, a groundwater quality assessment, and Phase I assessments at six previously unaddressed parcels.

All of the samples initially collected at IB, except those collected for radiation, toxicity characteristic leaching procedure (TCLP) metals and extraction procedure (EP) toxicity metals analyses, were analyzed by Clayton Environmental Laboratory (Clayton) Novi, Michigan. The TCLP metals and EP Toxicity metals were analyzed by Snell Environmental (Snell) Lansing, Michigan. The radiation samples were analyzed by Core Laboratories (Core) Casper, Wyoming. Table 4-1 lists the samples collected at IB in November of 1992. Tables 4-2 and 4-3 show the samples that were collected during the most recent field effort and the analysis performed on those samples.

The following subsections summarize the investigative activities and provide details of the field investigation.

## 4.1 HEALTH AND SAFETY

Prior to the initiation of field activities, a detailed site specific HASP was prepared to meet the requirements set forth by the Occupational Safety and Health Administration (OSHA) in 29 CFR (1910.120) for work conducted at hazardous waste sites. A copy of the HASP was presented to all personnel working on the site. All site personnel read and signed the HASP acknowledging their understanding and willingness to follow all procedures outlined in the HASP. The HASP was implemented at the site by the WESTON Site Health and Safety Coordinator (SHSC). Prior to initiating field work the SHSC directed a safety meeting with all on-site personnel, including subcontractor personnel, which addressed the potential safety hazards that may be encountered during the day's activities.

WESTON personnel monitored the breathing zone for VOCs, explosive atmospheres and oxygen content during drilling and sampling activities using a flame-ionization detector (FID) or photo-ionization detector (PID) for VOCs, and a combustible gas indicator (CGI) for flammability and oxygen content. WESTON also monitored with a radiation meter before, during, and after completion of site activities in each area. All monitoring data were recorded on individual boring log forms and in the field logbook.



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Table 4-1
Summary of Samp[illegible] Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

| Area of Concern | Sample No. | Matrix | Depth (ft) Below Ground Surface | Analysis Performed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | VOC | SVOC | PAH | Metal | PCB | Cyanide |
| Area No. 1 | IBSB3701 | Soil | 6-10 | X | X | | | X | |
| | IBMW01 | Water | | X | X | | X | X | X |
| Area No. 2 | IBSB3801 | Soil | 4-6 | X | | | | | |
| | IBSB3802 | Soil | 2-8 (composite) | | X | | | X | |
| | IBSB4601 | Soil | 8-10 | X | X | | | X | |
| | IBSB4602 | Soil | 4-6 | X | X | | | X | |
| | IBMW02 | Water | | X | X | | X | X | X |
| Area No. 3 | No soil borings or monitoring wells were installed in this area. No samples were collected in this area. | | | | | | | | |
| Area No. 4 | IBSB0101 | Soil | 6-8 | X | X | | X | X | |
| | IBSB0102 | Soil | 8-10 | X | X | | X | X | |
| | IBSB0201 | Soil | 8-10 | X | X | | X | | |
| | IBSB0301 | Soil | 6-8 | X | X | | | | |
| | IBSB0302 | Soil | 8-10 | X | X | | | | |
| | IBMW04 | Water | | X | X | | X | X | X |
| Area No. 5 | IBSB3301 | Soil | 6-8 | X | X | | X | | |
| | IBSB3302 | Soil | 12-14 | X | X | | X | | |
| | IBSB3401 | Soil | 4-6 | X | X | | X | | |
| | IBMW13 | Water | | X | X | | X | X | X |



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Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

| Area of Concern | Sample No. | Matrix | Depth (ft) Below Ground Surface | Analysis Performed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | VOC | SVOC | PAH | Metal | PCB | Cyanide |
| Area No. 5 (continued) | IBHA1601 | Soil | 3-3.5 | X | | | | | |
| | IBHA1602 | Soil | 1.5-2/3-3.5 (composite) | | X | | X | X | |
| Area No. 5A | IBSB3101 | Soil | 10-12 | X | X | | X | | |
| | IBSB3201 | Soil | 4-6 | X | X | | X | | |
| | IBSB3202 | Soil | 8-10 | X | X | | X | | |
| | IBHA1701 | Soil | 1.5-2 | X | | | | | |
| | IBHA1702 | Soil | 1.5-2 | | X | | X | X | |
| | IBMW12 | Water | | X | X | | X | X | X |
| Area No. 6 | IBSB0401 | Soil | 16-18 | X | | X | | X | |
| | IBSB0402 | Soil | 29-31 | X | | X | | X | |
| | IBSB0501 | Soil | 10-12 | X | | | | | |
| | IBSB0502 | Soil | 6-14 | | | X | | X | |
| | IBMW03 | Water | | X | X | | X | X | X |



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Table 4-1
Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

| Area of Concern | Sample No. | Matrix | Depth (ft) Below Ground Surface | Analysis Performed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | VOC | SVOC | PAH | Metal | PCB | Cyanide |
| Area No. 7 | IBSB4501 | Soil | 10-12 | X | | X | X | X | |
| | IBSB4502 | Soil | 12-14 | | | X | X | X | |
| | IBSB4503 | Soil | 14-16 | X | | | | | |
| | IBHA1001 | Soil | 3-3.5 | X | | | | | |
| | IBHA1002 | Soil | 1.5-2/3-3.5 4-4.5 (composite) | | | | X | X | |
| | IBHA1101 | Soil | 1.5-2 | X | | | | | |
| | IBHA1102 | Soil | 1.5-2 | | | | X | X | |
| Area No. 8/9 | IBSB0601 | Soil | 15-17 | X | | | | | |
| | IBSB0602 | Soil | 7-17 (composite) | | X | | X | X | |
| | IBSB0701 | Soil | 8-10 | X | | | | | |
| | IBSB0702 | Soil | 2-12 (composite) | | X | | X | X | |
| | IBSB0801 | Soil | 8-10 | X | X | | X | X | |
| | IBSB0802 | Soil | 10-12 | X | | | | | |
| | IBSB0901 | Soil | 4-6 | X | X | | X | X | |
| | IBSB1001 | Soil | 8-10 | X | X | | X | X | |
| | IBMW05 | Water | | X | X | | X | X | X |
| | IBMW08 | Water | | X | X | | X | X | X |



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Table 4-1
Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

| Area of Concern | Sample No. | Matrix | Depth (ft) Below Ground Surface | Analysis Performed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | VOC | SVOC | PAH | Metal | PCB | Cyanide |
| Area No. 10 | IBSB1101 | Soil | 4-6 | X | | X | X | | |
| | IBSB1102 | Soil | 12-14 | X | | X | X | | |
| | IBSB1201 | Soil | 12-14 | X | | X | X | | |
| | IBMW06 | Water | | X | X | | X | X | X |
| Area No. 11 | IBSB1301 | Soil | 4-6 | X | | X | X | | |
| | IBSB1302 | Soil | 12-14 | X | | X | X | | |
| | IBSB1401 | Soil | 8-10 | X | | X | X | | |
| | IBSB1501 | Soil | 2-4 | X | | X | X | | |
| | IBSB1502 | Soil | 8-10 | X | | X | X | | |
| | IBSB4301 | Soil | 4-6 | X | | X | X | | |
| | IBSB4701 | Soil | 4-6 | X | | X | X | | |
| | IBSB4702 | Soil | 8-10 | X | | X | X | | |
| | IBMW07 | Water | | X | X | | X | X | X |
| | IBMW14 | Water | | X | X | | X | X | X |
| Area No. 12 | IBSB1601 | Soil | 2-4 | X | | X | X | | |
| | IBSB1602 | Soil | 4-6 | X | | X | X | | |
| | IBSB1701 | Soil | 2-4 | X | | | | | |
| | IBSB1702 | Soil | 4-6 | | | X | X | X | |



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Table 4-1
Summary of Sample Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

| Area of Concern | Sample No. | Matrix | Depth (ft) Below Ground Surface | Analysis Performed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | VOC | SVOC | PAH | Metal | PCB | Cyanide |
| Area No. 13 | IBSB2501 | Soil | 6-8 | X | | X | X | X | |
| | IBSB2502 | Soil | 10-12 | X | | X | X | X | |
| | IBSB2503 | Soil | 12-14 | X | | X | X | X | |
| | IBSB2601 | Soil | 6-8 | X | | | | | |
| | IBSB2602 | Soil | 8-10 | | | X | X | X | |
| | IBSB2701 | Soil | 2-4 | X | | X | X | X | |
| | IBSB2702 | Soil | 4-6 | X | | X | X | X | |
| | IBMW10 | Water | | X | X | | X | X | X |
| Area No. 14 | IBSB2801 | Soil | 10-12 | X | | | | | |
| | IBSB2802 | Soil | 12-14 | | | X | X | X | |
| | IBSB2803 | Soil | 14-16 | X | | X | X | X | |
| Area No. 15 | IBSB2901 | Soil | 4-6 | X | | X | X | X | |
| | IBSB2902 | Soil | 12-14 | | | X | X | X | |
| | IBSB2903 | Soil | 14-16 | X | | | | | |
| Area No. 15/16A | IBSB3001 | Soil | 2-4 | X | | | | | |
| | IBSB3002 | Soil | 12-14 | X | | X | X | X | |
| | IBMW11 | Water | | X | X | | X | X | X |
| Area No. 16 | No soil borings or monitoring wells were installed in this area. No samples were collected in this area. | | | | | | | | |



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Table 4-1
Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

| Area of Concern | Sample No. | Matrix | Depth (ft) Below Ground Surface | Analysis Performed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | VOC | SVOC | PAH | Metal | PCB | Cyanide |
| Area No. 16/17A | IBSB3501 | Soil | 6-8 | X | | X | X | X | |
| | IBSB3601 | Soil | 10-12 | X | | X | X | X | |
| Area No. 17 | IBSB3901 | Soil | 6-8 | X | | X | X | | |
| | IBMW09 | Water | | X | X | | X | X | X |
| Area No. 18 | IBSB4401 | Soil | 10-12 | X | | | | | |
| | IBSB4402 | Soil | 20-22 | X | | | | | |
| | IBSB4403 | Soil | 12-14 | X | | X | | | |
| | IBSB4404 | Soil | 22-24 | X | | X | X | X | |
| Area No. 19 | IBSB1901 | Soil | 2-4 | X | | X | X | X | |
| | IBSB1902 | Soil | 6-8 | X | | X | X | X | |
| | IBSB2001 | Soil | 0-2 | X[2] | | | | | |
| | IBSB2002 | Soil | 0-6 (composite) | | | X | X | X | |
| | IBSB2301 | Soil | 4-6 | X | X | | X | | X |
| | IBSB2401 | Soil | 4-6 | X | X | | X | | X |
| | IBHA1201 | Soil | 4-4.5 | X | | | | | |
| | IBHA1202 | Soil | 1.5-2/3-3.5/ 4-4.5 (composite) | | | X | X | X | X |
| | IBHA1301 | Soil | 1.5-2 | X | | | | | |



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Summary of Sample[illegible]llected and Analysis Performed[1]
[illegible]ovember 1992
Industrial Brownhoist, Bay City, Michigan

| Area of Concern | Sample No. | Matrix | Depth (ft) Below Ground Surface | Analysis Performed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | VOC | SVOC | PAH | Metal | PCB | Cyanide |
| Area No. 19 (continued) | IBHA1302 | Soil | 1.5-2/3-3.5/ 4-4.5 (composite) | | | X | X | X | |
| | IBHA1401 | Soil | 3-3.5 | X | | | | | |
| | IBHA1402 | Soil | 1.5-2/3-3.5 4-4.5 (composite) | | | X | X | X | |
| | IBHA1501 | Soil | 2.5-3 | X | | | | | |
| | IBHA1502 | Soil | 1.5-2/2.5-3/3-3.5/ 4-4.5 (composite) | | | X | X | X | |
| Area No. 20 | IBSB2101 | Soil | 0-2 | X | X | | X | | X |
| | IBSB2102 | Soil | 2-4 | X | X | | X | | X |
| | IBSB2201 | Soil | 4-6 | X | X | | X | | X |
| | IBCC01 | Concrete | Surface | | | | | | X |
| | IBCC02 | Concrete | Surface | | | | | | X |
| | IBCC03 | Concrete | Surface | | | | | | X |
| Area No. 21 | No soil borings or monitoring wells were installed in this area. No samples were collected in this area. | | | | | | | | |
| Area No. 22 | IBSB1801 | Soil | 2-4 | X | | X | X | | |
| Area No. 23 | IBSB4801 | Soil | 0-1 (surface) | | | X | | X | |
| | IBSB4802 | Soil | 2-4 | X | | X | | X | |
| | IBSB4901 | Soil | 0-2 | X | X | | | X | |
| | IBSB4902 | Soil | 6-8 | X | X | | | X | |



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Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

| Area of Concern | Sample No. | Matrix | Depth (ft) Below Ground Surface | Analysis Performed | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | VOC | SVOC | PAH | Metal | PCB | Cyanide |
| Area No. 24 | No soil borings or monitoring wells were installed in this area. No samples were collected in this area. | | | | | | | | |
| Area No. 25 | IBHA0601 | Soil | 1.5-2 | X | | | | | |
| | IBHA0602 | Soil | 1.5-2/3-3.5 (composite) | | X | | X | X | |
| | IBHA0701 | Soil | 1.5-2 | X | | | | | |
| | IBHA0702 | Soil | 1.5-2/3-3.5/ 4-4.5 (composite) | | X | | X | X | |
| | IBHA0801 | Soil | 2.5-3 | X | | | | | |
| | IBHA0802 | Soil | 1.5-2/2.5-3 (composite) | | X | | X | X | |
| Area No. 25A | IBSB4001 | Soil | 4-6 | X | | X | | | |
| | IBSB4101 | Soil | 6-8 | X | | X | | | |
| | IBSB4201 | Soil | 6-8 | X | | X | | | |
| | IBHA0901 | Soil | 3-3.5 | X | | | | | |
| | IBHA0902 | Soil | 1.5-2/3-3.5 4-4.5 (composite) | | X | | X | X | |

[1] Does not include samples collected for QA/QC.
[2] Sample lost prior to analysis.



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Table 4-2
Summary of Samples Collected and Analysis Performed
May – June 1993
Industrial Brownhoist
Bay City, Michigan

| Area of Concern | Sample # | Matrix | Depth below ground surface (ft) | Ananlysis | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | VOC | SVOC | PAH | Metals | PCB | Cyanide | TCLP/EP Tox. | Radiation |
| 5A | CS-SB-01 | Soil | 2-10 | | | | | | | X | |
| 5 | CS-SB-02 | Soil | 10-16 | | | | | | | X | |
| 8 | CS-SB-04 | Soil | 8-14 | X | X | | X | X | | | |
| | CS-SB-06 | Soil | 6-12 | X | X | | X | X | | | |
| | CS-SB-06 R | Soil | 25-29 | X | X | | | X | | | |
| | CS-HA-07 | Soil | .5-1.5 | | | | | | | | X |
| 11 | CS-SB-05 | Soil | 8-14 | | | | | | | X | |
| | CS-HA-06 | Soil | .5-1.5 | | | | | | | | X |
| 14 | CS-SB-03 | Soil | 10-14 | | | | | | | X | |
| 18 | CS-SB-07 | Soil | 21-22 | X | | X | | | | | |
| 18A | CS-SB-13 | Soil | 3-7 | X | X | | | | X | | |
| | CS-SB-14 | Soil | 1.5 | X | X | | | | X | | |
| | CS-SB-15 | Soil | 5-7 | X | X | | | | | | |
| | CS-SB-22 | Soil | 5-9 | X | X | | | X | X | | |
| | | Soil | 9-11 | X | X | | | X | X | | |
| | CS-SB-25 | Soil | 5 | X | X | | | X | X | | |
| 25/25A | CS-HA-12 | Soil | 1.5 | | | | | | | X | |
| | CS-HA-08 | Soil | .5-1.5 | | | | | | | | X |
| | CS-HA-09 | Soil | 0.5-1 | | | | | X | | | |
| | CS-HA-10 | Soil | 0.5-1 | | | | | X | | | |



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## 4.2 DECONTAMINATION

The hollow-stem augers, split spoon samplers, and all other drilling equipment and associated tools were steam cleaned between use at each borehole and monitoring well location to prevent cross-contamination. All steam cleaning was performed on wood sawhorses within the dedicated decontamination area at the IB site. The rinsate was collected, drummed and labeled. The split spoon samplers were decontaminated between samples by washing with an alconox mixture and a scrub brush to remove any solids, and rinsing with potable water. An equipment blank was collected by allowing high grade laboratory distilled water to run through a decontaminated split spoon sampler and collecting the water in a sample vial. The equipment blank was analyzed for VOCs. The decontamination water generated during the field activities will require future disposal.

## 4.3 GEOPHYSICAL SURVEYS

### 4.3.1 Industrial Brownhoist

WESTON conducted geophysical surveys of the IB property on 26 October through 6 November 1992. An electromagnetic terrain conductivity meter (EM31), a proton precession magnetometer and ground penetrating radar (GPR) were used during the geophysical surveys. The information collected during the geophysical investigation was utilized to identify potential underground utilities and the accessibility of potential soil boring locations.

Results of the geophysical surveys indicated that numerous underground utilities and foundations were present throughout the site, which restricted the placement of soil borings. Additionally, the surveys identified two potential underground storage tanks (USTs) at the IB site in Areas 11 and 13.

WESTON conducted additional geophysical surveys of the southwest portion of the IB property on 17 May 1993 through 21 May 1993. This area was formerly a swampy, low-lying area that had reportedly been used for the on-site disposal of unknown waste material. During the survey, WESTON utilized an EM31 and a proton procession magnetometer. The survey information identified the presence of buried ferromagnetic material and a buried trench. The survey information was also used to establish soil boring locations.

WESTON was scheduled to conduct additional geophysical survey activities in the southwest portion of the IB site. However, these additional survey activities were subsequently canceled by the U.S. EPA Work Assignment Manager (WAM) for the project when the aggregate piles present at the site could not be moved in a cost effective manner by the owner.



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## 4.4 RADIATION SURVEY AND SAMPLING

WESTON conducted gamma radiation surveys in conjunction with soil sampling activities at the IB site on 17 May 1993 through 20 May 1993. Gamma radiation walkover surveys of all sampling locations were performed using a Ludlum Model 19 Micro-Roentgen Meter held at waist level. Shallow subsurface soil samples were collected from locations that were identified as having elevated gamma radiation levels by gamma radiation grid surveys. Specific sampling locations were confirmed during current field activities using the Micro-Roentgen Meter. The suspected source of the contamination was radioactive sands utilized in foundries and potentially present in foundry sand used for fill at the site. Shallow subsurface soil samples were collected from .5 to 1.5 feet at three locations found to have elevated gamma radiation levels using a decontaminated bucket auger.

| SAMPLE ID NUMBER | GAMMA RADIATION READING |
|---|---|
| HA-CS-06 | 11 microroentgen per hour ($\mu$R/hr) |
| HA-CS-07 | 24 $\mu$R/hr |
| HA-CS-08 | 22 $\mu$R/hr |

These samples were analyzed for isotopic radium, thorium, uranium, natural uranium, gross gamma, gross beta and gross alpha. The samples collected are summarized in Table 4-2.

## 4.5 BUILDING INVESTIGATIONS - INDUSTRIAL BROWNHOIST

Investigation of the IB on-site buildings was conducted to determine whether hazardous materials or waste existed within the buildings, or if the subsurface material beneath the buildings had been impacted by the migration of contaminants through cracks in the floors or along the foundations. Locations of potential hazardous materials, observable spillage or staining and areas of potential asbestos-containing material (ACM) were identified. The investigation also attempted to identify all related drains and sumps however dye tests were not used to trace the drains and sumps. Dye tests were not determined to be necessary for this investigation by the U.S. EPA. A summary of the observations made in each IB building is provided below.

### 4.5.1 Powerhouse

A significant amount of oil staining was observed throughout the powerhouse. Oil-saturated wood flooring was observed on the first floor and oil-stained concrete walls were observed in the basement. PCB-labeled transformers were noted on the first floor of the building. Potential ACM was observed on the boiler and on pipe-wrap located in the basement. Additionally, potential ACM was observed on steam lines that entered the on-site tunnel system. Three drums of water treatment chemicals were also observed in the basement.



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### 4.5.2 Storage Building

An abandoned laboratory on the second floor of the storage building was observed. All of the laboratory chemicals appeared to have been removed. No significant staining was observed. No visual evidence of spilled mercury was observed by WESTON.

### 4.5.3 Boom Shop

Oil-stained concrete was observed in the vacant compressor room of the boom shop.

### 4.5.4 Sand-Blasting Building

A 6 to 12-inch layer of sand blasting sand was observed throughout the building. No evidence of staining was observed.

### 4.5.5 Building 42

Isolated areas of oil-stained concrete were observed throughout the building. A pile of solidified metal debris was also observed immediately outside the northwest corner of the building. Potential asbestos-containing floor tile was noted on the second floor within the office area of the building. Two drums of hydraulic oil were observed inside the building. Three drums of unknown contents were observed outside the building on a concrete pad to the west.

### 4.5.6 Building 41

Significant oil-staining was observed in the northwest portion of the building beneath a bank of PCB-labeled transformers. Additionally, isolated areas of oil-stained concrete and wood block flooring were noted throughout the building. Potential ACM was observed on pipes that originated in the tunnel system. Staining of the floor within the former plating area was observed, but the concrete floor was noted to be in good condition. Approximately 500 to 700 bags of used insulating material was observed in the northeast portion of the building. The source of this material could not be determined. The majority of the former machine pits in this building appear to have been backfilled with concrete or sand.

## 4.6 SOIL ASSESSMENT

During the soil assessment activities, samples were collected using a truck-mounted drill rig (CME-75) or a skid rig (Dietrich 50) with a 4¼-inch inside diameter (ID) hollow stem auger (HSA). Soil samples were collected at each boring location in accordance with ASTM D-1586, using 2-inch diameter, 2-foot long stainless steel split-spoon samplers. All of the drilling activities were performed by Burlington Environmental under subcontract to WESTON. A WESTON geologist/scientist collected and classified each of the soil borings according to the unified soil classification system (USCS). All of the samples were screened on-site with a FID or PID to aid in selecting samples for analysis.



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Because of accessibility problems for the truck-mounted drill rig at some locations, soil samples were collected using a stainless steel bucket hand auger. The bucket hand auger was decontaminated using the same methods described for the split-spoon samplers. All of the soil cuttings generated during the drilling activities were containerized and stored on-site. Boreholes were backfilled using cement/bentonite grout and/or hydrated bentonite chips.

### 4.6.1 Industrial Brownhoist

#### 4.6.1.1 Initial Characterization

Surface and subsurface soil sampling activities were initiated on 2 November 1992. Fifty (50) soil borings, ranging in depths from 6 to 60 feet below the ground surface, were installed throughout the IB site. The soil boring locations were selected to identify the presence of soil contamination in the 25 areas of concern previously identified by ADL. A total of 12 soil samples were collected from locations that were inaccessible to the drill rig because of overhead electrical lines, elevated radiation readings, or results of the geophysical survey using a stainless steel bucket hand auger at depths 2 to 4-feet below the ground surface. The locations for soil borings, monitoring wells, and hand auger borings are presented on Figure 4-1.

During soil boring installation, split-spoon samples were collected from 2 feet below the ground surface to the water table or until a clay layer was encountered. Samples were selected for analysis based on elevated VOC field screening results, and differences in the physical nature of the soil or other visual observations determined in the field. The selected samples were appropriately packaged and sent to Clayton for analysis. A total of 109 soil samples were analyzed for selected parameters including VOCs, polynuclear aromatic hydrocarbons (PAHs), PCBs, semi-volatile organic compounds (SVOCs), metals (Michigan 10 List) and cyanide. An overview of the samples collected and the analyses performed is shown in Table 4-1. Analytical results are presented in Section 5.

Concrete chip samples were collected from three locations in the vicinity of the former plating area inside building 41 to determine if the concrete had been impacted from former plating operations.

Selected Locations for Soil Borings

Fifty soil boring sample locations were selected based upon the areas of concern identified in a Preliminary Environmental Assessment Report prepared by ADL (Figure 2-2), as well as the results of the geophysical survey, radiation survey readings, overhead electrical lines and other site conditions. The potential contaminant source areas, the corresponding samples collected from each area and a brief description of field observations are summarized below.



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Area 1

One soil boring (IBSB37) was installed in this area based on limited accessibility and the results of the geophysical survey. The soils consisted of mostly fill material to a depth of at least 10 feet below grade. The fill material consisted of black soil with metal slag and pieces of wood. The texture of the fill material consisted of gravel and sand-sized material in the first 6 feet and sand and silt sized material toward the bottom of the boring. The fill varied in color from black to brown (approximately 12 feet below grade). Small amounts of a yellow silty material were also encountered at approximately 9.5 feet below grade.

Area 2

Two soil borings were installed in this location; one at the west end of the area of concern (IBSB46) and one at the east end (IBSB38). The overburden in Area 2 was characterized as fill material to a depth of 8 feet below grade. The fill consisted primarily of a brown to black slag-like material. Sand, gravel, and small amounts of silt were also observed. The fill was loosely compacted throughout and became saturated at approximately 7 feet below grade.

Area 3

No soil borings could be installed in this area because of the presence of large piles of aggregate which covered the entire area of concern.

Area 4

Three soil borings were advanced in this location (IBSB01, IBSB02, IBSB03). Soils consisted of mostly fill material with pieces of brick observed in the spoon samples. Elevated FID readings (600-1,000 units) were observed at all of the borehole openings in this area at 6-10 feet below the ground surface. On the south side of the area near the Boom Shop building, the overburden consisted of a moderate brown to brownish gray sand with traces of silt, clay, gravel, and organic material. The sand unit was observed to be saturated at 8 feet below grade and continued to a depth of 9 feet below grade. On the north side of the area, sand and gravel were encountered to a depth of 4 feet below grade. The unit varied in color from shades of gray to brown and black. Underlying the sand and gravel was a clay layer with some silt, a little sand, and a trace amount of gravel. The clay varied in color from olive gray to dark gray and was wet to saturated.

Area 5/5A

Two soil borings (IBSB33 and IBSB34) and one hand auger boring (IBHA16) were advanced in Area 5 and two soil borings (IBSB31, IBSB32) and one hand auger boring (IBHA17) were advanced in Area 5A. In both areas the fill material extended to a depth of at least 14 feet below grade. The fill consisted primarily of a dark brown fine sand and gravel with traces of silt. Pieces of brick, slag-like material, and a yellow powder substance



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were also observed. A greenish gray silty fine sand with some organic material and traces of clay was observed at approximately 8.5 feet below grade. Pieces of wood and a slight unidentifiable odor were encountered at 13 feet below grade.

Area 6

Two soil borings (IBSB04 and IBSB05) were advanced in this area. This area was characterized by a sand unit that extended to a depth of at least 27 feet below grade. The sand was fine-grained with varying amounts of gravel and silt and trace amounts of organic material (shell fragments, wood pieces). The sand unit was generally brownish gray in color and became saturated at 10-12 feet below the ground surface. A finer sandy silt layer was observed beneath the sand layer and contained traces of clay and organic matter. Elevated FID readings of greater than 1,000 units above background were observed at approximately 8 feet below the ground surface (water table), and FID readings of 100-700 units above background were recorded from the sample collected from 6 to 14-feet below the ground surface. Wood pieces were observed in split spoon samples from 2 to 24-feet below the ground surface. An oily sheen was observed on the water recovered in the split spoon sample from 10 to 12 feet and 12 to 14 feet below the ground surface.

Area 7

One soil boring (IBSB45) and two hand auger borings (IBHA10 and IBHA11) were advanced in this area. Elevated radiation readings were observed closer to the building and because of safety concerns limited available sample locations. This area was characterized by at least 16 feet of fill material consisting of gravel, sand, silt, broken pieces of brick and some slag-like material. An unidentifiable odor was documented at 2 to 4-feet and 10 to 16 feet below the ground surface. The overburden was wet at 11 feet below the ground surface and saturated at 13.5 feet.

Area 8

Four soil borings were advanced in this area (IBSB07, IBSB08, IBSB09 and IBSB10). The area was characterized by fill material to a depth of at least 12 feet below the ground surface. The fill material consisted of brick, ash, slag and wood. The fill varied in color from dusty brown to brownish black to grayish black. The fill material was wet at approximately 6 feet below the ground surface and saturated at 8 feet. Readings of 120-650 units above background were observed on the FID while screening samples from 8-10 feet below the ground surface (at water table). The borehole was screened at 12 feet below the ground surface with the CGI/oxygen meter. 20 % of the Lower Explosive Limit (LEL) and 13% oxygen were recorded, which may indicate the presence of methane in the subsurface.

Area 9

One soil boring was advanced in this area (IBSB06). The fill material extended to a depth of 23 feet below the ground surface and consisted primarily of silt, sand, and gravel-sized



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material and pieces of wood. The fill ranged in color from gray to black. The fill became saturated at 11 feet below the ground surface. A wet, grayish brown clay layer was encountered beneath the fill. The clay layer contained traces of silt, sand, and organic material. FID readings were observed from 72 to greater than 1,000 units above background during soil boring installation.

Area 10

Two soil borings (IBSB11 and IBSB12) were advanced in this area. The area was characterized by fill material to a depth of at least 14 feet below the ground surface. Slag-like material and pieces of brick were encountered throughout the depth of the fill. Brownish black and brownish gray silt sand, and gravel were also encountered. The presence of organic material caused variations in the fill color from dark gray to grayish black. Elevated FID readings (greater than 1,000 units above background) were observed while screening samples from 12-14 feet below the ground surface, which may indicate the presence of methane.

Area 11

Five soil borings (IBSB13, IBSB14, IBSB15, IBSB43 and IBSB47) were advanced in this area based on the results of the geophysical survey, which indicated the presence of a potential UST. Soil borings were advanced on four sides of the potential UST to determine the extent of contamination resulting from any potential leaks that may have occurred. The fill material in Area 11 varied in depth from 4-14 feet below the ground surface. A clay layer was observed directly below the fill. The fill consisted of organic material, slag-like material, pieces of wood, pieces of black coal-like material, broken pieces of glass, varying amounts of silt, sand and gravel. The clay varied in color from yellowish brown to brown to brownish gray and was firm, becoming stiff with depth. Soil screening results indicated 50-100 units above background on the FID from 6-10 feet below the ground surface. While advancing the soil boring at the west end of the potential UST (IBSB15), a strong diesel odor was observed when drilling from 2-4 feet below the ground surface. FID readings of 60 units above background were recorded at the top of the borehole. A strong sulfur odor was detected when grouting the borehole. Radiation readings of 14 $\mu$R/hr were observed in the area near the building.

Area 12

Two soil borings (IBSB16 and IBSB17) were advanced in this area. The auger was advanced through the concrete roadway before samples were collected. Fill material was observed to a depth of 2-4 feet below ground surface, consisting primarily of gravel-sized material with some fine sand and silt. A slight amount of organic material was observed at the 2-4 foot sampling interval. The material was generally dry to damp and ranged in color from a brownish or dusty orange to a brownish or medium light gray. Underlying the fill material was a dense clay layer. The color of the clay layer ranged from yellow-brown to brownish gray. The clay was primarily dry to moist, but a saturated lens was encountered



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at 6-6.5 feet below the ground surface. FID readings of up to 50 units above background were observed while screening the interval from 2-4 feet below the ground surface.

Area 13

Three soil borings (IBSB25, IBSB26 and IBSB27) were advanced in this area based on the results of the geophysical survey, which indicated the presence of a potential UST. Soil borings were advanced on three sides of the potential UST location to determine the extent of contamination resulting from potential leaks that may have occurred. No soil borings were advanced on the southeast corner (upgradient) side of the tank because of insufficient clearance between the overhead power lines and the derrick of the drill rig. The area was characterized by 4-10 feet of fill material underlain by a dense clay unit. The fill material consisted of gravel and sand sized material as well as up to 4 feet of decaying material. Pieces of brick and slag-like material were also encountered within the fill layer. The material varied in color from brownish gray to grayish black. The underlying clay unit contained traces of gravel, sand, and silt, and ranged in color from dark yellow-brown to brownish gray. A strong diesel odor was observed in the split-spoon sample collected from 8-10 feet below the ground surface. A visible sheen was observed on the clay material inside the split-spoon sample collected from 12-14 feet below the ground surface.

Area 14

One soil boring (IBSB28) was advanced in this area. The soil boring was characterized by fill material to about 14.5 feet below the ground surface. A clay layer was observed directly beneath the fill. The fill consisted primarily of gravel with some sand and silt. Slag-like material and a layer of organic material was observed at 8 and 12 feet below the ground surface. A silt lens (2.5 inches) was observed at 10 feet below the ground surface. The fill was wet and became saturated at 10 feet below the ground surface. The light brown-gray clay layer had a trace of organic material and silt. A strong diesel odor was detected and a sheen was observed at 8-10 feet below the ground surface. FID readings of greater than 1,000 units above background were observed directly above the borehole when drilling from 10-12 feet below the ground surface. Elevated FID readings, greater than 10 units, were observed in the breathing zone when pulling the augers from the borehole.

Area 15

One soil boring (IBSB29) was advanced in this location to delineate the extent of contamination from the potential UST in Area 13. Approximately 12-14 feet of clay underlain by a sand layer was observed. The clay layer had occasional lenses of organic material and had small amounts of sand and silt and trace amounts of gravel. The clay ranged in color from tan to dark gray. The organic layers were dark gray, gray brown, and black. The underlying sand layer contained a small amount of silt and clay and was wet. Elevated PID and FID readings were observed from 2 to 16 feet below the ground surface. No visible or olfactory indications of contamination were noted throughout the boring.



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Area 15/16A

One soil boring (IBSB30) was advanced in this location to delineate the extent of contamination from the potential UST in Area 13. Fill material was observed to a depth of approximately 7 feet below ground surface. The fill consisted of brick pieces and metallic slag-like material and was underlain by a clay layer. The clay was firm and moist just beneath the fill and contained small amounts of silt, sand, and gravel. Elevated FID and PID readings were observed at 12-14 feet below the ground surface.

Area 16/17A

Two soil borings (IBSB35 and IBSB36) were advanced in this area. Fill material was observed to a depth of approximately 7 feet below the ground surface. This fill consisted of brick pieces and metallic slag-like material. The fill was underlain by a clay layer. The clay was firm and moist just beneath the fill and contained small amounts of silt, sand, and gravel.

Area 17

One soil boring (IBSB39) was advanced in this area. Fill material was encountered to a depth of approximately 3.5 feet below the ground surface. The material was damp and consisted of a firm silty clay with some fine sand. Underlying the fill material was a fine red-brown sand with a little silt. The sand was moist becoming saturated at 6 feet below the ground surface.

Area 18

One soil boring (IBSB44) was advanced in this area. The area is low-lying with respect to the rest of the site and was very swamp-like and not readily accessible with the drill rig. The area was characterized by dense, tall vegetation and standing, shallow water. Fill material was observed to a depth of approximately 22 feet. The fill was comprised of pieces of black slag-like material, pieces of wood, pieces of brick and broken rock. An oily sheen was encountered at 3 to 6 feet below the ground surface. A strong solvent-like odor was observed at approximately 5.5 feet and tapered off to a slight odor at 20 feet below the ground surface. Underlying the fill material was a dense dry clay layer with some silt, fine to medium sand and fine gravel. The stiff clay was uniformly gray in color and high in plasticity.

Area 19

Five soil borings (IBSB19, IBSB20, IBSB23, IBSB24 and IBSB50) and four hand auger borings (IBHA12, IBHA13, IBHA14 and IBHA15) were advanced in this area. The area was characterized by a dense dry stiff clay to at least 60 feet below the ground surface. The clay contained small amounts of silt and fine sand and traces of fine gravel. At 15 feet



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below the ground surface the clay became softer and moist and changed color from a brown/yellow-brown to a uniform grayish brown at 15 feet below the ground surface.

Area 20

Since this area of concern was located inside the building and not readily accessible for sampling, the two soil borings (IBSB21 and IBSB22) were advanced immediately outside the building through the asphalt pad. The area was characterized by a dense dry stiff clay. The clay contained small amounts of silt and fine sand and traces of fine gravel.

Area 21

The area of concern was located inside the building and was inaccessible, therefore no soil borings were advanced in this location.

Area 22

Overhead power lines restricted access and only one soil boring (IBSB18) was advanced in Area 22. A light brown sand with a little gravel and a trace of silt was observed in this area to a depth of approximately 2.5 feet below the ground surface. A dense clay with some silt and a trace of sand and gravel was observed underlying the sand layer. The clay ranged in color from moderately yellow brown to light brown. The material was saturated from the ground surface (sand unit) and became progressively drier with depth.

Area 23

Two soil borings (IBSB48 and IBSB49) were advanced inside the building to determine if any contamination had migrated beneath the cement slab or through cracks in the floor. Approximately 3 feet of fill material was encountered which included the 5 inches of concrete floor. The fill material was a dry sand and gravel, light brown in color. Immediately below the fill layer was a dense, stiff clay layer. The clay was also dry and contained small amounts of fine to coarse sand, fine to coarse gravel, and silt.

Area 24

Results of the geophysical surveys indicated that this area was inaccessible for soil boring installation because of the potential presence of underground utilities.

Area 25

One soil boring (IBSB40) and three hand auger borings (IBHA06, IBHA07 and IBHA08) were advanced in this area. The area was characterized by a dense, dry clay layer overlain by a loose, damp sand layer. The brown clay was stiff and contained small amounts of silt, sand and gravel. A gray brown silt seam was observed between the sand and clay layers.



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Area 25A

Two soil borings (IBSB41 and IBSB42) and one hand auger boring (IBHA09) were advanced in this area. The area was characterized by a dense, dry clay layer overlain by a loose, damp sand layer. The brown clay was stiff and contained small amounts of silt, sand and gravel. A gray brown silt seam was observed between the sand and clay layers.

### 4.6.1.2 Additional Characterization

A total of nineteen additional soil borings were completed at the IB property in May and June 1993, and 20 soil samples were collected for analysis. The samples and the requested analysis is summarized in Table 4-2. Borings were installed in Areas 5, 5A, 8, 11, 14, 18, and 25A and in Building 41 (Area 18A).

Area 8

Two borings were located in the southwestern portion of the property in Area 8 to define the subsurface materials. Both of these borings extended through the fill material to a highly organic sandy clay which was encountered at a depth of approximately 25 feet below the ground surface. Two samples were collected from each soil boring. One from an interval of fill with elevated FID and/or PID readings, and one from the clay layer. Select samples were analyzed for VOCs, semi-volatiles, PCBs, and metals analysis. Strong organic odors and elevated PID readings were noted in soil boring CS-SB-04. Elevated FID readings were observed in soil boring CS-SB-06.

Area 18

One soil boring, CS-SB-07, was located in Area 18 on the eastern side of the property to define the extent of contamination in the subsurface. Two samples were collected from this boring, one from the fill and one from the clay till, for VOC and PAH analysis. An oily sheen, solvent odor, and elevated FID and PID readings were observed at soil boring CS-SB-07. The area appears to be a former pit that was dug out of the native clay and then filled in. Five split-spoon samples were taken in this area to determine the extent of the fill. The fill appears to extend out from soil boring CS-SB-07 for 30 feet.

Areas 5, 5A, 11, 14

One soil sample was collected from soil borings in each of the following areas, 5, 5A, 11, and 14, where elevated concentrations of metals had previously been detected. These samples were analyzed for TCLP and EP toxicity metals. Soil was composited from the intervals where previous sampling showed the metals concentrations to be the highest. Elevated FID readings were observed in soil borings CS-SB-02, CS-SB-03, and CS-SB-05. Soil boring CS-SB-01 had slightly elevated PID readings. Soil from soil boring CS-SB-02 also had a noticeable petroleum odor. One TCLP and EP toxicity metal sample was also



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collected using a bucket auger from a depth of 1.5 feet below the ground surface from Area 25A.

Building 41 (Area 18A)

Twelve soil borings were installed in Building 41 using the truck-mounted rig or the skid rig. These borings were placed in areas where former aboveground storage tanks or a possible coal gasification plant may have been located. Samples were collected from six of these borings. The samples were collected when elevated PID/FID readings were recorded or when any unusual subsurface material was encountered. Seven of the borings had elevated PID and/or FID readings. Organic odors were observed in soil boring CS-SB-14. Petroleum odors were encountered in soil borings CS-SB-15, CS-SB-21, and CS-SB-23. A tar-like product was observed in soil borings CS-SB-15 and CS-SB-23. Soil from soil boring CS-SB-25 had a naphthalene smell, and soil from soil boring CS-SB-22 had a creosote odor. A sample was also collected from native clay material which appeared to be uncontaminated.

## 4.7 GROUNDWATER ASSESSMENT

### 4.7.1 Industrial Brownhoist

#### 4.7.1.1 Monitoring Well Installation

Fourteen temporary overburden monitoring wells were installed on the IB site as depicted in Figure 4-1. Drilling and well installation activities were performed by Burlington Environmental under the direct supervision of WESTON. Well locations were selected based on observations documented during soil boring installation. Locations were selected to address potentially impacted areas and areas potentially downgradient from impacted areas. Well screens were placed 1 foot above the water table and 4 feet into the water table. All wells were constructed of 2-inch polyvinyl chloride (PVC) well screen and PVC riser pipe with flush threads. The use of PVC was authorized by the U.S. EPA and MDNR since the wells were temporary and were removed following completion of the initial investigation in December 1992. The screen length was 5 feet with a .007-inch slot opening. The annular space surrounding the well screen was filled with filter sand to an elevation approximately 2 feet above the top of the screen. A minimum of 1 foot bentonite seal was placed above the sand. Auger flight cuttings were used to backfill the remainder of the annular space to the ground surface. A flush mount protective steel casing with a bolted cap was installed at the surface. In addition a cement grout collar was poured and formed around the steel casing. After the bentonite grout had been allowed to harden for a minimum of 24 hours, the wells were developed using a surge block technique, and pumped until the water began to run clear. Well construction diagrams are presented in Appendix B.



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### 4.7.1.2 Monitoring Well Locations

The locations selected for placement of the monitoring wells and observations made during well development and sampling activities are summarized below.

Area 1

One monitoring well was installed in this area (IBMW01) to access groundwater downgradient from the reported former outside storage area. Recovery of the well was sufficient during both the development and sampling events.

Area 2

One monitoring well was installed in this area (IBMW02) to assess groundwater downgradient from the reported former outside storage area and to assess water quality at the site boundary. A strong sewage-like odor was noted while developing and sampling the well.

Area 4

One monitoring well was installed in this area (IBMW04) to assess downgradient site water quality. No noticeable characteristics were observed when developing or sampling the well.

Area 5/5A

One well (IBMW12) was installed in Area 5A and one well (IBMW13) was installed downgradient of Area 5A. Slow recovery was noted while developing IBMW12. The water was observed to be dark brown with a strong sewage-like odor during sampling. Recovery was sufficient during both developing and sampling IBMW13 and no color or odors were observed when sampling this well.

Area 6

One well (IBMW03) was installed in this area because a sheen was observed during soil boring installation. Although the well was very close to the river, slow recovery was noted during development and sampling of the well.

Area 8

One well (IBMW08) was installed in this area, downgradient of the old crane pad. No notable observations were made while developing or sampling the well.



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Area 9

One well (IBMW05) was installed in this area, upgradient of site activities. Slow recovery was noted while developing and sampling the well.

Area 10

One well (IBMW06) was installed in this area to determine water quality near Building 42. Slow recovery was noted during sampling and development. The water was observed to be dark black and silty.

Area 11

Two wells were installed in this area. One well (IBMW07) was installed upgradient of the potential UST and Building 42 and one well (IBMW14) was installed between the potential UST and Building 42. Very slow recovery was noted while developing IBMW07 and a slight sewage-like odor was also noted while sampling the well. A strong sewage odor was detected when sampling IBMW14 and the well had very slow recovery.

Area 14

One well (IBMW10) was installed in this area to determine groundwater quality downgradient of the potential UST in Area 13.

Area 15/16A

One well (IBMW11) was installed in this area to characterize the water quality downgradient of the potential USTs and Building 42.

Area 17

One monitoring well (IBMW09) was installed in this area. The well was pumped dry during development and again during sampling operations. Sampling took place over a two day period to allow the well to recharge with sufficient water to collect samples.

Monitoring Well Sampling

Well sampling was initiated on 30 November 1992. The following procedures were used to collect the samples:

- A depth to water level measurement relative to the top of the inner casing was obtained with an electronic water level indicator and recorded on the well sampling form.



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- Based on the water level and depth of the well, the volume of standing water in the well was calculated.

- The well was purged of three times the volume of standing water using a disposable PVC bailer.

- Following initial well purging, measurements of pH, specific conductance, and temperature were made using field instruments and recorded on the well sampling form. Pre-measurement calibration of the instruments were performed prior to field screening.

- Purging continued until measurements for all three parameters stabilized ($\pm 0.25$ units for pH, $\pm 10\%$ for specific conductance, and $\pm 1.0°C$ for temperature) for three consecutive readings or until five well volumes were removed. If the well was purged dry, it was allowed to recharge for 15 minutes before it was bailed dry again and then samples were collected.

- The samples were collected with the disposable bailer and poured directly into the sample containers supplied by the laboratory. Samples collected for metals analyses were filtered through a .45$\mu$ disposable filter. Appropriate preservatives were added and the samples were stored on ice. Each well sample was analyzed for VOCs, SVOCs, PCBs, dissolved metals and cyanide.

Two types of quality control (QC) samples, duplicate samples and field blank samples, were also collected and submitted for analysis. A duplicate sample was analyzed to obtain information on the precision of laboratory analysis; and a field blank sample was analyzed to obtain information on the effectiveness of the sample equipment decontamination. The duplicate groundwater sample was collected from IBMW01 and was collected concurrently with the respective investigative sample. The field blank sample was collected by pouring distilled laboratory grade water through a disposable bailer directly into a sample container.

All groundwater samples were kept in coolers from the time of collection until delivery to the laboratory. A completed chain-of-custody form was placed inside each of the coolers, which were then sealed with strapping tape and custody seals. Laboratory personnel picked up the samples from the IB site and hand delivered the samples to the laboratory. The analytical results of the monitoring well samples are presented in Section 5. The purge and development water was collected, containerized, labeled, and stored on site.

In accordance with the requirements established for the site, all of the WESTON installed wells (casings and screens) were removed after completion of the first round of groundwater sampling activities. The well holes were grouted to the surface with bentonite holeplug on 1 and 2 December 1992.



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#### 4.7.2.1 Monitoring Well Locations

Industrial Brownhoist

One monitoring well was scheduled to be installed southeast of Building 41 at the IB site. However, only dry clay till was encountered in the borehole to a depth of 18 below the ground surface. This soil boring was identified as CS-MW-01A because a shallow aquifer was not found and the well was not installed.

## 4.8 PCB SAMPLING

A limited number of PCB samples were collected from areas within the Powerhouse and Building 41 at the IB site on 21 December 1992. The sampling was conducted to determine if PCB contamination was present in the significantly oil-stained areas of the IB site. A total of six samples (three wipe, two oil and one solid) were collected within the Powerhouse. A total of two samples (one wipe and one solid) were collected in the northwest portion of Building 41 in the vicinity of the PCB-labeled transformers. All of the samples were delivered to Clayton for PCB analysis. The analytical results are summarized in Section 5.

## 4.9 SITE SURVEY

WESTON subcontracted Wade-Trim/Edmands (Wade-Trim) of Bay City, Michigan to perform a site survey of the CERT site. The horizontal location and vertical elevations were determined for all the soil boring locations, the groundwater wells, and the hand auger boring locations. Wade-Trim referenced all elevations to two on-site USGS (National Geodetic Vertical Datum) benchmarks. The ground elevation and the elevation of the top of the riser pipe were determined at each well location.



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# SECTION 5

# ANALYTICAL RESULTS

All of the samples collected at the CERT site with the exception of the radiation, EP Toxicity and TCLP samples, were analyzed by Clayton. The TCLP and EP Toxicity metals samples were analyzed by Snell. The radiation samples were analyzed by Core. Tables 4-1, 4-2 and 4-3 summarized the number of samples collected and the associates analysis. Following receipt of the analytical results, the data were validated and tabulated. A summary of the QA/QC can be found in Appendix D.

## 5.1 INDUSTRIAL BROWNHOIST

A summary of the parameters detected in the soil borings collected in each area at the IB site is presented in Tables 5-1 through 5-19A. When an analyte was not detected in a sample the symbol "ND" was used on the table followed by the detection limit in parentheses. A summary of the analytical results from the TCLP and EP toxicity samples from the IB site is presented in Table 5-20. A summary of the analytical results from the radiation samples from the IB site is presented in Table 5-21. A summary of the analytical results of the additional PCB sampling at the IB site is presented in Table 5-22.

A summary of the detected parameters from the groundwater samples is presented in Table 5-34.



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TABLE 5-1
Areas 1 and 2
Summary of Detected Parameters in Soil Samples
Industrial Brownfield, Bay City, Michigan

| Parameter | AREA 1 Sample (Depth) IBSB37-01 (6'-10') | AREA 2 Sample (Depth) IBSB36-01 (4'-6') | IBSB36-02 (2'-6') Comp | IBSB46-01 (8'-10') | IBSB46-02 (4'-6') |
|---|---|---|---|---|---|
| **INORGANICS (mg/kg)** | | | | | |
| Arsenic | NA | NA | NA | NA | NA |
| Barium | NA | NA | NA | NA | NA |
| Cadmium | NA | NA | NA | NA | NA |
| Chromium | NA | NA | NA | NA | NA |
| Copper | NA | NA | NA | NA | NA |
| Lead | NA | NA | NA | NA | NA |
| Mercury | NA | NA | NA | NA | NA |
| Selenium | NA | NA | NA | NA | NA |
| Silver | NA | NA | NA | NA | NA |
| Zinc | NA | NA | NA | NA | NA |
| Cyanide (total) | NA | NA | NA | NA | NA |
| **ORGANICS (ug/kg)** | | | | | |
| Volatile Organic Compounds | | | | | |
| Acetone | 500 | 300 | NA | ND (100) | ND (100) |
| Benzene | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| 2-Butanone | ND (100) | ND (100) | NA | ND (100) | ND (100) |
| 1,1-Dichloroethane | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| Ethylbenzene | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| Methylene Chloride | 40 | 30 | NA | 10 | 20 |
| Styrene | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| Toluene | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| 1,1,1-Trichloroethane | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| Trichloroethene | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| Xylene (total) | ND (30) | ND (30) | NA | ND (30) | ND (30) |
| Polychlorinated Biphenyl (PCB) | | | | | |
| Aroclor-1242 | ND (40) | NA | ND (40) | ND (500) | ND (40) |
| Aroclor-1248 | ND (40) | NA | ND (40) | 730 | 150 |
| Aroclor-1260 | ND (40) | NA | ND (40) | ND (500) | 180 |
| Base Neutral Compounds | | | | | |
| Acenaphthene | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Acenaphthylene | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Anthracene | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Benzo(a)anthracene | 200 | NA | 400 | 600 | 300 |
| Benzo(b)fluoranthene | ND (200) | NA | 500 | 700 | 200 |
| Benzo(k)fluoranthene | ND (200) | NA | 200 | 400 | 300 |
| Benzo(a)pyrene | ND (200) | NA | 400 | 500 | ND (200) |
| Benzo(g,h,i)perylene | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Bis(2-ethylhexyl)phthalate | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Chrysene | 200 | NA | 400 | 600 | 300 |
| Dibenzo(a,h)anthracene | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Dibenzofuran | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Fluoranthene | 400 | NA | 700 | 1200 | 600 |
| Fluorene | ND (200) | NA | ND (200) | ND (200) | 300 |
| Ideno(1,2,3-cd)pyrene | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| 2-Methylnaphthalene | ND (200) | NA | 300 | ND (200) | ND (200) |
| Naphthalene | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Phenanthrene | ND (200) | NA | 800 | 600 | 1000 |
| Pyrene | 400 | NA | 700 | 1800 | 800 |

Notes
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.



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TABLE 5-2
Area 4
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) IBSB01-01 (6'-8') | IBSB01-02 (8'-10') | IBSB02-01 (6'-10') | IBSB03-01 (6'-8') | IBSB03-02 (8'-10') |
|---|---|---|---|---|---|
| **INORGANIC (mg/kg)** | | | | | |
| Arsenic | 2.1 | 3.1 | 4.4 | NA | NA |
| Barium | 30 | 32 | 40 | NA | NA |
| Cadmium | 2.7 | 3.4 | 4.0 | NA | NA |
| Chromium | 10 | 12 | 14 | NA | NA |
| Copper | 18 | 11 | 23 | NA | NA |
| Lead | 16 | 13 | 17 | NA | NA |
| Mercury | ND (0.1) | ND (0.1) | ND (0.1) | NA | NA |
| Selenium | ND (0.1) | 0.1 | 0.1 | NA | NA |
| Silver | ND (0.2) | 0.4 | 0.3 | NA | NA |
| Zinc | 26 | 18 | 26 | NA | NA |
| Cyanide (total) | NA | NA | NA | NA | NA |
| **ORGANIC (ug/kg)** | | | | | |
| Volatile Organic Compounds | | | | | |
| Acetone | 100 | ND (100) | ND (200) | ND (100) | ND (100) |
| Benzene | ND (10) | ND (10) | ND (20) | ND (10) | ND (10) |
| 2-Butanone | ND (100) | ND (100) | ND (200) | ND (100) | ND (100) |
| 1,1-Dichloroethane | ND (10) | ND (10) | ND (20) | 10 | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) | ND (10) | ND (20) | ND (10) | ND (10) |
| Ethylbenzene | ND (10) | ND (10) | ND (20) | ND (10) | ND (10) |
| Methylene Chloride | 20 | 10 | ND (20) | ND (10) | ND (10) |
| Styrene | ND (10) | ND (10) | ND (20) | ND (10) | ND (10) |
| Toluene | ND (10) | ND (10) | ND (20) | ND (10) | ND (10) |
| 1,1,1-Trichloroethane | ND (10) | ND (10) | ND (20) | 120 | 10 |
| Trichloroethene | ND (10) | ND (10) | ND (20) | ND (10) | ND (10) |
| Xylene (total) | ND (30) | ND (30) | ND (50) | ND (30) | ND (30) |
| Polychlorinated Biphenyl (PCB) | | | | | |
| Aroclor-1242 | ND (40) | ND (40) | NA | NA | NA |
| Aroclor-1248 | ND (40) | ND (40) | NA | NA | NA |
| Aroclor-1260 | ND (40) | ND (40) | NA | NA | NA |
| Base Neutral Compounds | | | | | |
| Acenaphthene | ND (200) | ND (200) | 400 | ND (200) | ND (200) |
| Acenaphthylene | ND (200) | ND (200) | 900 | ND (200) | ND (200) |
| Anthracene | ND (200) | ND (200) | 1500 | ND (200) | ND (200) |
| Benzo(a)anthracene | ND (200) | ND (200) | 3900 | ND (200) | ND (200) |
| Benzo(b)fluoranthene | ND (200) | ND (200) | 3100 | ND (200) | ND (200) |
| Benzo(k)fluoranthene | ND (200) | ND (200) | 1900 | ND (200) | ND (200) |
| Benzo(a)pyrene | ND (200) | ND (200) | 2600 | ND (200) | ND (200) |
| Benzo(g,h,i)perylene | ND (200) | ND (200) | 800 | ND (200) | ND (200) |
| Bis(2-ethylhexyl)phthalate | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) |
| Chrysene | ND (200) | ND (200) | 3200 | ND (200) | ND (200) |
| Dibenzo(a,h)anthracene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) |
| Dibenzofuran | ND (200) | ND (200) | 800 | ND (200) | ND (200) |
| Fluoranthene | ND (200) | ND (200) | 5700 | ND (200) | ND (200) |
| Fluorene | ND (200) | ND (200) | 800 | ND (200) | ND (200) |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (200) | 1600 | ND (200) | ND (200) |
| 2-Methylnaphthalene | ND (200) | ND (200) | 300 | ND (200) | ND (200) |
| Naphthalene | ND (200) | ND (200) | 1000 | ND (200) | ND (200) |
| Phenanthrene | ND (200) | ND (200) | 4900 | ND (200) | ND (200) |
| Pyrene | ND (200) | ND (200) | 4900 | ND (200) | ND (200) |

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.





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TABLE 5-3
Area 5
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) IBSB33-01 (6'-8') | IBSB33-02 (12'-14') | IBSB34-01 (4'-6') | IBHA16-01 (3'-3.5') | IBHA16-02 (1.5'-3.5') |
|---|---|---|---|---|---|
| **INORGANIC (mg/kg)** | | | | | |
| Arsenic | 3.6 | 11 | 11 | NA | 9.2 J |
| Barium | 19 | 140 | 87 | NA | 30 J |
| Cadmium | 2.6 | 9.7 | 9.8 | NA | 8.2 J |
| Chromium | 8 | 33 | 15 | NA | 24 J |
| Copper | 9 | 93 | 110 | NA | 62 |
| Lead | 14 | 180 | 110 | NA | 70 |
| Mercury | ND (0.1) | 0.3 | 0.1 | NA | 1.6 J |
| Selenium | 0.3 | 1.6 | 0.5 | NA | ND (0.1) J |
| Silver | ND (0.5) J | ND (0.5) J | ND (0.5) J | NA | 0.3 |
| Zinc | 130 | 1900 | 150 | NA | 200 J |
| Cyanide (total) | NA | NA | NA | NA | NA |
| **ORGANIC (ug/kg)** | | | | | |
| Volatile Organic Compounds | | | | | |
| Acetone | 300 | 12000 | ND (100) | ND (100) | NA |
| Benzene | ND (10) | ND (50) | ND (10) | ND (10) | NA |
| 2-Butanone | ND (100) | ND (500) | ND (100) | ND (100) | NA |
| 1,1-Dichloroethane | 30 | ND (50) | ND (10) | ND (10) | NA |
| 1,2-Dichloroethene (total) | ND (10) | ND (50) | ND (10) | ND (10) | NA |
| Ethylbenzene | ND (10) | ND (50) | ND (10) | ND (10) | NA |
| Methylene Chloride | 20 | 70 | ND (10) | 10 | NA |
| Styrene | ND (10) | ND (50) | ND (10) | ND (10) | NA |
| Toluene | ND (10) | ND (50) | 20 | ND (10) | NA |
| 1,1,1-Trichloroethane | 130 | ND (50) | ND (10) | ND (10) | NA |
| Trichloroethene | ND (10) | ND (50) | ND (10) | ND (10) | NA |
| Xylene (total) | ND (30) | ND (100) | ND (30) | ND (30) | NA |
| Polychlorinated Biphenyl (PCB) | | | | | |
| Aroclor-1242 | NA | NA | NA | NA | ND (40) |
| Aroclor-1248 | NA | NA | NA | NA | ND (40) |
| Aroclor-1260 | NA | NA | NA | NA | ND (40) |
| Base Neutral Compounds | | | | | |
| Acenaphthene | ND (200) | 1300 | ND (2000) | NA | ND (200) |
| Acenaphthylene | ND (200) | 800 | ND (2000) | NA | ND (200) |
| Anthracene | ND (200) | 3200 | 3000 | NA | ND (200) |
| Benzo(a)anthracene | 200 | 11000 | 9000 | NA | ND (200) |
| Benzo(b)fluoranthene | ND (200) | 13000 | 6000 | NA | 300 |
| Benzo(k)fluoranthene | ND (200) | 7600 | 8000 | NA | ND (200) |
| Benzo(a)pyrene | ND (200) | 8400 | 9000 | NA | ND (200) |
| Benzo(g,h,i)perylene | ND (200) | ND (600) | 4000 | NA | ND (200) |
| Bis(2-ethylhexyl)phthalate | ND (200) | ND (600) | ND (2000) | NA | ND (200) |
| Chrysene | 200 | 11000 | 11000 | NA | ND (200) |
| Dibenzo(a,h)anthracene | ND (200) | ND (600) | ND (2000) | NA | ND (200) |
| Dibenzofuran | ND (200) | 1400 | ND (2000) | NA | ND (200) |
| Fluoranthene | 500 | 18000 | 24000 | NA | ND (200) |
| Fluorene | ND (200) | 2100 | 2000 | NA | ND (200) |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (600) | ND (2000) | NA | ND (200) |
| 2-Methylnaphthalene | ND (200) | 900 | ND (2000) | NA | ND (200) |
| Naphthalene | ND (200) | 1300 | ND (2000) | NA | ND (200) |
| Phenanthrene | 400 | 14000 | 24000 | NA | ND (200) |
| Pyrene | 500 | 17000 | 20000 | NA | ND (200) |

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

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TABLE 5-4
Area 5A
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) IBSB31-01 (10'-12') | IBSB31-01D (10'-12') | IBSB32-01 (4'-6') | IBSB32-02 (8'-10') | IBHA17-01 (1.5'-2') | IBHA17-02 (1.5'-2') |
|---|---|---|---|---|---|---|
| **INORGANIC (mg/kg)** | | | | | | |
| Arsenic | 24 | 3.0 | 1.7 | 8.0 | NA | 34 J |
| Barium | 20 | 16 | 4 | 8 | NA | 71 J |
| Cadmium | 1.7 | 1.5 | 0.62 | 1.8 | NA | 11 J |
| Chromium | 5 | 5 | 3 | 4 | NA | 75 J |
| Copper | 6 | 5 | 3 | 4 | NA | 170 |
| Lead | 8 | 3.5 | 2 | 4 | NA | 290 |
| Mercury | ND (0.1) | ND (0.1) | ND (0.1) | ND (0.1) | NA | 0.1 J |
| Selenium | 0.1 | 0.2 | ND (0.1) | 0.2 | NA | 0.3 J |
| Silver | ND (0.5) J | ND (0.5) J | ND (0.5) J | ND (0.5) J | NA | 0.5 |
| Zinc | 26 | 20 | 32 | 22 | NA | 4400 J |
| Cyanide (total) | NA | NA | NA | NA | NA | NA |
| **ORGANIC (ug/kg)** | | | | | | |
| Volatile Organic Compounds | | | | | | |
| Acetone | 1800 | NA | 1000 | 400 | 200 | NA |
| Benzene | ND (10) | NA | ND (10) | ND (10) | ND (10) | NA |
| 2-Butanone | ND (100) | NA | ND (100) | ND (100) | ND (100) | NA |
| 1,1-Dichloroethane | ND (10) | NA | ND (10) | ND (10) | ND (10) | NA |
| 1,2-Dichloroethene (total) | ND (10) | NA | ND (10) | 10 | ND (10) | NA |
| Ethylbenzene | ND (10) | NA | ND (10) | ND (10) | ND (10) | NA |
| Methylene Chloride | 10 | NA | ND (10) | 10 | 30 | NA |
| Styrene | ND (10) | NA | ND (10) | ND (10) | ND (10) | NA |
| Toluene | ND (10) | NA | ND (10) | ND (10) | ND (10) | NA |
| 1,1,1-Trichloroethane | ND (10) | NA | ND (10) | ND (10) | 10 | NA |
| Trichloroethene | ND (10) | NA | ND (10) | ND (10) | ND (10) | NA |
| Xylene (total) | ND (30) | NA | ND (30) | ND (30) | ND (30) | NA |
| Polychlorinated Biphenyl (PCB) | | | | | | |
| Aroclor-1242 | NA | NA | NA | NA | NA | ND (40) |
| Aroclor-1248 | NA | NA | NA | NA | NA | ND (40) |
| Aroclor-1260 | NA | NA | NA | NA | NA | 300 |
| Base Neutral Compounds | | | | | | |
| Acenaphthene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Acenaphthylene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Anthracene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Benzo(a)anthracene | ND (200) | ND (200) | ND (200) | 200 | NA | ND (200) |
| Benzo(b)fluoranthene | ND (200) | ND (200) | ND (200) | ND (200) | NA | 400 |
| Benzo(k)fluoranthene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Benzo(a)pyrene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Benzo(g,h,i)perylene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Bis(2-ethylhexyl)phthalate | ND (200) | ND (200) | ND (200) | 300 | NA | ND (200) |
| Chrysene | ND (200) | ND (200) | ND (200) | ND (200) | NA | 300 |
| Dibenzo(a,h)anthracene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Dibenzofuran | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Fluoranthene | ND (200) | ND (200) | ND (200) | 300 | NA | 200 |
| Fluorene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| 2-Methylnaphthalene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Naphthalene | ND (200) | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Phenanthrene | ND (200) | ND (200) | ND (200) | ND (200) | NA | 300 |
| Pyrene | ND (200) | ND (200) | ND (200) | 300 | NA | 300 |

Notes
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.



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TABLE 5-5
Area 6
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) IBSB04-01 (16'-18') | IBSB04-02 (29'-31') | IBSB05-01 (10'-12') | IBSB05-02 (6'-14') |
|---|---|---|---|---|
| INORGANIC (mg/kg) | | | | |
| Arsenic | NA | NA | NA | NA |
| Barium | NA | NA | NA | NA |
| Cadmium | NA | NA | NA | NA |
| Chromium | NA | NA | NA | NA |
| Copper | NA | NA | NA | NA |
| Lead | NA | NA | NA | NA |
| Mercury | NA | NA | NA | NA |
| Selenium | NA | NA | NA | NA |
| Silver | NA | NA | NA | NA |
| Zinc | NA | NA | NA | NA |
| Cyanide (total) | NA | NA | NA | NA |
| ORGANIC (ug/kg) | | | | |
| Volatile Organic Compounds | | | | |
| Acetone | ND (100) | ND (100) | ND (100) | NA |
| Benzene | ND (10) | ND (10) | ND (10) | NA |
| 2-Butanone | ND (100) | ND (100) | ND (100) | NA |
| 1,1-Dichloroethane | ND (10) | ND (10) | ND (10) | NA |
| 1,2-Dichloroethene (total) | ND (10) | ND (10) | ND (10) | NA |
| Ethylbenzene | ND (10) | ND (10) | ND (10) | NA |
| Methylene Chloride | ND (10) | ND (10) | 10 | NA |
| Styrene | ND (10) | ND (10) | ND (10) | NA |
| Toluene | ND (10) | ND (10) | ND (10) | NA |
| 1,1,1-Trichloroethane | ND (10) | ND (10) | ND (10) | NA |
| Trichloroethene | ND (10) | ND (10) | ND (10) | NA |
| Xylene (total) | ND (30) | ND (30) | ND (30) | NA |
| Polychlorinated Biphenyl (PCB) | | | | |
| Aroclor-1242 | ND (50) | ND (50) | NA | ND (40) |
| Aroclor-1248 | ND (50) | ND (50) | NA | ND (40) |
| Aroclor-1260 | ND (50) | ND (50) | NA | ND (40) |
| Base Neutral Compounds | | | | |
| Acenaphthene | ND (200) | ND (200) | NA | ND (200) |
| Acenaphthylene | ND (200) | ND (200) | NA | ND (200) |
| Anthracene | ND (200) | ND (200) | NA | ND (200) |
| Benzo(a)anthracene | ND (200) | ND (200) | NA | ND (200) |
| Benzo(b)fluoranthene | ND (200) | ND (200) | NA | ND (200) |
| Benzo(k)fluoranthene | ND (200) | ND (200) | NA | ND (200) |
| Benzo(a)pyrene | ND (200) | ND (200) | NA | ND (200) |
| Benzo(g,h,i)perylene | ND (200) | ND (200) | NA | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | NA |
| Chrysene | ND (200) | ND (200) | NA | ND (200) |
| Dibenzo(a,h)anthracene | ND (200) | ND (200) | NA | ND (200) |
| Dibenzofuran | NA | NA | NA | NA |
| Fluoranthene | ND (200) | ND (200) | NA | ND (200) |
| Fluorene | ND (200) | ND (200) | NA | ND (200) |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (200) | NA | ND (200) |
| 2-Methylnaphthalene | NA | NA | NA | NA |
| Naphthalene | ND (200) | ND (200) | NA | ND (200) |
| Phenanthrene | ND (200) | ND (200) | NA | ND (200) |
| Pyrene | ND (200) | ND (200) | NA | ND (200) |

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.



Work Assignment No.: 55-5AED
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TABLE 5-6
Area 7
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) IBSB45-01 (10'-12') | IBSB45-02 (12'-14') | IBSB45-03 (14'-16') | IBHA10-01 (3'-3.5') | IBHA10-02 (1.5'-3.5') | IBHA11-01 (1.5'-2') | IBHA11-02 (1.5'-2') |
|---|---|---|---|---|---|---|---|
| INORGANIC (mg/kg) | | | | | | | |
| Arsenic | 3.3 | 3.2 | NA | NA | 3.6 | NA | 3.5 |
| Barium | 34 | 34 | NA | NA | 160 | NA | 96 |
| Cadmium | 14 | 6.7 | NA | NA | 13 J | NA | 16 J |
| Chromium | 61 | 15 | NA | NA | 37 J | NA | 49 J |
| Copper | 170 | 1600 | NA | NA | 380 J | NA | 270 J |
| Lead | 85 | 230 | NA | NA | 82 J | NA | 150 J |
| Mercury | 0.2 | 6.2 | NA | NA | 0.18 | NA | 0.13 |
| Selenium | ND (0.1) J | 0.1 J | NA | NA | 0.4 J | NA | 0.3 J |
| Silver | 1.6 | 1 | NA | NA | ND (0.5) J | NA | ND (0.5) J |
| Zinc | 32 | 57 | NA | NA | 91 J | NA | 160 J |
| Cyanide (total) | NA | NA | NA | NA | NA | NA | NA |
| ORGANIC (ug/kg) | | | | | | | |
| Volatile Organic Compounds | | | | | | | |
| Acetone | 100 | NA | ND (600) | ND (100) | NA | ND (100) | NA |
| Benzene | ND (10) | NA | ND (60) | ND (10) | NA | ND (10) | NA |
| 2-Butanone | ND (100) | NA | ND (600) | ND (100) | NA | ND (100) | NA |
| 1,1-Dichloroethane | ND (10) | NA | ND (60) | ND (10) | NA | ND (10) | NA |
| 1,2-Dichloroethene (total) | ND (10) | NA | ND (60) | ND (10) | NA | ND (10) | NA |
| Ethylbenzene | ND (10) | NA | ND (60) | ND (10) | NA | ND (10) | NA |
| Methylene Chloride | 10 | NA | ND (60) | ND (10) | NA | 20 | NA |
| Styrene | ND (10) | NA | ND (60) | ND (10) | NA | ND (10) | NA |
| Toluene | ND (10) | NA | ND (60) | ND (10) | NA | ND (10) | NA |
| 1,1,1-Trichloroethane | ND (10) | NA | ND (60) | ND (10) | NA | ND (10) | NA |
| Trichloroethene | ND (10) | NA | ND (60) | ND (10) | NA | ND (10) | NA |
| Xylene (total) | ND (30) | NA | ND (200) | ND (30) | NA | ND (30) | NA |
| Polychlorinated Biphenyl (PCB) | | | | | | | |
| Aroclor-1242 | ND (40) | ND (40) | NA | NA | ND (40) | NA | ND (40) |
| Aroclor-1248 | ND (40) | ND (40) | NA | NA | ND (40) | NA | ND (40) |
| Aroclor-1260 | ND (40) | ND (40) | NA | NA | ND (40) | NA | 200 |
| Base Neutral Compounds | | | | | | | |
| Acenaphthene | ND (200) | ND (600) | NA | NA | NA | NA | NA |
| Acenaphthylene | ND (200) | ND (600) | NA | NA | NA | NA | NA |
| Anthracene | 1000 | 2200 | NA | NA | NA | NA | NA |
| Benzo(a)anthracene | 2700 | 4100 | NA | NA | NA | NA | NA |
| Benzo(b)fluoranthene | 3500 | 3600 | NA | NA | NA | NA | NA |
| Benzo(k)fluoranthene | 1500 | 4800 | NA | NA | NA | NA | NA |
| Benzo(a)pyrene | 2600 | 4800 | NA | NA | NA | NA | NA |
| Benzo(g,h,i)perylene | 2300 | 2600 | NA | NA | NA | NA | NA |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | 2400 | 4300 | NA | NA | NA | NA | NA |
| Dibenzo(a,h)anthracene | ND (200) | ND (600) | NA | NA | NA | NA | NA |
| Dibenzofuran | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | 5500 | 8200 | NA | NA | NA | NA | NA |
| Fluorene | 1200 | 3000 | NA | NA | NA | NA | NA |
| Ideno(1,2,3-cd)pyrene | 2500 | 3400 | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | 200 | 1300 | NA | NA | NA | NA | NA |
| Phenanthrene | 4200 | 13000 | NA | NA | NA | NA | NA |
| Pyrene | 3700 | 6900 | NA | NA | NA | NA | NA |

Notes:
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NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.



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TABLE 5-7
Area 8/9
Summary of Detected Parameters in Soil Samples
Industrial Brownfield, Bay City, Michigan

| Parameter | Sample (Depth) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | IBSB06-01 (15'-17') | IBSB06-02 (7'-17') | IBSB07-01 (8'-10') | IBSB07-02 (2'-12') | IBSB08-01 (2'-3') | IBSB08-02 (10'-12') | IBSB09-01 (4'-6') | IBSB10-01 (8'-10') |
| **INORGANIC (mg/kg)** | | | | | | | | |
| Arsenic | NA | 3.7 | NA | 2.0 | 4.1 | NA | 4.4 | 11 |
| Barium | NA | 49 | NA | 34 | 34 | NA | 36 | 22 |
| Cadmium | NA | 16 | NA | 7.8 J | 12 J | NA | 10 J | 11 J |
| Chromium | NA | 32 | NA | 22 J | 16 J | NA | 14 J | 8.9 J |
| Copper | NA | 94 | NA | 110 J | 150 J | NA | 320 J | 110 J |
| Lead | NA | 45 | NA | 150 J | 30 J | NA | 81 J | 25 J |
| Mercury | NA | ND (0.1) | NA | 0.09 | ND (0.05) | NA | 0.09 | ND (0.05) |
| Selenium | NA | 0.1 | NA | 0.2 J | 0.3 J | NA | 0.2 J | 0.4 J |
| Silver | NA | 0.4 | NA | ND (0.5) J | ND (0.5) J | NA | ND (0.5) J | ND (0.5) J |
| Zinc | NA | 46 | NA | 45 J | 55 J | NA | 63 J | 33 J |
| Cyanide (total) | NA | NA | NA | NA | NA | NA | NA | NA |
| **ORGANIC (ug/kg)** | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | |
| Acetone | ND (100) | NA | ND (100) J | NA | 200 | ND (100) | 700 | 1100 |
| Benzene | ND (10) | NA | ND (10) J | NA | ND (10) | ND (10) | ND (10) | ND (60) |
| 2-Butanone | ND (100) | NA | ND (100) J | NA | ND (100) | ND (100) | ND (100) | ND (600) |
| 1,1-Dichloroethane | ND (10) | NA | ND (10) J | NA | ND (10) | ND (10) | ND (10) | ND (60) |
| 1,2-Dichloroethene (total) | ND (10) | NA | ND (10) J | NA | ND (10) | ND (10) | ND (10) | ND (60) |
| Ethylbenzene | ND (10) | NA | ND (10) J | NA | ND (10) | ND (10) | ND (10) | ND (60) |
| Methylene Chloride | ND (10) | NA | 10 J | NA | 30 | 10 | 30 | 80 |
| Styrene | ND (10) | NA | ND (10) J | NA | ND (10) | ND (10) | ND (10) | ND (60) |
| Toluene | ND (10) | NA | 30 J | NA | ND (10) | ND (10) | ND (10) | ND (60) |
| 1,1,1-Trichloroethane | ND (10) | NA | ND (10) J | NA | ND (10) | ND (10) | ND (10) | ND (60) |
| Trichloroethene | ND (10) | NA | ND (10) J | NA | ND (10) | ND (10) | ND (10) | ND (60) |
| Xylene (total) | ND (30) | NA | ND (30) J | NA | ND (30) | ND (30) | ND (30) | ND (200) |
| Polychlorinated Biphenyl (PCB) | | | | | | | | |
| Aroclor-1242 | NA | ND (40) | NA | ND (40) | ND (40) | NA | ND (40) | ND (40) |
| Aroclor-1248 | NA | ND (40) | NA | ND (40) | ND (40) | NA | ND (40) | ND (40) |
| Aroclor-1260 | NA | ND (40) | NA | ND (40) | ND (40) | NA | ND (40) | ND (40) |
| Base Neutral Compounds | | | | | | | | |
| Acenaphthene | NA | ND (200) | NA | ND (200) | ND (200) | NA | ND (200) | ND (200) |
| Acenaphthylene | NA | ND (200) | NA | ND (200) | ND (200) | NA | ND (200) | ND (200) |
| Anthracene | NA | ND (200) | NA | ND (200) | ND (200) | NA | ND (200) | ND (200) |
| Benzo(a)anthracene | NA | 300 | NA | 300 | ND (200) | NA | 400 | 300 |
| Benzo(b)fluoranthene | NA | 600 | NA | 700 | 300 | NA | 500 | 300 |
| Benzo(k)fluoranthene | NA | ND (200) | NA | 300 | ND (200) | NA | 400 | ND (200) |
| Benzo(a)pyrene | NA | 200 | NA | 300 | ND (200) | NA | 400 | ND (200) |
| Benzo(g,h,i)perylene | NA | ND (200) | NA | ND (200) | ND (200) | NA | ND (200) | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | ND (200) | NA | ND (200) | ND (200) | NA | ND (200) | ND (200) |
| Chrysene | NA | 400 | NA | 500 | 200 | NA | 500 | 500 |
| Dibenzo(a,h)anthracene | NA | ND (200) | NA | ND (200) | ND (200) | NA | ND (200) | ND (200) |
| Dibenzofuran | NA | ND (200) | NA | ND (200) | ND (200) | NA | ND (200) | ND (200) |
| Fluoranthene | NA | 700 | NA | 400 | ND (200) | NA | 600 | 400 |
| Fluorene | NA | ND (200) | NA | ND (200) | ND (200) | NA | ND (200) | ND (200) |
| Ideno(1,2,3-cd)pyrene | NA | ND (200) | NA | 300 | ND (200) | NA | 300 | ND (200) |
| 2-Methylnaphthalene | NA | ND (200) | NA | ND (200) | ND (200) | NA | ND (200) | ND (200) |
| Naphthalene | NA | ND (200) | NA | ND (200) | ND (200) | NA | ND (200) | ND (200) |
| Phenanthrene | NA | 600 | NA | ND (200) | 300 | NA | 300 | 600 |
| Pyrene | NA | 600 | NA | 300 | ND (200) | NA | 500 | 300 |

Notes
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.



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Summary of Detected Parameters in Soil Samples
Industrial Brownholst, Bay City, Michigan

| Parameter | Sample (Depth) CS-SB-04 (8-14) | CS-SB-06 (6-12) | CS-SB-06 Dp (6-12) | CS-SB-06R (25-29) |
|---|---|---|---|---|
| **INORGANIC (mg/kg)** | | | | |
| Arsenic | 12 | 11 | NA | NA |
| Barium | 36 | 49 | NA | NA |
| Cadmium | ND (0.05) | ND (0.05) | NA | NA |
| Chromium | 51 | 15 | NA | NA |
| Copper | 140 | 140 | NA | NA |
| Lead | 65 | 69 | NA | NA |
| Mercury | 0.1 | ND (0.1) | NA | NA |
| Selenium | ND (0.5) | ND (0.5) | NA | NA |
| Silver | 1.3 | ND (0.5) | NA | NA |
| Zinc | 140 | 54 | NA | NA |
| Cyanide (total) | NA | NA | NA | NA |
| **ORGANIC (ug/kg)** | | | | |
| Volatile Organic Compounds | | | | |
| Acetone | 200 | ND (100) | NA | ND (100) |
| Benzene | ND (10) | ND (10) | NA | ND (10) |
| 2-Butanone | 100 | ND (100) | NA | ND (100) |
| 1,1-Dichloroethane | ND (10) | ND (10) | NA | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) | ND (10) | NA | ND (10) |
| Ethylbenzene | ND (10) | ND (10) | NA | ND (10) |
| Methylene Chloride | 110 | 40 | NA | 10 |
| Styrene | ND (10) | ND (10) | NA | ND (10) |
| Toluene | ND (10) | ND (10) | NA | ND (10) |
| 1,1,1-Trichloroethane | ND (10) | ND (10) | NA | ND (10) |
| Trichloroethene | ND (10) | ND (10) | NA | ND (10) |
| Xylene (total) | ND (30) | ND (30) | NA | ND (30) |
| Polychlorinated Biphenyl (PCB) | | | | |
| Aroclor-1242 | ND (400) J | ND (4,000) J | ND (400) J | ND (200) |
| Aroclor-1248 | ND (400) J | ND (4,000) J | ND (400) J | ND (200) |
| Aroclor-1260 | ND (400) J | ND (4,000) J | ND (400) J | ND (200) |
| Base Neutral Compounds | | | | |
| Acenaphthene | ND (200) | ND (200) | NA | ND (200) |
| Acenaphthylene | ND (200) | ND (200) | NA | ND (200) |
| Anthracene | ND (200) | ND (200) | NA | ND (200) |
| Benzo(a)anthracene | 500 | ND (200) | NA | ND (200) |
| Benzo(b)fluoranthene | 700 | 200 | NA | ND (200) |
| Benzo(k)fluoranthene | 200 | ND (200) | NA | ND (200) |
| Benzo(a)pyrene | 400 | ND (200) | NA | ND (200) |
| Benzo(g,h,i)perylene | 400 | ND (200) | NA | ND (200) |
| Bis(2-ethylhexyl)phthalate | ND (500) | ND (200) | NA | 400 |
| Chrysene | 500 | ND (200) | NA | ND (200) |
| Dibenzo(a,h)anthracene | ND (200) | ND (200) | NA | ND (200) |
| Dibenzofuran | NA | NA | NA | NA |
| Fluoranthene | 800 | ND (200) | NA | ND (200) |
| Fluorene | ND (200) | ND (200) | NA | ND (200) |
| Ideno(1,2,3-cd)pyrene | 300 | ND (200) | NA | ND (200) |
| 2-Methylnaphthalene | NA | NA | NA | NA |
| Naphthalene | ND (200) | ND (200) | NA | ND (200) |
| Phenanthrene | 500 | 300 | NA | ND (200) |
| Pyrene | 600 | ND (200) | NA | ND (200) |

Notes:
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TABLE 5-6
Area 10
Summary of Detected Parameters in Soil Samples
Industrial Brownfield, Bay City, Michigan

| Parameter | Sample (Depth) IBSB11-01 (4'-6') | IBSB11-02 (12'-14') | IBSB12-01 (12'-14') |
|---|---|---|---|
| INORGANIC (mg/kg) | | | |
| Arsenic | 9.5 | 1.4 | 9.7 |
| Barium | 64 | 20 | 180 |
| Cadmium | 13 J | 1.0 J | 12 J |
| Chromium | 16 J | 3.7 J | 14 J |
| Copper | 170 J | 5.7 J | 120 J |
| Lead | 57 J | 80 J | 100 J |
| Mercury | ND (0.05) | ND (0.05) | 0.31 |
| Selenium | 0.3 J | 0.1 J | 0.2 J |
| Silver | ND (0.5) J | ND (0.5) J | 0.7 J |
| Zinc | 56 J | 27 J | 120 J |
| Cyanide (total) | NA | NA | NA |
| ORGANIC (ug/kg) | | | |
| Volatile Organic Compounds | | | |
| Acetone | ND (100) | ND (100) | 200 |
| Benzene | ND (10) | ND (10) | ND (10) |
| 2-Butanone | ND (100) | ND (100) | ND (100) |
| 1,1-Dichloroethane | ND (10) | ND (10) | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) | ND (10) | ND (10) |
| Ethylbenzene | ND (10) | ND (10) | ND (10) |
| Methylene Chloride | ND (10) | 10 | 10 |
| Styrene | ND (10) | ND (10) | ND (10) |
| Toluene | ND (10) | ND (10) | ND (10) |
| 1,1,1-Trichloroethane | ND (10) | ND (10) | ND (10) |
| Trichloroethene | ND (10) | ND (10) | ND (10) |
| Xylene (total) | ND (30) | ND (30) | ND (30) |
| Polychlorinated Biphenyl (PCB) | | | |
| Aroclor-1242 | NA | NA | NA |
| Aroclor-1248 | NA | NA | NA |
| Aroclor-1260 | NA | NA | NA |
| Base Neutral Compounds | | | |
| Acenaphthene | ND (200) | ND (200) | ND (200) |
| Acenaphthylene | ND (200) | ND (200) | ND (200) |
| Anthracene | ND (200) | ND (200) | 200 |
| Benzo(a)anthracene | ND (200) | ND (200) | 200 |
| Benzo(b)fluoranthene | ND (200) | ND (200) | ND (200) |
| Benzo(k)fluoranthene | ND (200) | ND (200) | ND (200) |
| Benzo(a)pyrene | ND (200) | ND (200) | ND (200) |
| Benzo(g,h,i)perylene | ND (200) | ND (200) | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA |
| Chrysene | 200 | ND (200) | 200 |
| Dibenzo(a,h)anthracene | ND (200) | ND (200) | ND (200) |
| Dibenzofuran | NA | NA | NA |
| Fluoranthene | 300 | ND (200) | 400 |
| Fluorene | ND (200) | ND (200) | ND (200) |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (200) | ND (200) |
| 2-Methylnaphthalene | NA | NA | NA |
| Naphthalene | ND (200) | ND (200) | ND (200) |
| Phenanthrene | 300 | ND (200) | 400 |
| Pyrene | 300 | ND (200) | 400 |

Notes:
ND - Not detected at method detection limit.
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( ) - Method detection limit.
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TABLE 5-9
Area 11
Summary of Detected Parameters in Soil Samples
Industrial Brownfield, Bay City, Michigan

| Parameter | Sample (Depth) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | IBSB13-01 (4'-6') | IBSB13-02 (12'-14') | IBSB14-01 (8'-10') | IBSB15-01 (2'-4') | IBSB15-02 (8'-10') | IBSB43-01 (4'-6') | IBSB47-01 (4'-6') | IBSB47-02 (8'-10') |
| **INORGANIC (mg/kg)** | | | | | | | | |
| Arsenic | 2.2 | 1.6 | 1.6 | 1.5 | 6.1 | 0.1 | 2.5 | 0.5 |
| Barium | 26 | 39 | 39 | 32 | 94 | 34 | 190 | 27 |
| Cadmium | 4.0 J | 4.6 J | 5.2 J | 2.9 J | 3.2 J | 2.9 | 3.9 | 1.2 |
| Chromium | 14 J | 16 J | 18 J | 9.6 J | 7.9 J | 9 | 6 | 4 |
| Copper | 13 J | 16 J | 22 J | 16 J | 18 J | 13 | 720 | 15 |
| Lead | 4.8 J | 4.9 J | 18 J | 16 J | 140 J | 68 | 230 | 20 |
| Mercury | ND (0.05) | ND (0.05) | ND (0.05) | ND (0.05) | 0.15 | ND (0.1) | ND (0.1) | ND (0.1) |
| Selenium | ND (0.1) J | ND (0.1) J | ND (0.1) J | ND (0.1) J | 0.1 J | 0.2 J | 3.1 J | 0.2 J |
| Silver | ND (0.5) J | ND (0.5) J | ND (0.5) J | ND (0.5) J | ND (0.5) J | ND (0.5) | 1 | ND (0.5) |
| Zinc | 22 J | 30 J | 38 J | 25 J | 260 J | 41 | 140 | 28 |
| Cyanide (total) | NA | NA | NA | NA | NA | NA | NA | NA |
| **ORGANIC (ug/kg)** | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | |
| Acetone | ND (100) J | ND (100) | 200 | ND (100) | ND (100) | 400 | ND (400) | ND (200) |
| Benzene | ND (10) J | ND (10) | 30 | ND (10) | ND (10) | ND (10) | ND (40) | ND (20) |
| 2-Butanone | ND (100) J | ND (100) | ND (100) | ND (100) | ND (100) | ND (100) | ND (400) | ND (200) |
| 1,1-Dichloroethane | ND (10) J | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) | 300 | ND (20) |
| 1,2-Dichloroethene (total) | ND (10) J | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) | ND (40) | ND (20) |
| Ethylbenzene | ND (10) J | ND (10) | ND (10) | 4100 | 10 | ND (10) | ND (40) | ND (20) |
| Methylene Chloride | ND (10) J | 20 | ND (10) | 10 | ND (10) | 10 | 290 | 40 |
| Styrene | ND (10) J | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) | ND (40) | ND (20) |
| Toluene | ND (10) J | ND (10) | 20 | ND (10) | 40 | ND (10) | ND (40) | ND (20) |
| 1,1,1-Trichloroethane | ND (10) J | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) | ND (40) | 130 |
| Trichloroethene | ND (10) J | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) | ND (40) | ND (20) |
| Xylene (total) | ND (30) J | ND (30) | 100 | 11000 | 40 | ND (30) | ND (100) | ND (50) |
| Polychlorinated Biphenyl (PCB) | | | | | | | | |
| Aroclor-1242 | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor-1248 | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor-1260 | NA | NA | NA | NA | NA | NA | NA | NA |
| Base Neutral Compounds | | | | | | | | |
| Acenaphthene | ND (200) | ND (200) | ND (200) | ND (200) | 600 | ND (200) | ND (300) | ND (200) |
| Acenaphthylene | ND (200) | ND (200) | ND (200) | ND (200) | 1200 | ND (200) | ND (300) | ND (200) |
| Anthracene | ND (200) | ND (200) | 700 | ND (200) | 2600 | 200 | 1100 | 600 |
| Benzo(a)anthracene | ND (200) | ND (200) | 1200 | ND (200) | 6600 | 1200 | 1900 | 1900 |
| Benzo(b)fluoranthene | ND (200) | ND (200) | 1600 | ND (200) | 11000 | 1200 | 1200 | 1300 |
| Benzo(k)fluoranthene | ND (200) | ND (200) | 600 | ND (200) | 4700 | 700 | 900 | 1000 |
| Benzo(a)pyrene | ND (200) | ND (200) | 1000 | ND (200) | 8400 | 800 | 900 | 900 |
| Benzo(g,h,i)perylene | ND (200) | ND (200) | 400 | ND (200) | 3600 | 900 | ND (300) | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | ND (200) | ND (200) | 1200 | ND (200) | 6500 | 1200 | 1600 | 1600 |
| Dibenzo(a,h)anthracene | ND (200) | ND (200) | 500 | ND (200) | 3600 | ND (200) | ND (300) | ND (200) |
| Dibenzofuran | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | ND (200) | ND (200) | 3600 | ND (200) | 15000 | 2600 | 4100 | 3600 |
| Fluorene | ND (200) | ND (200) | 300 | ND (200) | 1100 | ND (200) | 600 | 300 |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (200) | 1100 | ND (200) | 8100 | 900 | 700 | 600 |
| 2-Methylnaphthalene | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | ND (200) | ND (200) | 400 | 200 | 500 | ND (200) | ND (300) | ND (200) |
| Phenanthrene | ND (200) | ND (200) | 2500 | ND (200) | 7500 | 1000 | 3600 | 2700 |
| Pyrene | ND (200) | ND (200) | 2600 | ND (200) | 13000 | 2000 | 2700 | 2100 |

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

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45005ST6.WK3

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TABLE 5-10
Area 12
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) IBSB16-01 (2'-4') | IBSB16-02 (4'-6') | IBSB17-01 (2'-4') | IBSB17-01D (2'-4') | IBSB17-02 (4'-6') | IBSB17-02D (4'-6') |
|---|---|---|---|---|---|---|
| INORGANIC (mg/kg) | | | | | | |
| Arsenic | 2.8 | 2.9 | NA | NA | 1.4 | 1.3 |
| Barium | 20 | 25 | NA | NA | 33 | 32 |
| Cadmium | 3.6 J | 3.5 J | NA | NA | 4.0 J | 3.3 J |
| Chromium | 12 J | 12 J | NA | NA | 14 J | 14 J |
| Copper | 11 J | 11 J | NA | NA | 13 J | 10 J |
| Lead | 4.6 J | 4.1 J | NA | NA | 4.0 J | 3.7 J |
| Mercury | ND (0.05) | ND (0.05) | NA | NA | ND (0.05) | ND (0.05) |
| Selenium | ND (0.1) J | ND (0.1) J | NA | NA | ND (0.1) J | ND (0.1) J |
| Silver | ND (0.5) J | ND (0.5) J | NA | NA | ND (0.5) J | 0.4 J |
| Zinc | 20 J | 20 J | NA | NA | 21 J | 21 J |
| Cyanide (total) | NA | NA | NA | NA | NA | NA |
| ORGANIC (ug/kg) | | | | | | |
| Volatile Organic Compounds | | | | | | |
| Acetone | ND (100) | ND (100) | ND (100) | ND (100) | NA | NA |
| Benzene | ND (10) | ND (10) | ND (10) | ND (10) | NA | NA |
| 2-Butanone | ND (100) | ND (100) | ND (100) | ND (100) | NA | NA |
| 1,1-Dichloroethane | ND (10) | ND (10) | ND (10) | ND (10) | NA | NA |
| 1,2-Dichloroethene (total) | ND (10) | ND (10) | ND (10) | ND (10) | NA | NA |
| Ethylbenzene | ND (10) | ND (10) | ND (10) | ND (10) | NA | NA |
| Methylene Chloride | ND (10) | ND (10) | 20 | ND (10) | NA | NA |
| Styrene | ND (10) | ND (10) | ND (10) | ND (10) | NA | NA |
| Toluene | ND (10) | ND (10) | ND (10) | ND (10) | NA | NA |
| 1,1,1-Trichloroethane | ND (10) | ND (10) | ND (10) | ND (10) | NA | NA |
| Trichloroethene | ND (10) | ND (10) | ND (10) | ND (10) | NA | NA |
| Xylene (total) | ND (30) | ND (30) | ND (30) | ND (30) | NA | NA |
| Polychlorinated Biphenyl (PCB) | | | | | | |
| Aroclor-1242 | NA | NA | NA | NA | ND (40) | ND (40) |
| Aroclor-1248 | NA | NA | NA | NA | ND (40) | ND (40) |
| Aroclor-1260 | NA | NA | NA | NA | ND (40) | ND (40) |
| Base Neutral Compounds | | | | | | |
| Acenaphthene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Acenaphthylene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Anthracene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Benzo(a)anthracene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Benzo(b)fluoranthene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Benzo(k)fluoranthene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Benzo(a)pyrene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Benzo(g,h,i)perylene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | NA | NA | NA |
| Chrysene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Dibenzo(a,h)anthracene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Dibenzofuran | NA | NA | NA | NA | NA | NA |
| Fluoranthene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Fluorene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| 2-Methylnaphthalene | NA | NA | NA | NA | NA | NA |
| Naphthalene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Phenanthrene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |
| Pyrene | ND (200) | ND (200) | NA | NA | ND (200) | ND (200) |

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.



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TABLE 5-11
Area 13
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) IBS825-01 (6'-8') | IBS825-02 (10'-12') | IBS825-03 (12'-14') | IBS826-01 (6'-8') | IBS826-02 (8'-10') | IBS827-01 (2'-4') | IBS827-02 (4'-6') |
|---|---|---|---|---|---|---|---|
| **INORGANIC (mg/kg)** | | | | | | | |
| Arsenic | NA | 3.5 J | 3.9 J | NA | 2.1 J | 1.6 J | 1.0 J |
| Barium | NA | 46 J | 37 J | NA | 31 J | 27 J | 33 J |
| Cadmium | NA | 3.0 J | 3.5 J | NA | 3.4 J | 1.4 J | 3.0 J |
| Chromium | NA | 11 J | 15 J | NA | 13 J | 5.3 J | 11 J |
| Copper | NA | 13 | 16 | NA | 15 | 16 | 11 |
| Lead | NA | 7.8 | 7.1 | NA | 6.1 | 25 | 4.4 |
| Mercury | NA | ND (0.1) J | ND (0.1) J | NA | ND (0.1) J | ND (0.1) J | ND (0.1) J |
| Selenium | NA | 0.2 J | 0.1 J | NA | ND (0.1) J | 0.1 J | 0.2 J |
| Silver | NA | 0.3 | 0.4 | NA | 0.4 | ND (0.2) | 0.3 |
| Zinc | NA | 25 J | 26 J | NA | 25 J | 26 J | 16 J |
| Cyanide (total) | NA | NA | NA | NA | NA | NA | NA |
| **ORGANIC (ug/kg)** | | | | | | | |
| Volatile Organic Compounds | | | | | | | |
| Acetone | ND (100) J | ND (100) | ND (100) | ND (100) | NA | ND (100) | ND (100) |
| Benzene | ND (10) J | ND (10) | 20 | ND (10) | NA | ND (10) | ND (10) |
| 2-Butanone | ND (100) | ND (100) | ND (100) | ND (100) | NA | ND (100) | ND (100) |
| 1,1-Dichloroethane | ND (10) J | ND (10) | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) J | ND (10) | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| Ethylbenzene | ND (10) J | ND (10) | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| Methylene Chloride | 70 J | ND (10) | 10 | 20 | NA | 20 | 10 |
| Styrene | ND (10) J | ND (10) | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| Toluene | ND (10) J | ND (10) | 10 | ND (10) | NA | ND (10) | ND (10) |
| 1,1,1-Trichloroethane | 40 J | ND (10) | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| Trichloroethene | ND (10) J | ND (10) | ND (10) | ND (10) | NA | ND (10) | ND (10) |
| Xylene (total) | ND (30) J | ND (30) | 120 | ND (30) | NA | ND (30) | ND (30) |
| Polychlorinated Biphenyl (PCB) | | | | | | | |
| Aroclor-1242 | NA | ND (50) | ND (40) | NA | ND (40) | ND (40) | ND (40) |
| Aroclor-1248 | NA | ND (50) | ND (40) | NA | ND (40) | ND (40) | ND (40) |
| Aroclor-1260 | NA | ND (50) | ND (40) | NA | ND (40) | ND (40) | ND (40) |
| Base Neutral Compounds | | | | | | | |
| Acenaphthene | ND (300) | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Acenaphthylene | 600 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Anthracene | 400 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Benzo(a)anthracene | 2100 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Benzo(b)fluoranthene | 1800 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Benzo(k)fluoranthene | 800 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Benzo(a)pyrene | 1600 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Benzo(g,h,i)perylene | 700 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | 1900 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Dibenzo(a,h)anthracene | ND (300) | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Dibenzofuran | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | 2900 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Fluorene | ND (300) | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Ideno(1,2,3-cd)pyrene | 1100 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| 2-Methylnaphthalene | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | ND (300) | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Phenanthrene | 1600 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |
| Pyrene | 2000 | ND (200) | ND (200) | NA | ND (200) | ND (200) | ND (200) |

Notes:
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NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because surrogate recovery or spike recovery outside control limits.



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TABLE 5-12
Areas 14 and 15
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | AREA 14 Sample (Depth) IBS826-01 (10'-12') | IBS826-01D (10'-12') | IBS826-02 (12'-14') | IBS826-03 (14'-16') | IBS826-03D (14'-16') | AREA 15 Sample (Depth) IBS829-01 (4'-6') | IBS829-02 (12'-14') | IBS829-03 (14'-16') |
|---|---|---|---|---|---|---|---|---|
| INORGANIC (mg/kg) | | | | | | | | |
| Arsenic | NA | NA | 11 J | 1.3 J | NA | 19 | 15 | NA |
| Barium | NA | NA | 54 J | 19 J | NA | 73 | 29 | NA |
| Cadmium | NA | NA | 1.4 J | 1.6 J | NA | 11 | 5.3 | NA |
| Chromium | NA | NA | ND (0.6) J | 6.1 J | NA | 36 | 13 | NA |
| Copper | NA | NA | 30 | 7.1 | NA | 65 | 45 | NA |
| Lead | NA | NA | 39 | 3.4 | NA | 31 | 29 | NA |
| Mercury | NA | NA | ND (0.1) J | ND (0.1) J | NA | ND (0.1) | ND (0.1) | NA |
| Selenium | NA | NA | 0.3 J | 0.1 J | NA | 0.6 | 0.6 | NA |
| Silver | NA | NA | ND (0.2) | ND (0.2) | NA | 0.7 J | ND (0.5) J | NA |
| Zinc | NA | NA | 64 J | 13 J | NA | 66 | 53 | NA |
| Cyanide (total) | NA | NA | NA | NA | NA | NA | NA | NA |
| ORGANIC (ug/kg) | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | |
| Acetone | ND (1000) | ND (3000) | NA | ND (100) | ND (100) | ND (100) | NA | ND (300) |
| Benzene | ND (100) | ND (300) | NA | ND (10) | ND (10) | ND (10) | NA | ND (30) |
| 2-Butanone | ND (1000) | ND (3000) | NA | ND (100) | ND (100) | ND (100) | NA | ND (300) |
| 1,1-Dichloroethane | ND (100) | ND (300) | NA | ND (10) | ND (10) | ND (10) | NA | ND (30) |
| 1,2-Dichloroethene (total) | ND (100) | ND (300) | NA | ND (10) | ND (10) | ND (10) | NA | ND (30) |
| Ethylbenzene | ND (100) | ND (300) | NA | ND (10) | ND (10) | ND (10) | NA | ND (30) |
| Methylene Chloride | 200 | ND (300) | NA | 10 | 20 | 20 | NA | ND (30) |
| Styrene | ND (100) | ND (300) | NA | ND (10) | ND (10) | ND (10) | NA | ND (30) |
| Toluene | ND (100) | ND (300) | NA | ND (10) | ND (10) | ND (10) | NA | ND (30) |
| 1,1,1-Trichloroethane | ND (100) | ND (300) | NA | ND (10) | ND (10) | ND (10) | NA | ND (30) |
| Trichloroethene | ND (100) | ND (300) | NA | ND (10) | ND (10) | ND (10) | NA | ND (30) |
| Xylene (total) | ND (400) | ND (600) | NA | ND (30) | ND (30) | ND (30) | NA | ND (100) |
| Polychlorinated Biphenyl (PCB) | | | | | | | | |
| Aroclor-1242 | NA | NA | ND (100) | ND (40) | NA | ND (40) | ND (60) | NA |
| Aroclor-1248 | NA | NA | ND (100) | ND (40) | NA | ND (40) | ND (60) | NA |
| Aroclor-1260 | NA | NA | ND (100) | ND (40) | NA | 130 | 110 | NA |
| Base Neutral Compounds | | | | | | | | |
| Acenaphthene | NA | NA | ND (600) | ND (200) | NA | 3000 | ND (200) | NA |
| Acenaphthylene | NA | NA | ND (600) | ND (200) | NA | ND (200) | ND (200) | NA |
| Anthracene | NA | NA | ND (600) | ND (200) | NA | 5600 | 400 | NA |
| Benzo(a)anthracene | NA | NA | ND (600) | ND (200) | NA | 12000 | 400 | NA |
| Benzo(b)fluoranthene | NA | NA | ND (600) | ND (200) | NA | 9500 | 300 | NA |
| Benzo(k)fluoranthene | NA | NA | ND (600) | ND (200) | NA | 10000 | 300 | NA |
| Benzo(a)pyrene | NA | NA | ND (600) | ND (200) | NA | 10000 | 300 | NA |
| Benzo(g,h,i)perylene | NA | NA | ND (600) | ND (200) | NA | 4700 | 200 | NA |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | NA | NA | ND (600) | ND (200) | NA | 12000 | 600 | NA |
| Dibenzo(a,h)anthracene | NA | NA | ND (600) | ND (200) | NA | 2600 | ND (200) | NA |
| Dibenzofuran | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | NA | NA | ND (600) | ND (200) | NA | 34000 | 900 | NA |
| Fluorene | NA | NA | 1600 | ND (200) | NA | 2500 | 1000 | NA |
| Ideno(1,2,3-cd)pyrene | NA | NA | ND (600) | ND (200) | NA | 5300 | ND (200) | NA |
| 2-Methylnaphthalene | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | NA | NA | ND (600) | ND (200) | NA | 200 | ND (200) | NA |
| Phenanthrene | NA | NA | 9000 | ND (200) | NA | 23000 | 600 | NA |
| Pyrene | NA | NA | ND (600) | ND (200) | NA | 26000 | 900 | NA |

Notes:
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( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.



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TABLE 5-13
Areas 15/16A, 16/17A and 17
Summary of Detected Parameters in Soil Samples
Industrial Brownfield, Bay City, Michigan

| Parameter | AREA 15/16A Sample (Depth) IBSB30-01 (2'-4') | IBSB30-02 (12'-14') | AREA 16/17A Sample (Depth) IBSB35-01 (4'-6') | IBSB36-01 (10'-12') | AREA 17 Sample (Depth) IBSB39-01 (6'-8') |
|---|---|---|---|---|---|
| INORGANIC (mg/kg) | | | | | |
| Arsenic | NA | 1.9 | 2.2 | 2.5 | 0.5 |
| Barium | NA | 17 | 25 | 51 | 6 |
| Cadmium | NA | 1.4 | 2.0 | 4.9 | ND (0.05) |
| Chromium | NA | 4 | 9 | 6 | 2 |
| Copper | NA | 6 | 11 | 74 | 2 |
| Lead | NA | 6 | 6 | 42 | ND (1) |
| Mercury | NA | ND (0.1) | ND (0.1) | 0.3 | ND (0.1) |
| Selenium | NA | 0.1 | ND (0.1) | 0.2 J | ND (0.1) J |
| Silver | NA | ND (0.5) J | ND (0.5) J | ND (0.5) | ND (0.5) |
| Zinc | NA | 24 | 17 | 120 | 5 |
| Cyanide (total) | NA | NA | NA | NA | NA |
| ORGANIC (ug/kg) | | | | | |
| Volatile Organic Compounds | | | | | |
| Acetone | ND (100) | ND (100) | ND (100) | 400 | 500 |
| Benzene | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| 2-Butanone | ND (100) | ND (100) | ND (100) | ND (100) | ND (100) |
| 1,1-Dichloroethane | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| Ethylbenzene | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| Methylene Chloride | ND (10) | ND (10) | ND (10) | 10 | 20 |
| Styrene | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| Toluene | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| 1,1,1-Trichloroethane | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| Trichloroethene | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| Xylene (total) | ND (30) | ND (30) | ND (30) | ND (30) | ND (30) |
| Polychlorinated Biphenyl (PCB) | | | | | |
| Aroclor-1242 | NA | ND (50) | ND (40) | ND (40) | NA |
| Aroclor-1248 | NA | ND (50) | ND (40) | ND (40) | NA |
| Aroclor-1260 | NA | ND (50) | ND (40) | ND (40) | NA |
| Base Neutral Compounds | | | | | |
| Acenaphthene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Acenaphthylene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Anthracene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Benzo(a)anthracene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Benzo(b)fluoranthene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Benzo(k)fluoranthene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Benzo(a)pyrene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Benzo(g,h,i)perylene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | NA | NA |
| Chrysene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Dibenzo(a,h)anthracene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Dibenzofuran | NA | NA | NA | NA | NA |
| Fluoranthene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Fluorene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Ideno(1,2,3-cd)pyrene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| 2-Methylnaphthalene | NA | NA | NA | NA | NA |
| Naphthalene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Phenanthrene | NA | ND (200) | ND (200) | ND (200) | ND (200) |
| Pyrene | NA | ND (200) | ND (200) | ND (200) | ND (200) |

Notes:
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NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.



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TABLE 5-14
Area 16
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) IBSB44-01 (10'-12') | IBSB44-02 (20'-22') | IBSB44-03 (12'-14') | IBSB44-04 (22'-24') |
|---|---|---|---|---|
| **INORGANIC (mg/kg)** | | | | |
| Arsenic | NA | NA | NA | 4.0 |
| Barium | NA | NA | NA | 37 |
| Cadmium | NA | NA | NA | 3.3 |
| Chromium | NA | NA | NA | 13 |
| Copper | NA | NA | NA | 15 |
| Lead | NA | NA | NA | 8 |
| Mercury | NA | NA | NA | ND (0.1) |
| Selenium | NA | NA | NA | 0.1 J |
| Silver | NA | NA | NA | 0.7 |
| Zinc | NA | NA | NA | 24 |
| Cyanide (total) | NA | NA | NA | NA |
| **ORGANIC (ug/kg)** | | | | |
| Volatile Organic Compounds | | | | |
| Acetone | ND (100) | ND (20000) | ND (100) | ND (100) |
| Benzene | 40 | 2000 | 100 | 5600 |
| 2-Butanone | ND (100) | ND (20000) | ND (100) | ND (100) |
| 1,1-Dichloroethane | ND (10) | ND (2000) | ND (10) | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) | ND (2000) | ND (10) | ND (10) |
| Ethylbenzene | 20 | ND (2000) | 20 | ND (10) |
| Methylene Chloride | ND (10) | ND (2000) | ND (10) | ND (10) |
| Styrene | ND (10) | ND (2000) | ND (10) | ND (10) |
| Toluene | ND (10) | 2000 | ND (10) | 20 |
| 1,1,1-Trichloroethane | ND (10) | ND (2000) | ND (10) | ND (10) |
| Trichloroethene | ND (10) | ND (2000) | ND (10) | ND (10) |
| Xylene (total) | 60 | 7000 | 60 | ND (30) |
| Polychlorinated Biphenyl (PCB) | | | | |
| Aroclor-1242 | NA | NA | NA | ND (40) |
| Aroclor-1248 | NA | NA | NA | ND (40) |
| Aroclor-1260 | NA | NA | NA | ND (40) |
| Base Neutral Compounds | | | | |
| Acenaphthene | NA | NA | ND (200) | ND (200) |
| Acenaphthylene | NA | NA | ND (200) | ND (200) |
| Anthracene | NA | NA | ND (200) | ND (200) |
| Benzo(a)anthracene | NA | NA | ND (200) | ND (200) |
| Benzo(b)fluoranthene | NA | NA | ND (200) | ND (200) |
| Benzo(k)fluoranthene | NA | NA | ND (200) | ND (200) |
| Benzo(a)pyrene | NA | NA | ND (200) | ND (200) |
| Benzo(g,h,i)perylene | NA | NA | ND (200) | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | NA |
| Chrysene | NA | NA | ND (200) | ND (200) |
| Dibenzo(a,h)anthracene | NA | NA | ND (200) | ND (200) |
| Dibenzofuran | NA | NA | NA | NA |
| Fluoranthene | NA | NA | 300 | ND (200) |
| Fluorene | NA | NA | ND (200) | ND (200) |
| Ideno(1,2,3-cd)pyrene | NA | NA | ND (200) | ND (200) |
| 2-Methylnaphthalene | NA | NA | NA | NA |
| Naphthalene | NA | NA | 1300 | 800 |
| Phenanthrene | NA | NA | 200 | ND (200) |
| Pyrene | NA | NA | 200 | ND (200) |

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J - Estimated value because spike recovery outside control limits.



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## Summary of Detected Parameters in Soil Samples
## Industrial Brownholst, Bay City, Michigan

| Parameter | Sample (Depth) CS-SB-07 (21-22) |
|---|---|
| **INORGANICS (mg/kg)** | |
| Arsenic | NA |
| Barium | NA |
| Cadmium | NA |
| Chromium | NA |
| Copper | NA |
| Lead | NA |
| Mercury | NA |
| Selenium | NA |
| Silver | NA |
| Zinc | NA |
| Cyanide (total) | NA |
| **ORGANICS (ug/kg)** | |
| Volatile Organic Compounds | |
| Acetone | ND (100) |
| Benzene | 14,000 |
| 2-Butanone | ND (100) |
| 1,1-Dichloroethane | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) |
| Ethylbenzene | 50 |
| Methylene Chloride | 30 |
| Styrene | 10 |
| Toluene | 4,300 |
| 1,1,1-Trichloroethane | ND (10) |
| Trichloroethene | ND (10) |
| Xylene (total) | 170 |
| Polychlorinated Biphenyl (PCB) | |
| Aroclor-1242 | NA |
| Aroclor-1248 | NA |
| Aroclor-1260 | NA |
| Base Neutral Compounds | |
| Acenaphthene | ND (200) |
| Acenaphthylene | ND (200) |
| Anthracene | ND (200) |
| Benzo(a)anthracene | ND (200) |
| Benzo(b)fluoranthene | ND (200) |
| Benzo(k)fluoranthene | ND (200) |
| Benzo(a)pyrene | ND (200) |
| Benzo(g,h,i)perylene | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA |
| Chrysene | ND (200) |
| Dibenzo(a,h)anthracene | ND (200) |
| Dibenzofuran | NA |
| Fluoranthene | ND (200) |
| Fluorene | ND (200) |
| Ideno(1,2,3-cd)pyrene | ND (200) |
| 2-Methylnaphthalene | NA |
| Naphthalene | ND (200) |
| Phenanthrene | ND (200) |
| Pyrene | ND (200) |

Notes:
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NA - Not analyzed.
( ) - Method detection limit.



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TABLE 5-14B
Area 18A
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) CS-SB-13 (3-7) | CS-SB-14 (5) | CS-SB-15 (5-7) | CS-SB-22 (8-9) | CS-SB-22 (9-11) | CS-SB-25 (5) |
|---|---|---|---|---|---|---|
| INORGANICS (mg/kg) | | | | | | |
| Arsenic | NA | NA | NA | NA | NA | NA |
| Barium | NA | NA | NA | NA | NA | NA |
| Cadmium | NA | NA | NA | NA | NA | NA |
| Chromium | NA | NA | NA | NA | NA | NA |
| Copper | NA | NA | NA | NA | NA | NA |
| Lead | NA | NA | NA | NA | NA | NA |
| Mercury | NA | NA | NA | NA | NA | NA |
| Selenium | NA | NA | NA | NA | NA | NA |
| Silver | NA | NA | NA | NA | NA | NA |
| Zinc | NA | NA | NA | NA | NA | NA |
| Cyanide (total) | ND (0.2) | 0.2 | NA | 6.2 | ND (0.2) | ND (0.2) |
| ORGANICS (ug/kg) | | | | | | |
| Volatile Organic Compounds | | | | | | |
| Acetone | ND (100) | ND (200) | ND (100) | ND (100) | ND (100) | ND (100) |
| Benzene | ND (10) | ND (20) | ND (10) | ND (10) | 110 | ND (10) |
| 2-Butanone | ND (100) | ND (200) | ND (100) | ND (100) | ND (100) | ND (100) |
| 1,1-Dichloroethane | ND (10) | ND (20) | ND (10) | ND (10) | ND (10) | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) | ND (20) | ND (10) | ND (10) | ND (10) | ND (10) |
| Ethylbenzene | ND (10) | ND (20) | ND (10) | 190 | 30 | ND (10) |
| Methylene Chloride | 10 | 40 | ND (10) | 20 | 10 | ND (10) |
| Styrene | ND (10) | ND (20) | ND (10) | ND (10) | ND (10) | 10 |
| Toluene | ND (10) | ND (20) | ND (10) | 10 | ND (10) | ND (10) |
| 1,1,1-Trichloroethane | ND (10) | ND (20) | ND (10) | ND (10) | ND (10) | ND (10) |
| Trichloroethene | ND (10) | ND (20) | ND (10) | ND (10) | ND (10) | ND (10) |
| Xylene (total) | ND (30) | ND (50) | ND (30) | 240 | 130 | 90 |
| Polychlorinated Biphenyl (PCB) | | | | | | |
| Aroclor-1242 | NA | NA | NA | ND (200) | ND (40) | ND (40) |
| Aroclor-1248 | NA | NA | NA | ND (200) | ND (40) | ND (40) |
| Aroclor-1260 | NA | NA | NA | ND (200) | ND (40) | ND (40) |
| Base Neutral Compounds | | | | | | |
| Acenaphthene | ND (200) | ND (300) | 1,900 | 1,200 | ND (200) | 700 |
| Acenaphthylene | ND (200) | ND (300) | 800 | 400 | ND (200) | 1,100 |
| Anthracene | ND (200) | ND (300) | 2,800 | 1,700 | ND (200) | 2,900 |
| Benzo(a)anthracene | ND (200) | 900 | 2,100 | 2,800 | ND (200) | 2,200 |
| Benzo(b)fluoranthene | ND (200) | 1,200 | 2,000 | 2,100 | ND (200) | 1,300 |
| Benzo(k)fluoranthene | ND (200) | ND (300) | 900 | 2,600 | ND (200) | 1,700 |
| Benzo(a)pyrene | ND (200) | 700 | 1,700 | 2,600 | ND (200) | 1,800 |
| Benzo(g,h,i)perylene | ND (200) | 900 | 700 | 1,300 | ND (200) | 600 |
| Bis(2-ethylhexyl)phthalate | ND (200) | ND (300) | 400 | ND (200) | 200 | ND (200) |
| Chrysene | ND (200) | 1,000 | 1,800 | 2,200 | ND (200) | 1,900 |
| Dibenzo(a,h)anthracene | ND (200) | 300 | ND (200) | 800 | ND (200) | 400 |
| Dibenzofuran | NA | NA | NA | NA | NA | NA |
| Fluoranthene | ND (200) | 1,100 | 4,700 | 4,400 | ND (200) | 6,100 |
| Fluorene | ND (200) | ND (300) | 2,700 | 2,100 | ND (200) | 2,600 |
| Ideno(1,2,3-cd)pyrene | ND (200) | 800 | 700 | 1,700 | ND (200) | 900 |
| 2-Methylnaphthalene | NA | NA | NA | NA | NA | NA |
| Naphthalene | ND (200) | 700 | 1,000 | 7,400 | 2,300 | 29,000 |
| Phenanthrene | ND (200) | 1,100 | 5,700 | 4,400 | ND (200) | 12,000 |
| Pyrene | ND (200) | 800 | 4,900 | 4,700 | ND (200) | 4,300 |

Notes:
( ) = Method detection limit.
NA = Not analyzed.
ND = Not detected at method detection limit.

Work Assignment No.: 55-5AED
OMI\M4500T1.WK3



Document Control No.: 4500-55-AHXB

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TABLE 5-15
Area 19
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) | | | | | | |
|---|---|---|---|---|---|---|---|
| | IBSB19-01 (2'-4') | IBSB19-02 (0'-6') | IBSB20-02 (0'-6') | IBSB23-01 (4'-6') | IBSB24-01 (4'-6') | IBHA12-01 (4'-4.5') | IBHA12-01D (4'-4.5') |
| **INORGANIC (mg/kg)** | | | | | | | |
| Arsenic | 0.7 | 2.6 | 1.3 | 2.1 J | 4.1 J | NA | NA |
| Barium | 30 | 40 | 26 | 26 J | 30 J | NA | NA |
| Cadmium | 3.3 J | 3.6 J | 2.9 J | 2.5 J | 2.4 J | NA | NA |
| Chromium | 13 J | 14 J | 11 J | 11 J | 11 J | NA | NA |
| Copper | 12 J | 13 J | 14 J | 12 | 11 | NA | NA |
| Lead | 3.3 J | 4.9 J | 9.1 J | 4.4 | 6.0 | NA | NA |
| Mercury | ND (0.05) | ND (0.05) | ND (0.06) | ND (0.1) J | ND (0.1) J | NA | NA |
| Selenium | ND (0.1) J | ND (0.1) J | ND (0.1) J | 0.4 J | 0.2 J | NA | NA |
| Silver | ND (0.5) J | ND (0.5) J | 0.6 J | 0.3 | 0.4 | NA | NA |
| Zinc | 17 J | 23 J | 21 J | 19 J | 17 J | NA | NA |
| Cyanide (total) | NA | NA | NA | ND (0.1) J | ND (0.1) J | NA | NA |
| **ORGANIC (ug/kg)** | | | | | | | |
| Volatile Organic Compounds | | | | | | | |
| Acetone | ND (100) | 200 | NA | ND (100) | ND (100) | ND (100) | ND (100) |
| Benzene | ND (10) | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| 2-Butanone | ND (100) | ND (100) | NA | ND (100) | ND (100) | ND (100) | ND (100) |
| 1,1-Dichloroethane | ND (10) | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| Ethylbenzene | ND (10) | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| Methylene Chloride | 10 | 10 | NA | 20 | ND (10) | 10 | 20 |
| Styrene | ND (10) | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| Toluene | ND (10) | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| 1,1,1-Trichloroethane | ND (10) | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| Trichloroethene | ND (10) | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| Xylene (total) | ND (10) | ND (10) | NA | ND (30) | ND (30) | ND (30) | ND (30) |
| Polychlorinated Biphenyl (PCB) | | | | | | | |
| Aroclor-1242 | ND (40) | ND (40) | ND (40) | NA | NA | NA | NA |
| Aroclor-1248 | ND (40) | ND (40) | ND (40) | NA | NA | NA | NA |
| Aroclor-1260 | ND (40) | ND (40) | ND (40) | NA | NA | NA | NA |
| Base Neutral Compounds | | | | | | | |
| Acenaphthene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Acenaphthylene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Anthracene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Benzo(a)anthracene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Benzo(b)fluoranthene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Benzo(k)fluoranthene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Benzo(a)pyrene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Benzo(g,h,i)perylene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | ND (200) | ND (200) | NA | NA |
| Chrysene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Dibenzo(a,h)anthracene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Dibenzofuran | NA | NA | NA | ND (200) | ND (200) | NA | NA |
| Fluoranthene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Fluorene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| 2-Methylnaphthalene | NA | NA | NA | ND (200) | ND (200) | NA | NA |
| Naphthalene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Phenanthrene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |
| Pyrene | ND (200) | ND (200) | ND (200) | ND (200) | ND (200) | NA | NA |

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

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TABLE 5-15 (Continued)
Area 19
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | SAMPLE (DEPTH) | | | | | | |
|---|---|---|---|---|---|---|---|
| | IBHA12-02 (1.5'-4.5') | IBHA13-01 (1.5'-2') | IBHA13-02 (1.5'-4.5') | IBHA14-01 (3'-3.5') | IBHA14-02 (1.5'-4.5') | IBHA15-01 (2.5'-3') | IBHA15-02 (1.5'-4.5') |
| **INORGANIC (mg/kg)** | | | | | | | |
| Arsenic | 2.3 | NA | 1.2 | NA | 1.3 | NA | 2.1 |
| Barium | 29 | NA | 31 | NA | 26 | NA | 78 |
| Cadmium | 3.6 J | NA | 3.5 J | NA | 3.3 J | NA | 5.3 J |
| Chromium | 13 J | NA | 13 J | NA | 12 J | NA | 17 J |
| Copper | 15 J | NA | 13 J | NA | 12 J | NA | 180 J |
| Lead | 4.8 J | NA | 4.2 J | NA | 4.0 J | NA | 96 J |
| Mercury | ND (0.05) | NA | ND (0.05) | NA | ND (0.05) | NA | ND (0.05) |
| Selenium | 0.1 J | NA | ND (0.1) J | NA | ND (0.1) J | NA | ND (0.1) J |
| Silver | 1.5 J | NA | 0.9 J | NA | 0.6 J | NA | 0.7 J |
| Zinc | 21 J | NA | 20 J | NA | 18 J | NA | 150 J |
| Cyanide (total) | ND (0.1) | NA | NA | NA | NA | NA | NA |
| **ORGANIC (ug/kg)** | | | | | | | |
| Volatile Organic Compounds | | | | | | | |
| Acetone | NA | ND (100) | NA | 600 | NA | ND (100) | NA |
| Benzene | NA | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| 2-Butanone | NA | ND (100) | NA | ND (100) | NA | ND (100) | NA |
| 1,1-Dichloroethane | NA | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| 1,2-Dichloroethene (total) | NA | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Ethylbenzene | NA | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Methylene Chloride | NA | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Styrene | NA | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Toluene | NA | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| 1,1,1-Trichloroethane | NA | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Trichloroethene | NA | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Xylene (total) | NA | ND (30) | NA | ND (30) | NA | ND (30) | NA |
| Polychlorinated Biphenyl (PCB) | | | | | | | |
| Aroclor-1242 | ND (40) | NA | ND (40) | NA | ND (40) | NA | ND (40) |
| Aroclor-1248 | ND (40) | NA | ND (40) | NA | ND (40) | NA | ND (40) |
| Aroclor-1260 | ND (40) | NA | ND (40) | NA | ND (40) | NA | 80 |
| Base Neutral Compounds | | | | | | | |
| Acenaphthene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Acenaphthylene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Anthracene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Benzo(a)anthracene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Benzo(b)fluoranthene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Benzo(k)fluoranthene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Benzo(a)pyrene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Benzo(g,h,i)perylene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Dibenzo(a,h)anthracene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Dibenzofuran | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Fluorene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Ideno(1,2,3-cd)pyrene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| 2-Methylnaphthalene | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Phenanthrene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Pyrene | ND (200) | NA | ND (200) | NA | ND (200) | NA | ND (200) |

Notes
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

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TABLE 5-16
Area 20
Summary of Detected Parameters in Soil Samples
Industrial Brownfield, Bay City, Michigan

| Parameter | Sample (Depth) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | IBSB21-01 (0'-2') | IBSB21-02 (2'-4') | IBSB21-02D (2'-4') | IBSB22-01 (4'-6') | IBCC01 (concrete chip) | IBCC02 (concrete chip) | IBCC02D (concrete chip) | IBCC03 (concrete chip) |
| INORGANIC (mg/kg) | | | | | | | | |
| Arsenic | 2.1 J | 2.3 J | NA | 3.1 J | NA | NA | NA | NA |
| Barium | 33 J | 29 J | NA | 26 J | NA | NA | NA | NA |
| Cadmium | 3.2 J | 2.9 J | NA | 2.6 J | NA | NA | NA | NA |
| Chromium | 8.6 J | 11 J | NA | 11 J | NA | NA | NA | NA |
| Copper | 15 | 12 | NA | 13 | NA | NA | NA | NA |
| Lead | 15 | 6.5 | NA | 6.3 | NA | NA | NA | NA |
| Mercury | ND (0.1) J | ND (0.1) J | NA | ND (0.1) J | NA | NA | NA | NA |
| Selenium | 0.3 J | 0.1 J | NA | 0.1 J | NA | NA | NA | NA |
| Silver | ND (0.2) | 0.5 | NA | 0.4 | NA | NA | NA | NA |
| Zinc | 27 J | 23 J | NA | 21 J | NA | NA | NA | NA |
| Cyanide (total) | ND (0.1) J | ND (0.1) J | ND (0.1) J | ND (0.1) J | 1.8 J | ND (0.1) J | 0.1 J | 0.5 J |
| ORGANIC (ug/kg) | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | |
| Acetone | ND (100) | ND (100) | NA | ND (100) | NA | NA | NA | NA |
| Benzene | ND (10) | ND (10) | NA | ND (10) | NA | NA | NA | NA |
| 2-Butanone | ND (100) | ND (100) | NA | ND (100) | NA | NA | NA | NA |
| 1,1-Dichloroethane | ND (10) | ND (10) | NA | ND (10) | NA | NA | NA | NA |
| 1,2-Dichloroethene (total) | ND (10) | ND (10) | NA | ND (10) | NA | NA | NA | NA |
| Ethylbenzene | ND (10) | ND (10) | NA | ND (10) | NA | NA | NA | NA |
| Methylene Chloride | 10 | 10 | NA | ND (10) | NA | NA | NA | NA |
| Styrene | ND (10) | ND (10) | NA | ND (10) | NA | NA | NA | NA |
| Toluene | ND (10) | ND (10) | NA | ND (10) | NA | NA | NA | NA |
| 1,1,1-Trichloroethane | ND (10) | ND (10) | NA | ND (10) | NA | NA | NA | NA |
| Trichloroethene | ND (10) | ND (10) | NA | ND (10) | NA | NA | NA | NA |
| Xylene (total) | ND (30) | ND (30) | NA | ND (30) | NA | NA | NA | NA |
| Polychlorinated Biphenyl (PCB) | | | | | | | | |
| Aroclor-1242 | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor-1248 | NA | NA | NA | NA | NA | NA | NA | NA |
| Aroclor-1260 | NA | NA | NA | NA | NA | NA | NA | NA |
| Base Neutral Compounds | | | | | | | | |
| Acenaphthene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Acenaphthylene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Anthracene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Benzo(a)anthracene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Benzo(b)fluoranthene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Benzo(k)fluoranthene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Benzo(a)pyrene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Benzo(g,h,i)perylene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Bis(2-ethylhexyl)phthalate | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Chrysene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Dibenzo(a,h)anthracene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Dibenzofuran | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Fluoranthene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Fluorene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| 2-Methylnaphthalene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Naphthalene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Phenanthrene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |
| Pyrene | ND (200) | ND (200) | NA | ND (200) | NA | NA | NA | NA |

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

Work Assignment No. 55-5AEB
45005 ST4.WK3



Document Control No. 4500-55-AHXB

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TABLE 5-17
Areas 22 and 23 (Inside Building)
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | AREA 22 Sample (Depth) IBSB18-01 (2'-4') | AREA 23 Sample (Depth) IBSB48-01 (0'-1') | IBSB48-02 (2'-4') | IBSB49-01 (0'-2') | IBSB49-02 (6'-8') | IBSB49-02D (6'-8') |
|---|---|---|---|---|---|---|
| INORGANIC (mg/kg) | | | | | | |
| Arsenic | 1.2 | NA | NA | NA | NA | NA |
| Barium | 31 | NA | NA | NA | NA | NA |
| Cadmium | 3.2 J | NA | NA | NA | NA | NA |
| Chromium | 12 J | NA | NA | NA | NA | NA |
| Copper | 11 J | NA | NA | NA | NA | NA |
| Lead | 3.0 J | NA | NA | NA | NA | NA |
| Mercury | ND (0.05) | NA | NA | NA | NA | NA |
| Selenium | ND (0.1) J | NA | NA | NA | NA | NA |
| Silver | ND (0.5) J | NA | NA | NA | NA | NA |
| Zinc | 16 J | NA | NA | NA | NA | NA |
| Cyanide (total) | NA | NA | NA | NA | NA | NA |
| ORGANIC (ug/kg) | | | | | | |
| Volatile Organic Compounds | | | | | | |
| Acetone | 200 | NA | ND (100) | ND (100) | ND (100) | ND (100) |
| Benzene | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| 2-Butanone | ND (100) | NA | ND (100) | ND (100) | ND (100) | ND (100) |
| 1,1-Dichloroethane | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| 1,2-Dichloroethene (total) | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| Ethylbenzene | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| Methylene Chloride | ND (10) | NA | 30 | 10 | ND (10) | ND (10) |
| Styrene | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| Toluene | ND (10) | NA | ND (10) | ND (10) | ND (10) | ND (10) |
| 1,1,1-Trichloroethane | ND (10) | NA | 30 | ND (10) | ND (10) | ND (10) |
| Trichloroethene | ND (10) | NA | 10 | ND (10) | ND (10) | ND (10) |
| Xylene (total) | ND (30) | NA | ND (30) | ND (30) | ND (30) | ND (30) |
| Polychlorinated Biphenyl (PCB) | | | | | | |
| Aroclor-1242 | NA | ND (300) | ND (40) | ND (40) | ND (40) | NA |
| Aroclor-1248 | NA | ND (300) | ND (40) | ND (40) | ND (40) | NA |
| Aroclor-1260 | NA | ND (300) | ND (40) | ND (40) | ND (40) | NA |
| Base Neutral Compounds | | | | | | |
| Acenaphthene | ND (200) | ND (300) | ND (200) | ND (200) | ND (200) | NA |
| Acenaphthylene | ND (200) | ND (300) | ND (200) | ND (200) | ND (200) | NA |
| Anthracene | ND (200) | ND (300) | ND (200) | ND (200) | ND (200) | NA |
| Benzo(a)anthracene | ND (200) | ND (300) | ND (200) | 300 | ND (200) | NA |
| Benzo(b)fluoranthene | ND (200) | ND (300) | ND (200) | 800 | ND (200) | NA |
| Benzo(k)fluoranthene | ND (200) | ND (300) | ND (200) | 600 | ND (200) | NA |
| Benzo(a)pyrene | ND (200) | ND (300) | ND (200) | 600 | ND (200) | NA |
| Benzo(g,h,i)perylene | ND (200) | ND (300) | ND (200) | ND (200) | ND (200) | NA |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | ND (200) | ND (200) | NA |
| Chrysene | ND (200) | 300 | ND (200) | 300 | ND (200) | NA |
| Dibenzo(a,h)anthracene | ND (200) | ND (300) | ND (200) | ND (200) | ND (200) | NA |
| Dibenzofuran | NA | NA | NA | ND (200) | ND (200) | NA |
| Fluoranthene | ND (200) | ND (300) | ND (200) | 700 | ND (200) | NA |
| Fluorene | ND (200) | ND (300) | ND (200) | ND (200) | ND (200) | NA |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (300) | ND (200) | ND (200) | ND (200) | NA |
| 2-Methylnaphthalene | NA | NA | NA | ND (200) | ND (200) | NA |
| Naphthalene | ND (200) | ND (300) | ND (200) | ND (200) | ND (200) | NA |
| Phenanthrene | ND (200) | 1600 | ND (200) | 300 | ND (200) | NA |
| Pyrene | ND (200) | 400 | ND (200) | 700 | ND (200) | NA |

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.



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TABLE 5-18
Area 25
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) IBHA06-01 (1.5'-2') | IBHA06-02 (1.5'-4.5') | IBHA07-01 (1.5'-2') | IBHA07-02 (3'-3.5'/4'-4.5') | IBHA06-01 (2.5'-3') | IBHA06-02 (1.5'-2'/2.5'-3') |
|---|---|---|---|---|---|---|
| INORGANIC (mg/kg) | | | | | | |
| Arsenic | NA | 2.5 | NA | 1.9 | NA | 9.6 |
| Barium | NA | 30 | NA | 55 | NA | 65 |
| Cadmium | NA | 2.7 J | NA | 6.0 J | NA | 14 J |
| Chromium | NA | 7.5 J | NA | 13 J | NA | 18 J |
| Copper | NA | 26 J | NA | 70 J | NA | 70 J |
| Lead | NA | 33 J | NA | 66 J | NA | 130 J |
| Mercury | NA | 0.10 | NA | 0.13 | NA | 0.10 |
| Selenium | NA | 0.1 J | NA | 0.1 J | NA | 0.4 J |
| Silver | NA | ND (0.5) J | NA | ND (0.5) J | NA | ND (0.5) J |
| Zinc | NA | 46 J | NA | 66 J | NA | 99 J |
| Cyanide (total) | NA | NA J | NA | NA | NA | NA |
| ORGANIC (ug/kg) | | | | | | |
| Volatile Organic Compounds | | | | | | |
| Acetone | 300 | NA | 200 | NA | ND (100) | NA |
| Benzene | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| 2-Butanone | ND (100) | NA | ND (100) | NA | ND (100) | NA |
| 1,1-Dichloroethane | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| 1,2-Dichloroethene (total) | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Ethylbenzene | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Methylene Chloride | 20 | NA | 10 | NA | ND (10) | NA |
| Styrene | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Toluene | ND (10) | NA | ND (10) | NA | 30 | NA |
| 1,1,1-Trichloroethane | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Trichloroethene | ND (10) | NA | ND (10) | NA | ND (10) | NA |
| Xylene (total) | ND (30) | NA | ND (30) | NA | ND (30) | NA |
| Polychlorinated Biphenyl (PCB) | | | | | | |
| Aroclor-1242 | NA | ND (40) | NA | ND (40) | NA | ND (40) |
| Aroclor-1248 | NA | ND (40) | NA | ND (40) | NA | ND (40) |
| Aroclor-1260 | NA | ND (40) | NA | ND (40) | NA | ND (40) |
| Base Neutral Compounds | | | | | | |
| Acenaphthene | NA | 300 | NA | ND (200) | NA | ND (200) |
| Acenaphthylene | NA | ND (200) | NA | ND (200) | NA | 200 |
| Anthracene | NA | 600 | NA | 300 | NA | 400 |
| Benzo(a)anthracene | NA | 3100 | NA | 1100 | NA | 1300 |
| Benzo(b)fluoranthene | NA | 3400 | NA | 900 | NA | 1000 |
| Benzo(k)fluoranthene | NA | 2100 | NA | 900 | NA | 1000 |
| Benzo(a)pyrene | NA | 2300 | NA | 800 | NA | 600 |
| Benzo(g,h,i)perylene | NA | 500 | NA | 300 | NA | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Chrysene | NA | 3100 | NA | 1100 | NA | 1300 |
| Dibenzo(a,h)anthracene | NA | 900 | NA | ND (200) | NA | ND (200) |
| Dibenzofuran | NA | 200 | NA | ND (200) | NA | ND (200) |
| Fluoranthene | NA | 4700 | NA | 2100 | NA | 2300 |
| Fluorene | NA | 300 | NA | ND (200) | NA | 200 |
| Ideno(1,2,3-cd)pyrene | NA | 1600 | NA | 500 | NA | 400 |
| 2-Methylnaphthalene | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Naphthalene | NA | ND (200) | NA | ND (200) | NA | ND (200) |
| Phenanthrene | NA | 3300 | NA | 1500 | NA | 1700 |
| Pyrene | NA | 3700 | NA | 1600 | NA | 1500 |

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.



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TABLE 5-19
Area 25A
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) IBSB40-01 (4'-6') | IBSB41-01 (6'-8') | IBSB42-01 (6'-8') | IBHA09-01 (3'-3.5') | IBHA09-02 (1.5'-4.5') |
|---|---|---|---|---|---|
| INORGANIC (mg/kg) | | | | | |
| Arsenic | NA | NA | NA | NA | 2.5 |
| Barium | NA | NA | NA | NA | 32 |
| Cadmium | NA | NA | NA | NA | 5.2 J |
| Chromium | NA | NA | NA | NA | 9.9 J |
| Copper | NA | NA | NA | NA | 17 J |
| Lead | NA | NA | NA | NA | 16 J |
| Mercury | NA | NA | NA | NA | 0.07 |
| Selenium | NA | NA | NA | NA | 0.1 J |
| Silver | NA | NA | NA | NA | ND (0.5) J |
| Zinc | NA | NA | NA | NA | 37 J |
| Cyanide (total) | NA | NA | NA | NA | NA |
| ORGANIC (ug/kg) | | | | | |
| Volatile Organic Compounds | | | | | |
| Acetone | ND (100) | 200 | 2300 | ND (100) | NA |
| Benzene | ND (10) | ND (10) | ND (10) | ND (10) | NA |
| 2-Butanone | ND (100) | ND (100) | ND (100) | ND (100) | NA |
| 1,1-Dichloroethane | ND (10) | ND (10) | ND (10) | ND (10) | NA |
| 1,2-Dichloroethene (total) | ND (10) | ND (10) | ND (10) | ND (10) | NA |
| Ethylbenzene | ND (10) | ND (10) | ND (10) | ND (10) | NA |
| Methylene Chloride | ND (10) | ND (10) | ND (10) | ND (10) | NA |
| Styrene | ND (10) | ND (10) | ND (10) | ND (10) | NA |
| Toluene | ND (10) | ND (10) | ND (10) | ND (10) | NA |
| 1,1,1-Trichloroethane | ND (10) | ND (10) | ND (10) | ND (10) | NA |
| Trichloroethene | ND (10) | ND (10) | ND (10) | ND (10) | NA |
| Xylene (total) | ND (30) | ND (30) | ND (30) | ND (30) | NA |
| Polychlorinated Biphenyl (PCB) | | | | | |
| Aroclor-1242 | NA | NA | NA | NA | ND (40) |
| Aroclor-1248 | NA | NA | NA | NA | ND (40) |
| Aroclor-1260 | NA | NA | NA | NA | ND (40) |
| Base Neutral Compounds | | | | | |
| Acenaphthene | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Acenaphthylene | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Anthracene | ND (200) | ND (200) | ND (200) | NA | 200 |
| Benzo(a)anthracene | ND (200) | ND (200) | ND (200) | NA | 800 |
| Benzo(b)fluoranthene | ND (200) | ND (200) | ND (200) | NA | 400 |
| Benzo(k)fluoranthene | ND (200) | ND (200) | ND (200) | NA | 600 |
| Benzo(a)pyrene | ND (200) | ND (200) | ND (200) | NA | 500 |
| Benzo(g,h,i)perylene | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Bis(2-ethylhexyl)phthalate | NA | NA | NA | NA | ND (200) |
| Chrysene | ND (200) | ND (200) | ND (200) | NA | 700 |
| Dibenzo(a,h)anthracene | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Dibenzofuran | NA | NA | NA | NA | ND (200) |
| Fluoranthene | ND (200) | ND (200) | ND (200) | NA | 1300 |
| Fluorene | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Ideno(1,2,3-cd)pyrene | ND (200) | ND (200) | ND (200) | NA | 300 |
| 2-Methylnaphthalene | NA | NA | NA | NA | 300 |
| Naphthalene | ND (200) | ND (200) | ND (200) | NA | ND (200) |
| Phenanthrene | ND (200) | ND (200) | ND (200) | NA | 1000 |
| Pyrene | ND (200) | ND (200) | ND (200) | NA | 1100 |

Notes
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NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.



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## Summary of Detected Parameters in Soil Samples
## Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) CS-HA-09 (0.5-1) | CS-HA-10 (0.5-1) |
|---|---|---|
| **INORGANICS (mg/kg)** | | |
| Arsenic | NA | NA |
| Barium | NA | NA |
| Cadmium | NA | NA |
| Chromium | NA | NA |
| Copper | NA | NA |
| Lead | NA | NA |
| Mercury | NA | NA |
| Selenium | NA | NA |
| Silver | NA | NA |
| Zinc | NA | NA |
| Cyanide (total) | NA | NA |
| **ORGANICS (ug/kg)** | | |
| Acetone | NA | NA |
| Benzene | NA | NA |
| 2-Butanone | NA | NA |
| 1,1-Dichloroethane | NA | NA |
| 1,2-Dichloroethene (total) | NA | NA |
| Ethylbenzene | NA | NA |
| Methylene Chloride | NA | NA |
| Styrene | NA | NA |
| Toluene | NA | NA |
| 1,1,1-Trichloroethane | NA | NA |
| Trichloroethene | NA | NA |
| Xylene (total) | NA | NA |
| **Polychlorinated Biphenyl (PCB)** | | |
| Aroclor-1242 | ND (200) | ND (40) |
| Aroclor-1248 | ND (200) | ND (40) |
| Aroclor-1260 | ND (200) | ND (40) |
| **Base Neutral Compounds** | | |
| Acenaphthene | NA | NA |
| Acenaphthylene | NA | NA |
| Anthracene | NA | NA |
| Benzo(a)anthracene | NA | NA |
| Benzo(b)fluoranthene | NA | NA |
| Benzo(k)fluoranthene | NA | NA |
| Benzo(a)pyrene | NA | NA |
| Benzo(g,h,i)perylene | NA | NA |
| Bis(2-ethylhexyl)phthalate | NA | NA |
| Chrysene | NA | NA |
| Dibenzo(a,h)anthracene | NA | NA |
| Dibenzofuran | NA | NA |
| Fluoranthene | NA | NA |
| Fluorene | NA | NA |
| Ideno(1,2,3-cd)pyrene | NA | NA |
| 2-Methylnaphthalene | NA | NA |
| Naphthalene | NA | NA |
| Phenanthrene | NA | NA |
| Pyrene | NA | NA |

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.

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## TABLE 5-20
## TCLP/EP Toxicity Analytical Results
## Industrial Brownhoist, Bay City, Michigan

| Parameter | Sample (Depth) CS-SB-01 (2-10') | CS-SB-02 (10-16') | CS-SB-03 (10-14') | CS-SB-05 (8-14') | CS-HA-12 (1.5-2') |
|---|---|---|---|---|---|
| **TCLP (mg/L)** | | | | | |
| Arsenic | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) |
| Barium | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| Cadmium | ND (0.10) | ND (0.10) | ND (0.10) | ND (0.10) | ND (0.10) |
| Chromium | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) |
| Copper | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| Lead | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) |
| Mercury | ND (0.020) | ND (0.020) | ND (0.020) | ND (0.020) | ND (0.020) |
| Selenium | ND (0.10) | ND (0.10) | ND (0.10) | ND (0.10) | ND (0.10) |
| Silver | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) |
| Zinc | ND (50) | ND (50) | ND (50) | ND (50) | ND (50) |
| **EP Toxicity (mg/L)** | | | | | |
| Arsenic | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) |
| Barium | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| Cadmium | ND (0.10) | ND (0.10) | ND (0.10) | ND (0.10) | ND (0.10) |
| Chromium | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) |
| Copper | ND (10) | ND (10) | ND (10) | ND (10) | ND (10) |
| Lead | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) |
| Mercury | ND (0.020) | ND (0.020) | ND (0.020) | ND (0.020) | ND (0.020) |
| Selenium | ND (0.10) | ND (0.10) | ND (0.10) | ND (0.10) | ND (0.10) |
| Silver | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) | ND (0.50) |
| Zinc | ND (50) | ND (50) | ND (50) | ND (50) | ND (50) |

Notes:
ND - Not detected at method detection limit.
( ) - Method detection limit.



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TABLE 5-21
Summary of Detected Radiation Parameters – Industrial Brownhoist
CERT Site, Bay City, Michigan
(all results in pCi/g unless otherwise indicated)

| Sample Location<br>Sample Depth (Inches) | CSHA-06<br>6-18 | CSHA-06<br>6-18 | CSHA-06<br>6-18 |
|---|---|---|---|
| Parameter | | | |
| Uranium Natural Total (UNAT) | 0.002 mg/gm | 0.014 mg/gm | 0.003 mg/gm |
| Gross Alpha, Total | ND | 1.9 | 46.6 |
| Gross Alpha, Total, LLD | 10.9 | 10.7 | 9.9 |
| Gross Beta, Total | ND | 14.1 | 21.8 |
| Gross Beta, Total, LLD | 8.4 | 8.5 | 8.3 |
| Gross Gamma, Total (12.8-1947 KeV) | 9.3 | 15.0 | 13.7 |
| Radium 226, Total | 2.3 | 9.2 | 2.2 |
| Radium, 226, Total, LLD | 0.5 | 0.5 | 0.5 |
| Radium, 228, Total | 1.5 | 6.2 | 3.6 |
| Radium, 228, Total, LLD | 2.8 | 2.8 | 2.8 |
| Thorium, 230, Total | 2.0 | 6.8 | 2.6 |
| Thorium, 230, Total, LLD | 0.2 | 0.1 | 0.1 |
| Thorium, 232, Total | 1.0 | 4.7 | 0.7 |
| Thorium, 232, Total, LLD | 0.2 | 0.1 | 0.1 |
| Uranium, 234, Total | 1.7 | 4.7 | 1.1 |
| Uranium, 234, Total, LLD | 0.1 | 0.2 | 0.1 |
| Uranium, 235, Total | 0.1 | 0.2 | ND |
| Uranium, 235, Total, LLD | 0.1 | 0.1 | 0.1 |
| Uranium, 238, Total | 1.4 | 4.5 | 1.2 |
| Uranium, 238, Total, LLD | 0.1 | 0.1 | 0.2 |
| Thorium, 228, Total | 0.9 | 4.8 | 0.3 |
| Thorium, 228, Total, LLD | 0.2 | 0.2 | 0.3 |

[1] – All samples were analyzed by Core Laboratories, Casper, Wyoming.
ND – Not detected.



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TABLE 5-22
SUMMARY OF DETECTED AROCLORS – PCB SAMPLING
INDUSTRIAL BROWNHOIST, BAY CITY, MICHIGAN
RESULTS IN MG/KG UNLESS OTHERWISE INDICATED

| SAMPLE LOCATION | MATRIX | PCB AROCLOR-1248 | AROCLOR-1254 | AROCLOR-1260 |
|---|---|---|---|---|
| IB-PH-PCB-1 | OIL | ND (3)J | ND (3)J | ND (3)J |
| IB-PH-PCB-2 | OIL | ND (3)J | ND (3)J | ND (3)J |
| IB-PH-PCB-3 | SOLID | 19 J | 19 J | 19 J |
| IB-PH-PCB-4 | WIPE | 6.4 ug/100 sq cm | ND (0.5ug/100 sq cm) | 2.1 ug/100 sq cm |
| IB-PH-PCB-5 | WIPE | 2.0 ug/100 sq cm | ND (0.5ug/100 sq cm) | ND (0.5ug/100 sq cm) |
| IB-PH-PCB-6 | WIPE | 2.7 ug/100 sq cm | ND (0.5ug/100 sq cm) | ND (0.5ug/100 sq cm) |
| IB-42-PCB-7 | SOLID | ND (10)J | ND (10)J | ND (10)J |
| IB-42-PCB-8 | WIPE | ND (0.5ug/100 sq cm) | ND (0.5ug/100 sq cm) | ND (0.5ug/100 sq cm) |

ND – Not detected at method detection limit.
( ) – Method detection limit.
PH – Powerhouse.
42 – Building 42.
J – Estimated value because surrogate recovery outside control limits.



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TABLE 5-34
**Summary of Detected Parameters in Groundwater Samples**
**Industrial Brownhoist, Bay City, Michigan**

| Parameter | MW-01 | MW-01D | MW-02 | MW-03 | MW-04 | MW-05 | MW-06 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11 | MW-12 | MW-13 | MW-14 | FB-01 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals (mg/L)** | | | | | | | | | | | | | | | | |
| Arsenic (0.001) | 0.007 | 0.006 | 0.013 | 0.008 | 0.015 | 0.008 | 0.030 | 0.005 | 0.008 | 0.003 | 0.005 | 0.011 | 0.005 | 0.005 | 0.011 | .001 |
| Barium (0.2) | ND | 0.2 | ND | ND | ND | ND | 0.2 | ND | 0.2 | ND | ND | 0.2 | ND | ND | 0.4 | ND |
| Cadmium (0.0002) | ND | ND | ND | ND | ND | 0.006 | ND | ND | ND | ND | ND | ND | ND | ND | 0.40 | ND |
| Chromium (0.05) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.42 | ND |
| Lead (0.003) | ND | 0.026 | 0.013 | ND | ND | 0.017 | 0.018 | 0.010 | 0.010 | ND | 0.017 | 0.010 | ND | ND | 0.44 | ND |
| Selenium (0.001) | ND | ND | 0.004 J | ND | ND J | ND | ND | ND | ND | ND | ND | 0.003 | ND | ND | ND | ND |
| Silver (0.0005) | 0.0006 J | 0.003 | ND J | ND J | ND J | ND | ND | ND | ND | ND J | ND | ND | ND J | ND J | 0.46 | ND J |
| Zinc (0.02) | ND | 0.03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.03 | ND |
| **Cyanide (mg/L) (0.01)** | ND | ND | 0.01 | ND | 0.01 | ND | ND | 0.48 | 0.02 | ND | ND | 0.03 | ND | ND | 0.55 | ND |
| **BNA (ug/L)** | | | | | | | | | | | | | | | | |
| Fluoranthene (5) | ND | ND | ND | ND | 10 | ND | ND | ND | 62 | ND | ND | ND | ND | ND | ND | ND |
| Naphthalene (5) | ND | ND | ND | ND | 11 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Phenanthrene (5) | ND | ND | ND | ND | 13 | ND | ND | ND | 36 | ND | 21 | ND | ND | ND | ND | ND |
| Pyrene (5) | ND | ND | ND | ND | 10 | ND | ND | ND | 62 | ND | ND | ND | ND | ND | ND | ND |
| Anthracene (5) | ND | ND | ND | ND | ND | ND | ND | ND | 8 | ND | ND | ND | ND | ND | ND | ND |
| Benzo(a)anthracene (5) | ND | ND | ND | ND | ND | ND | ND | ND | 31 | ND | ND | ND | ND | ND | ND | ND |
| Benzo(b)fluoranthene (5) | ND | ND | ND | ND | ND | ND | ND | ND | 18 | ND | ND | ND | ND | ND | ND | ND |
| Benzo(k)fluoranthene (5) | ND | ND | ND | ND | ND | ND | ND | ND | 26 | ND | ND | ND | ND | ND | ND | ND |
| Benzo(a)pyrene (5) | ND | ND | ND | ND | ND | ND | ND | ND | 72 | ND | ND | ND | ND | ND | ND | ND |
| Chrysene (5) | ND | ND | ND | ND | 5 | ND | ND | ND | 37 | ND | ND | ND | ND | ND | ND | ND |
| Bis(2-chloroisopropyl)ether (5) | ND | ND | ND | ND | ND | ND | ND | 11 | ND | ND | ND | ND | ND | ND | ND | ND |
| Acenaphthene (5) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 6 | ND | ND | ND | ND |
| Fluorene (5) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 6 | ND | ND | ND | ND | ND |
| **PCB (ug/L) (0.1)** | ND J | ND J | ND (1) J | ND | ND (1) J | ND J | ND J | ND (1) J | ND J | ND J | ND J | ND (1) J | ND J | ND J | ND J | ND J |
| **VOA (ug/L)** | | | | | | | | | | | | | | | | |
| Methylene Chloride (2) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.9 |
| Dichlorodifluoromethane (1) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2.7 |
| 1,1,1-Trichloroethane (0.5) | 0.6 | ND | ND | 0.8 | ND | ND | ND | 4.0 | ND | ND | ND | ND | ND | ND | 3.7 | ND |
| 1,2-Dichlorobenzene (0.5) | ND | ND | ND | ND | ND | ND | ND | 0.9 | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloroethane (0.5) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.8 | ND | 6.1 | 16 | ND |
| 1,2-Dichloroethane (0.3) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.5 | ND |
| Ethylbenzene (0.3) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.7 | ND |
| Benzene (0.4) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 8.3 | ND |
| Xylene (meta/para) (0.4) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1 | ND |
| Xylene (ortho) (0.4) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.7 | ND |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.7 | ND | ND | ND |

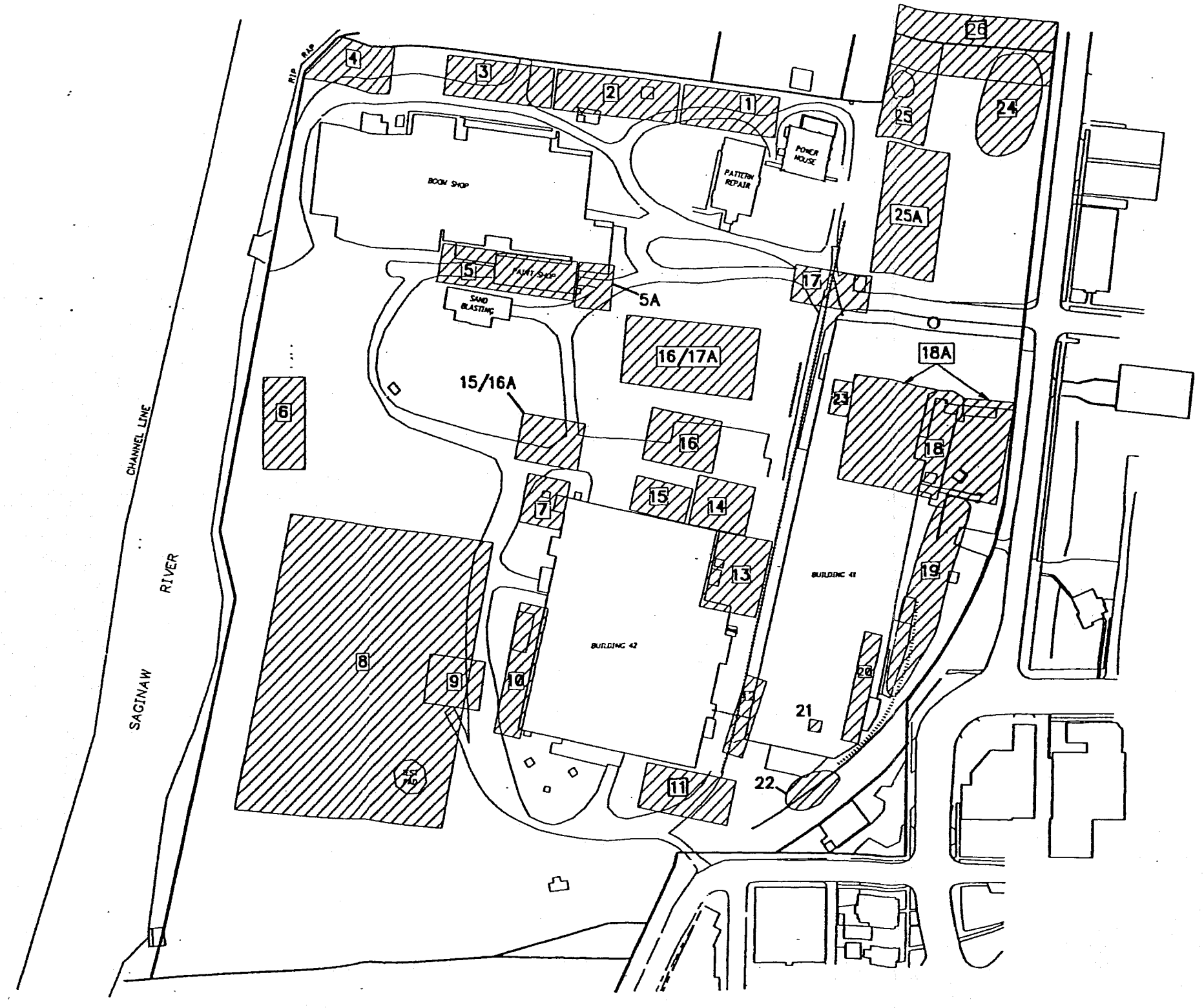
Notes:
( ) = Method detection limit
ND = Not detected at method detection limit
J = Estimated value because surrogate recovery or spike recovery outside control limits



This document is prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

LEGEND

6 AREAS OF CONCERN




N

0 175'
SCALE

RWS-09/16/93-14:07-CAD\BAY\03493

FIGURE 2-2

ALTERNATIVE REMEDIAL CONTRACTING STRATEGY
U.S. EPA CONTRACT No. 68-W8-0089
WORK ASSIGNMENT No. 055-5AED
DOCUMENT CONTROL No. 4500-55-AHUE

SITE PLAN
INDUSTRIAL BROWNHOIST PROPERTY
BAY CITY CERT SITE
Bay City, Michigan

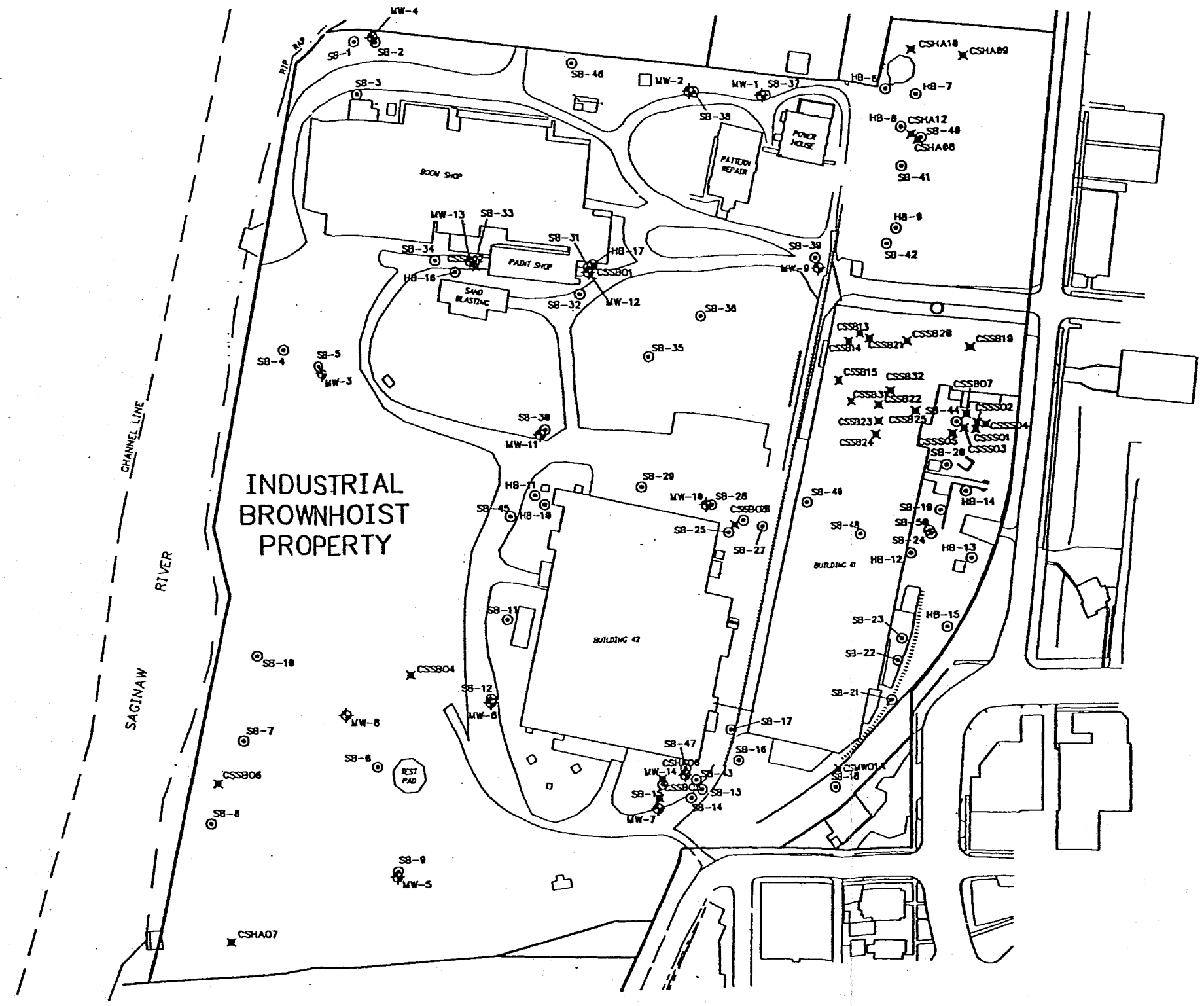
LEGEND

MW-14 MONITORING WELL LOCATION

SB-23 SOIL BORING LOCATION

HB-23 HAND BORING LOCATION

CSSB = SOIL BORING
CSHA = HAND AUGER
CSSS = SPLIT SPOON
CSMW = MONITORING WELL




RWS-10/07/93-15:15-CAD\BAY\85492

FIGURE 4-1

ALTERNATIVE REMEDIAL CONTRACTING STRATEGY
U.S. EPA CONTRACT No 68-W8-0089
WORK ASSIGNMENT No. 055-5AED
DOCUMENT CONTROL No. 4500-55-AHUE

SOIL BORING, HAND BORING AND
MONITORING WELL LOCATION MAP

BAY CITY CERT SITE
Bay City, Michigan

*ATTACHMENT 8*

# *ANALYTICAL RESULTS FOR ROY F. WESTON 1995 INVESTIGATION*

for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-25 (17-19') | Date Sampled: | 02/28/95 |
| Lab Number: | 002b/F4040.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 21 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka
6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-25 (27-29') | Date Sampled: | 02/28/9_ |
| Lab Number: | 003c | Date Received: | 03/06/95 |
| Sample Type: | Solid | Moisture (%): | 49 |
| Analyst: | PLEASANTON | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) | Preparation Method and Date | | Analytical Method and Date | |
|---|---|---|---|---|---|---|
| Arsenic | 7.5 J | 0.8 | EPA 3050 | 03/08/95 | EPA 7060 | 03/14/ 5 |
| Barium | 69 | 2 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Cadmium | <0.2 | 0.2 | EPA 3050 | 03/08/95 | EPA 7131 | 03/10/95 |
| Chromium | 14 | 2 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/ 5 |
| Copper | 8 | 2 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Lead | 8 | 2 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Mercury | 0.2 | 0.2 | EPA 7471 | 03/09/95 | EPA 7471 | 03/10/ 5 |
| Selenium | 0.8 | 0.8 | EPA 3050 | 03/08/95 | EPA 7740 | 03/14/ 5 |
| Silver | <1.0 | 1.0 | EPA 3050 | 03/08/95 | EPA 6010A | 03/0 95 |
| Zinc | 45 | 2 | EPA 3050 | 03/08/95 | EPA 6010A | 03/ |

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Y. Krabbe 6/30/95

for

ROY F. WESTON, INC.

Clayton Project No. 24448.00

Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-25 (27-29') | Date Sampled: | 02/28/95 |
| Lab Number: | 003a/A8742.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | -- | Date Analyzed: | 03/09/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 26 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | <10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

J. Kroeker 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-25 (27-29') | Date Sampled: | 02/28/95 |
| Lab Number: | 003a/A8742.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | -- | Date Analyzed: | 03/09/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 26 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka 6/30/95

for

ROY F. WESTON, INC.

Clayton Project No. 24448.00

Client Reference: --

| | | | |
|---|---|---|---|
| ample Identification: | CS2-SB-25 (27-29') | Date Sampled: | 02/28/95 |
| Lab Number: | 003b/F4041.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 29 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:

<: Less than the indicated limit of detection (LOD)

--: Information not available or not applicable

Results are reported on a dry-weight basis.

L. Kolobka 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-27 (15-17') | Date Sampled: | 03/01/95 |
| Lab Number: | 004c | Date Received: | 03/06/95 |
| Sample Type: | Solid | Moisture (%): | 21 |
| Analyst: | PLEASANTON | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) | Preparation Method and Date | | Analytical Method and Date | |
|---|---|---|---|---|---|---|
| Arsenic | 3.8 J | 5 | EPA 3050 | 03/08/95 | EPA 7060 | 03/14/9 |
| Barium | 25 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Cadmium | 0.4 | 0.1 | EPA 3050 | 03/08/95 | EPA 7131 | 03/10/95 |
| Chromium | 5 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/9 |
| Copper | 4 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Lead | 4 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Mercury | <0.1 | 0.1 | EPA 7471 | 03/09/95 | EPA 7471 | 03/10/9 |
| Selenium | <0.5 | 0.5 | EPA 3050 | 03/08/95 | EPA 7740 | 03/14/9 |
| Silver | <0.6 | 0.6 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Zinc | 20 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/0 |

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Koralka 6/30/95

for

ROY F. WESTON, INC.

Clayton Project No. 24448.00

Client Reference: --

| | | | |
|---|---|---|---|
| ample Identification: | CS2-SB-27 (15-17') | Date Sampled: | 03/01/95 |
| Lab Number: | 004a/A8763.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 26 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 20 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | 10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | 10 | 10 |

L. Korobka 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-27 (15-17') | Date Sampled: | 03/01/95 |
| Lab Number: | 004a/A8763.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 26 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L Koobes 6/20/95

for

ROY F. WESTON, INC.

Clayton Project No. 24448.00

Client Reference: --

| | | | |
|---|---|---|---|
| mple Identification: | CS2-SB-27 (15-17') | Date Sampled: | 03/01/95 |
| Lab Number: | 004b/F4042.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 31 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:

<: Less than the indicated limit of detection (LOD)

--: Information not available or not applicable

Results are reported on a dry-weight basis.

L. Kolodka 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-27 (27-29') | Date Sampled: | 03/01/9_ |
| Lab Number: | 005c | Date Received: | 03/06/95 |
| Sample Type: | Solid | Moisture (%): | 25 |
| Analyst: | PLEASANTON | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) | Preparation Method and Date | | Analytical Method and Date | |
|---|---|---|---|---|---|---|
| Arsenic | 5.3 J | 0.5 | EPA 3050 | 03/08/95 | EPA 7060 | 03/14/ |
| Barium | 39 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Cadmium | 0.4 | 0.1 | EPA 3050 | 03/08/95 | EPA 7131 | 03/10/95 |
| Chromium | 8 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/ |
| Copper | 5 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Lead | 4 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Mercury | 9.3 | 0.1 | EPA 7471 | 03/09/95 | EPA 7471 | 03/10/ |
| Selenium | <0.5 | 0.5 | EPA 3050 | 03/08/95 | EPA 7740 | 03/14/ |
| Silver | <0.7 | 0.7 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Zinc | 28 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03 |

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

J Kemble 6/30/95

for

ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-27 (27-29') | Date Sampled: | 03/01/95 |
| Lab Number: | 005a/A8744.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | -- | Date Analyzed: | 03/09/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 28 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| **Volatile Compounds** | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 120 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | 20 | 10 |

L. Corolla
6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-27 (27-29') | Date Sampled: | 03/01/95 |
| Lab Number: | 005a/A8744.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | -- | Date Analyzed: | 03/09/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 28 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Krobba 6/30/95

for

ROY F. WESTON, INC.

Clayton Project No. 24448.00

Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-27 (27-29') | Date Sampled: | 03/01/95 |
| Lab Number: | 005b/F4046.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 28 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:

<: Less than the indicated limit of detection (LOD)

--: Information not available or not applicable

Results are reported on a dry-weight basis.

Y. Korobka 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-22 (9-11') | Date Sampled: | 02/27/9_ |
| Lab Number: | 006c | Date Received: | 03/06/95 |
| Sample Type: | Solid | Moisture (%): | 35 |
| Analyst: | PLEASANTON | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) | Preparation Method and Date | | Analytical Method and Date | |
|---|---|---|---|---|---|---|
| Arsenic | 15 J | 0.6 | EPA 3050 | 03/08/95 | EPA 7060 | 03/14/ |
| Barium | 350 | 2 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Cadmium | 0.6 | 0.2 | EPA 3050 | 03/08/95 | EPA 7131 | 03/10/95 |
| Chromium | 5 | 2 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/ |
| Copper | 280 | 2 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Lead | 200 | 2 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Mercury | 43 | 0.2 | EPA 7471 | 03/09/95 | EPA 7471 | 03/10/ |
| Selenium | <0.6 | 0.6 | EPA 3050 | 03/08/95 | EPA 7740 | 03/14/ |
| Silver | <0.8 | 0.8 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Zinc | 97 | 2 | EPA 3050 | 03/08/95 | EPA 6010A | 03/ |

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Krobba 6/30/95

for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| mple Identification: | CS2-SB-22 (9-11') | Date Sampled: | 02/27/95 |
| Lab Number: | 006a/A8745.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | -- | Date Analyzed: | 03/09/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 24 |
| Analyst: | TF | | |

| Analyte | Concentration (a) (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <700 | 700 |
| Benzene | <70 | 70 |
| Bromodichloromethane | <70 | 70 |
| Bromoform | <70 | 70 |
| Bromomethane | <70 | 70 |
| 2-Butanone | <700 | 700 |
| Carbon disulfide | <700 | 700 |
| Carbon tetrachloride | <70 | 70 |
| Chlorobenzene | <70 | 70 |
| Chloroethane | <70 | 70 |
| Chloroform | <70 | 70 |
| Chloromethane | <70 | 70 |
| Dibromochloromethane | <70 | 70 |
| 1,2-Dichlorobenzene | <70 | 70 |
| 1,3-Dichlorobenzene | <70 | 70 |
| 1,4-Dichlorobenzene | <70 | 70 |
| 1,1-Dichloroethane | <70 | 70 |
| 1,2-Dichloroethane | <70 | 70 |
| 1,1-Dichloroethene | <70 | 70 |
| cis-1,2-Dichloroethene | <70 | 70 |
| trans-1,2-Dichloroethene | <70 | 70 |
| 1,2-Dichloropropane | <70 | 70 |
| cis-1,3-Dichloropropene | <70 | 70 |
| trans-1,3-Dichloropropene | <70 | 70 |
| Ethylbenzene | <70 | 70 |
| 2-Hexanone | <700 | 700 |
| Methylene chloride | 170 | 70 |
| 4-Methyl-2-pentanone | <700 | 700 |
| Styrene | <70 | 70 |
| 1,1,2,2-Tetrachloroethane | <70 | 70 |
| Tetrachloroethene | <70 | 70 |
| Toluene | <70 | 70 |

L. Kroeker
6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-22 (9-11') | Date Sampled: | 02/27/95 |
| Lab Number: | 006a/A8745.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | -- | Date Analyzed: | 03/09/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 24 |
| Analyst: | TF | | |

| Analyte | Concentration (a) (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <70 | 70 |
| 1,1,2-Trichloroethane | <70 | 70 |
| Trichloroethene | <70 | 70 |
| Vinyl acetate | <70 | 70 |
| Vinyl chloride | <70 | 70 |
| Xylenes [total] | <200 | 200 |

(a): MDNR limits could not be met due to matrix interference.

L. Koelke 6/30/95

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-22 (9-11') | Date Sampled: | 02/27/95 |
| Lab Number: | 006b/F4067.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 36 |
| Analyst: | TF | | |

| Analyte | Concentration (a) (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | 2,300 J | 1,300 |
| Acenaphthylene | <1,300 | 1,300 |
| Anthracene | 1,700 | 1,300 |
| Benzo[a]anthracene | 1,500 | 1,300 |
| Benzo[a]pyrene | <1,300 | 1,300 |
| Benzo[b]fluoranthene | <1,300 | 1,300 |
| Benzo[g,h,i]perylene | <1,300 | 1,300 |
| Benzo[k]fluoranthene | <1,300 | 1,300 |
| Chrysene | 3,800 | 1,300 |
| Dibenzo[a,h]anthracene | <1,300 | 1,300 |
| Fluoranthene | 2,000 | 1,300 |
| Fluorene | 3,300 | 1,300 |
| Indeno[1,2,3-cd]pyrene | <1,300 | 1,300 |
| Naphthalene | 4,200 | 1,300 |
| Phenanthrene | 3,000 | 1,300 |
| Pyrene | 2,000 | 1,300 |

(a): MDNR limits could not be met due to matrix interference. L. Krabbe 6/30/95

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

ENVIRONMENTAL CONSULTANTS

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-24 (9-11') | Date Sampled: | 02/27/95 |
| Lab Number: | 007c | Date Received: | 03/06/95 |
| Sample Type: | Solid | Moisture (%): | 11 |
| Analyst: | PLEASANTON | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) | Preparation Method and Date | | Analytical Method and Date | |
|---|---|---|---|---|---|---|
| Arsenic | <0.4 J | 0.4 | EPA 3050 | 03/08/95 | EPA 7060 | 03/14/9 |
| Barium | 31 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Cadmium | <0.1 | 0.1 | EPA 3050 | 03/08/95 | EPA 7131 | 03/10/9 |
| Chromium | 15 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/9 |
| Copper | 12 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Lead | <1 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Mercury | 0.1 | 0.1 | EPA 7471 | 03/09/95 | EPA 7471 | 03/10/9 |
| Selenium | <0.4 | 0.4 | EPA 3050 | 03/08/95 | EPA 7740 | 03/14/9 |
| Silver | <0.6 | 0.6 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Zinc | 29 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/0 |

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korbke 6/30/95

for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| ample Identification: | CS2-SB-24 (9-11') | Date Sampled: | 02/27/95 |
| Lab Number: | 007a/A8760.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 90 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

L Kadder 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-24 (9-11') | Date Sampled: | 02/27/95 |
| Lab Number: | 007a/A8760.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Koubba 6/30/95

for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-24 (9-11') | Date Sampled: | 02/27/95 |
| Lab Number: | 007b/F4048.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Krobler 6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

ENVIRONMENTAL CONSULTANTS

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-23B (13-15) | Date Sampled: | 02/27/95 |
| Lab Number: | 008c | Date Received: | 03/06/95 |
| Sample Type: | Solid | Moisture (%): | 29 |
| Analyst: | PLEASANTON | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) | Preparation Method and Date | | Analytical Method and Date | |
|---|---|---|---|---|---|---|
| Arsenic | 52 J | 0.6 | EPA 3050 | 03/08/95 | EPA 7060 | 03/14/95 |
| Barium | 730 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Cadmium | <0.1 | 0.1 | EPA 3050 | 03/08/95 | EPA 7131 | 03/10/95 |
| Chromium | <1 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Copper | 3 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Lead | 1 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Mercury | <0.1 | 0.1 | EPA 7471 | 03/09/95 | EPA 7471 | 03/10/95 |
| Selenium | <0.6 | 0.6 | EPA 3050 | 03/08/95 | EPA 7740 | 03/14/95 |
| Silver | <0.7 | 0.7 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Zinc | 630 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/[illegible] |

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

f. Krobba 03/30/95

for

ROY F. WESTON, INC.

Clayton Project No. 24448.00

Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-23B (13-15') | Date Sampled: | 02/27/95 |
| Lab Number: | 008a/A8761.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 22 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 130 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

L. Korobka
6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-23B (13-15') | Date Sampled: | 02/27/95 |
| Lab Number: | 008a/A8761.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 22 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L Krobka 6/30/95

for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-23B (13-15') | Date Sampled: | 02/27/95 |
| Lab Number: | 008b/F4049.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 26 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Krueke 6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-23B (11-13') | Date Sampled: | 02/27/95 |
| Lab Number: | 009a/A8762.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 31 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 80 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

R Kordka
6/30/95

for

ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| mple Identification: | CS2-SB-23B (11-13') | Date Sampled: | 02/27/95 |
| Lab Number: | 009a/A8762.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 31 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
ults are reported on a dry-weight basis.

L. Kroeber 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-18B (25-27') | Date Sampled: | 02/22/95 |
| Lab Number: | 001a/C6937.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/07/95 |
| Preparation Method: | -- | Date Analyzed: | 03/07/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 27 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | 20 J | 10 |

L. Korobka
6/30/95

for

ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| ...mple Identification: | CS2-SB-18B (25-27') | Date Sampled: | 02/22/95 |
| Lab Number: | 001a/C6937.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/07/95 |
| Preparation Method: | -- | Date Analyzed: | 03/07/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 27 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
...sults are reported on a dry-weight basis.

J. Krobbe 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-18B (25-27') | Date Sampled: | 02/22/95 |
| Lab Number: | 001b/F4031.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/06/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 29 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| **Polynuclear Aromatics** | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

K Karabka 6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

ample Identification: CS2-SB-18B (25-27)
ab Number: 9502321-01
ample Matrix/Media: SOIL

Date Sampled: 02/22/95
Date Received: 02/24/95

| alyte | Concentration | Method Detection Limit | Units | Date Prepared | Date Analyzed | Prep Method | Method Reference |
|---|---|---|---|---|---|---|---|
| senic | 6.1 | 0.6 | mg/kg | 03/08/95 | 03/09/95 | EPA 7060 | EPA 7060 |
| rium | 32 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| dmium | <0.1 | 0.1 | mg/kg | 03/08/95 | 03/10/95 | EPA 3050 | EPA 7131 |
| romium | 7 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| pper | 6 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| ad | 4 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| rcury | <0.1 | 0.1 | mg/kg | 03/07/95 | 03/07/95 | EPA 7471 | EPA 7471 |
| isture | 28 | 0.1 | % | -- | 03/10/95 | -- | EPA 160.3 |
| lenium | <0.6 | 0.6 | mg/kg | 03/08/95 | 03/09/95 | EPA 7740 | EPA 7740 |
| lver | <0.7 | 0.7 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| | 28 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |

: Not detected at or above limit of detection
: Information not available or not applicable

sults are reported on a dry-weight basis

L. Kolabka
6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-19D (17-19') | Date Sampled: | 02/23/95 |
| Lab Number: | 002a/C6938.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/07/95 |
| Preparation Method: | -- | Date Analyzed: | 03/07/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 25 |
| Analyst: | TF | | |

| Analyte | Concentration (a) (µg/kg) | LOD (µg/kg) |
|---|---|---|
| **Volatile Compounds** | | |
| Acetone | <100 J | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | 20 | 10 |

Y. Krabka
6/30/95

for

ROY F. WESTON, INC.

Clayton Project No. 24206.00

Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-19D (17-19') | Date Sampled: | 02/23/95 |
| Lab Number: | 002a/C6938.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/07/95 |
| Preparation Method: | -- | Date Analyzed: | 03/07/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 25 |
| Analyst: | TF | | |

| Analyte | Concentration (a) (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 J | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

(a): Please note that the internal standard areas were outside the acceptance criteria. This does not effect the value reported.

General Notes:

<: Less than the indicated limit of detection (LOD)

--: Information not available or not applicable

Results are reported on a dry-weight basis.

H. Kroboka 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-19D (17-19') | Date Sampled: | 02/23/95 |
| Lab Number: | 002b/F4032.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/06/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 26 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | 440 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | 340 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | 560 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | 880 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | 730 | 330 |
| Pyrene | 960 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

J. Korobka 6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

ample Identification: CS2-SB-19D (17-19)
ab Number: 9502321-02
ample Matrix/Media: SOIL

Date Sampled: 02/23/95
Date Received: 02/24/95

| nalyte | Concentration | Method Detection Limit | Units | Date Prepared | Date Analyzed | Prep Method | Method Reference |
|---|---|---|---|---|---|---|---|
| rsenic | 11 | 0.6 | mg/kg | 03/08/95 | 03/09/95 | EPA 7060 | EPA 7060 |
| arium | 76 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| admium | 0.6 | 0.1 | mg/kg | 03/08/95 | 03/10/95 | EPA 3050 | EPA 7131 |
| ıromium | 15 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| opper | 50 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| ead | 51 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| ercury | 0.4 | 0.1 | mg/kg | 03/07/95 | 03/07/95 | EPA 7471 | EPA 7471 |
| oisture | 32 | 0.1 | % | -- | 03/10/95 | -- | EPA 160.3 |
| elenium | <0.6 | 0.6 | mg/kg | 03/08/95 | 03/09/95 | EPA 7740 | EPA 7740 |
| ilver | <0.7 | 0.7 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| | 120 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |

): Not detected at or above limit of detection
-: Information not available or not applicable

esults are reported on a dry-weight basis

J. Kozobka 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-20 (25-27') | Date Sampled: | 02/24/95 |
| Lab Number: | 003a/C6944.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/08/95 |
| Preparation Method: | -- | Date Analyzed: | 03/08/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 19 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| **Volatile Compounds** | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | <10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | 20 | 10 |

L. Krobke
6/30/95

for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| ımple Identification: | CS2-SB-20 (25-27') | Date Sampled: | 02/24/95 |
| Lab Number: | 003a/C6944.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/08/95 |
| Preparation Method: | -- | Date Analyzed: | 03/08/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 19 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
sults are reported on a dry-weight basis.

L. Kobler
6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-20 (25-27') | Date Sampled: | 02/24/95 |
| Lab Number: | 003b/F4016.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/06/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/16/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 21 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | 430 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | 400 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Koeble 6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

mple Identification: CS2-SB-20 (25-27)
b Number: 9502321-03 ?
mple Matrix/Media: SOIL

Date Sampled: 02/24/95
Date Received: 02/24/95

| alyte | Concentration | Method Detection Limit | Units | Date Prepared | Date Analyzed | Prep Method | Method Reference |
|---|---|---|---|---|---|---|---|
| senic | 7.1 | 0.5 | mg/kg | 03/08/95 | 03/09/95 | EPA 7060 | EPA 7060 |
| rium | 16 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| dmium | <0.1 | 0.1 | mg/kg | 03/08/95 | 03/10/95 | EPA 3050 | EPA 7131 |
| romium | 4 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| pper | 3 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| ad | 1 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| rcury | <0.1 | 0.1 | mg/kg | 03/07/95 | 03/07/95 | EPA 7471 | EPA 7471 |
| isture | 21 | 0.1 | % | -- | 03/10/95 | -- | EPA 160.3 |
| lenium | <0.5 | 0.5 | mg/kg | 03/08/95 | 03/09/95 | EPA 7740 | EPA 7740 |
| lver | <0.6 | 0.6 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| | 15 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |

Not detected at or above limit of detection
Information not available or not applicable

R. Korabka 6/30/95

ults are reported on a dry-weight basis

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-19D (27-29') | Date Sampled: | 02/23/95 |
| Lab Number: | 004a/C6945.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/08/95 |
| Preparation Method: | -- | Date Analyzed: | 03/08/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 23 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| **Volatile Compounds** | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | <10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | 10 | 10 |

L. Krobbe
6/30/95

for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-19D (27-29') | Date Sampled: | 02/23/95 |
| Lab Number: | 004a/C6945.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/08/95 |
| Preparation Method: | -- | Date Analyzed: | 03/08/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 23 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L Korobka
6/30/95

Clayton ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-19D (27-29') | Date Sampled: | 02/23/95 |
| Lab Number: | 004b/F4033.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/06/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 20 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | 720 | 330 |
| Benzo[a]pyrene | 470 | 330 |
| Benzo[b]fluoranthene | 510 | 330 |
| Benzo[g,h,i]perylene | 420 | 330 |
| Benzo[k]fluoranthene | 550 | 330 |
| Chrysene | 740 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | 1,500 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | 380 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | 1,200 | 330 |
| Pyrene | 1,500 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Kaczka 6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

mple Identification: CS2-SB-19D (27-29) ?
ɔ Number: 9502321-04
mple Matrix/Media: SOIL

Date Sampled: 02/23/95
Date Received: 02/24/95

| alyte | Concentration | Method Detection Limit | Units | Date Prepared | Date Analyzed | Prep Method | Method Reference |
|---|---|---|---|---|---|---|---|
| senic | 6.0 | 0.5 | mg/kg | 03/08/95 | 03/09/95 | EPA 7060 | EPA 7060 |
| rium | 17 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| bmium | 0.1 | 0.1 | mg/kg | 03/08/95 | 03/10/95 | EPA 3050 | EPA 7131 |
| romium | 8 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| pper | 27 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| ad | 15 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| rcury | <0.1 | 0.1 | mg/kg | 03/07/95 | 03/07/95 | EPA 7471 | EPA 7471 |
| isture | 16 | 0.1 | % | -- | 03/10/95 | -- | EPA 160.3 |
| enium | <0.5 | 0.5 | mg/kg | 03/08/95 | 03/09/95 | EPA 7740 | EPA 7740 |
| ver | <0.6 | 0.6 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| | 33 | 1 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |

Not detected at or above limit of detection
Information not available or not applicable

L. Kroeber 6/30/95

ults are reported on a dry-weight basis

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-21 (15-17') | Date Sampled: | 02/24/95 |
| Lab Number: | 005a/C6941.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/08/95 |
| Preparation Method: | -- | Date Analyzed: | 03/08/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 21 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | 10 | 10 |

L. Korobka
6/30/95

for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| ample Identification: | CS2-SB-21 (15-17') | Date Sampled: | 02/24/95 |
| Lab Number: | 005a/C6941.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/08/95 |
| Preparation Method: | -- | Date Analyzed: | 03/08/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 21 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
sults are reported on a dry-weight basis.

L Krooke 6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-21 (15-17') | Date Sampled: | 02/24/95 |
| Lab Number: | 005b/F4034.D | Date Received: | 02/24/95 |
| Sample Type: | Soil | Date Prepared: | 03/06/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 25 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | 1,000 | 330 |
| Benzo[a]anthracene | 2,900 | 330 |
| Benzo[a]pyrene | 1,600 | 330 |
| Benzo[b]fluoranthene | 1,500 | 330 |
| Benzo[g,h,i]perylene | 920 | 330 |
| Benzo[k]fluoranthene | 1,700 | 330 |
| Chrysene | 2,900 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | 6,200 | 330 |
| Fluorene | 360 | 330 |
| Indeno[1,2,3-cd]pyrene | 930 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | 2,300 | 330 |
| Pyrene | 5,300 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka 6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

Sample Identification: CS2-SB-21 (15-17)
Lab Number: 9502321-05
Sample Matrix/Media: SOIL

Date Sampled: 02/24/95
Date Received: 02/24/95

| Analyte | Concentration | Method Detection Limit | Units | Date Prepared | Date Analyzed | Prep Method | Method Reference |
|---|---|---|---|---|---|---|---|
| Arsenic | 8.4 | 0.7 | mg/kg | 03/08/95 | 03/09/95 | EPA 7060 | EPA 7060 |
| Barium | 890 | 2 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| Cadmium | 0.7 | 0.2 | mg/kg | 03/08/95 | 03/10/95 | EPA 3050 | EPA 7131 |
| Chromium | 16 | 2 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| Copper | 110 | 2 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| Lead | 430 | 2 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| Mercury | <0.2 | 0.2 | mg/kg | 03/07/95 | 03/07/95 | EPA 7471 | EPA 7471 |
| Moisture | 39 | 0.1 | % | -- | 03/10/95 | -- | EPA 160.3 |
| Selenium | <0.7 | 0.7 | mg/kg | 03/08/95 | 03/09/95 | EPA 7740 | EPA 7740 |
| Silver | <0.8 | 0.8 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |
| | 180 | 2 | mg/kg | 03/03/95 | 03/03/95 | EPA 3050 | EPA 6010A |

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Results are reported on a dry-weight basis

L. Kratter 6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

mple Identification: CS2-SB-20 (23-27) ?
ab Number: 9502321-06
mple Matrix/Media: SOIL

Date Sampled: 02/24/95
Date Received: 02/24/95

| alyte | Concentration | Method Detection Limit | Units | Date Prepared | Date Analyzed | Prep Method | Method Reference |
|---|---|---|---|---|---|---|---|
| TOX Arsenic | <0.3 | 0.3 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Barium | 0.3 | 0.1 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Cadmium | <0.05 | 0.05 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Chromium | <0.1 | 0.1 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Lead | <0.1 | 0.1 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Mercury | <0.006 | 0.006 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 7740 |
| TOX Selenium | <0.3 | 0.3 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Silver | <0.1 | 0.1 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| isture | 24 | 0.1 | % | -- | 03/10/95 | -- | EPA 16 |

: Not detected at or above limit of detection
: Information not available or not applicable

L. Kobble 6/22/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

mple Identification: CS2-SB-21 (11-17) ?
b Number: 9502321-07
mple Matrix/Media: SOIL

Date Sampled: 02/24/95
Date Received: 02/24/95

| alyte | Concentration | Method Detection Limit | Units | Date Prepared | Date Analyzed | Prep Method | Method Reference |
|---|---|---|---|---|---|---|---|
| TOX Arsenic | <0.3 | 0.3 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Barium | 0.9 | 0.1 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Cadmium | <0.05 | 0.05 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Chromium | <0.1 | 0.1 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Lead | <0.1 | 0.1 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Mercury | <0.006 | 0.006 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| TOX Selenium | <0.3 | 0.3 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 7740 |
| TOX Silver | <0.1 | 0.1 | mg/L | 03/06/95 | 03/09/95 | EP TOX | EPA 6010A |
| sture | 25 | 0.1 | % | -- | 03/10/95 | -- | EPA 6010A |
| | | | | | | | EPA 160.3 |

Not detected at or above limit of detection
Information not available or not applicable

L Krabbe
6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-SB-28

| | | | |
|---|---|---|---|
| Sample Identification: | WDP-SB-39 (4.5-6.5') | Date Sampled: | 12/03/94 |
| Lab Number: | 001d/A7104.D | Date Received: | 12/05/94 |
| Sample Type: | Soil | Date Prepared: | 12/08/94 |
| Preparation Method: | -- | Date Analyzed: | 12/08/94 |
| Analytical Method: | EPA 8260 | Moisture(%): | 13 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| **Volatile Compounds** | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 30 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

L. Krobka
1/6/95

for
ROY F. WESTON, INC.
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-SB-29

| | | | |
|---|---|---|---|
| Sample Identification: | WDP-SB-39 (4.5-6.5') | Date Sampled: | 12/03/94 |
| Lab Number: | 001d/A7104.D | Date Received: | 12/05/94 |
| Sample Type: | Soil | Date Prepared: | 12/08/94 |
| Preparation Method: | -- | Date Analyzed: | 12/08/94 |
| Analytical Method: | EPA 8260 | Moisture(%): | 13 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka
1/6/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-SB-29

| | | | |
|---|---|---|---|
| Sample Identification: | WDP-SB-39 (4.5-6.5') | Date Sampled: | 12/03/94 |
| Lab Number: | 001a/F2830.D | Date Received: | 12/05/94 |
| Sample Type: | Soil | Date Prepared: | 12/08/94 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 12/10/94 |
| Analytical Method: | EPA 8270 | Moisture(%): | 12 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Base Neutral Compounds | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | 400 | 330 |
| Benzo[b]fluoranthene | 570 | 330 |
| Benzo[g,h,i]perylene | 450 | 330 |
| Benzo[k]fluoranthene | 460 | 330 |
| bis(2-chloroethoxy)methane | <330 | 330 |
| bis(2-chloroethyl)ether | <330 | 330 |
| bis(2-chloroisopropyl)ether | <330 | 330 |
| bis(2-ethylhexyl)phthalate | <330 | 330 |
| 4-Bromophenyl-phenylether | <330 | 330 |
| Butylbenzylphthalate | <330 | 330 |
| 4-Chloroaniline | <1,300 | 1,300 |
| 2-Chloronaphthalene | <330 | 330 |
| 4-Chlorophenyl-phenylether | <330 | 330 |
| Chrysene | 340 | 330 |
| Di-n-butylphthalate | <330 | 330 |
| Di-n-octylphthalate | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Dibenzofuran | <330 | 330 |
| 3,3'-Dichlorobenzidine | <2,000 | 2,000 |
| Diethylphthalate | <330 | 330 |
| Dimethylphthalate | <330 | 330 |
| 2,4-Dinitrotoluene | <330 | 330 |
| 2,6-Dinitrotoluene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Hexachlorobenzene | <330 | 330 |
| Hexachlorobutadiene | <330 | 330 |
| Hexachlorocyclopentadiene | <330 | 330 |
| Hexachloroethane | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | 400 | 330 |
| Isophorone | <330 | 330 |
| 2-Methylnaphthalene | <330 | 330 |
| N-Nitroso-di-n-propylamine | <330 | 330 |
| N-Nitrosodimethylamine | <330 | 330 |

X Kowalska
4/9/95

for

ROY F. WESTON, INC.

Clayton Project No. 21935.00

Client Reference: 04500-055-100

CS2-SB-28

| | | | |
|---|---|---|---|
| Sample Identification: | WDP-SB-39 (4.5-6.5') | Date Sampled: | 12/03/94 |
| Lab Number: | 001a/F2830.D | Date Received: | 12/05/94 |
| Sample Type: | Soil | Date Prepared: | 12/08/94 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 12/10/94 |
| Analytical Method: | EPA 8270 | Moisture(%): | 12 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| **Base Neutral Compounds (continued)** | | |
| N-Nitrosodiphenylamine | <330 | 330 |
| Naphthalene | <330 | 330 |
| 2-Nitroaniline | <1,700 | 1,700 |
| 3-Nitroaniline | <1,700 | 1,700 |
| 4-Nitroaniline | <1,700 | 1,700 |
| Nitrobenzene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |
| 1,2,4-Trichlorobenzene | <330 | 330 |
| **Acid Compounds** | | |
| Benzoic Acid | <3,300 | 3,300 |
| 4-Chloro-3-methylphenol | <330 | 330 |
| 2-Chlorophenol | <330 | 330 |
| 2,4-Dichlorophenol | <330 | 330 |
| 2,4-Dimethylphenol | <330 | 330 |
| 4,6-Dinitro-2-methylphenol | <1,700 | 1,700 |
| 2,4-Dinitrophenol | <1,700 | 1,700 |
| 2-Methylphenol | <330 | 330 |
| 4-Methylphenol | <330 | 330 |
| 2-Nitrophenol | <330 | 330 |
| 4-Nitrophenol | <1,700 | 1,700 |
| Pentachlorophenol | <1,700 | 1,700 |
| Phenol | <330 | 330 |
| 2,4,5-Trichlorophenol | <2,000 | 2,000 |
| 2,4,6-Trichlorophenol | <330 | 330 |

X. Krolika
1/9/95

General Notes:

<: Less than the indicated limit of detection (LOD)

--: Information not available or not applicable

Results are reported on a dry-weight basis.

CONSULTANTS

# Analytical Results
for
ROY F. WESTON
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-SB-28

| | | | |
|---|---|---|---|
| Sample Identification: | WDP-SB-39 (4.5-6.5') | Date Sampled: | 12/03/94 |
| Lab Number: | 001 | Date Received: | 12/05/94 |
| Sample Type: | Soil | Date Prepared: | 12/08/94 |
| Preparation Method: | EPA 3050A | Moisture (%): | 13 |
| Analyst: | SC | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) | Analytical Method | Date Analyzed |
|---|---|---|---|---|
| Metals | | | | |
| Arsenic | 0.8 J | 0.1 | EPA 7060 | 12/12/94 |
| Barium | 11 | 1 | EPA 6010A | 12/12/94 |
| Cadmium | 0.37 J | 0.06 | EPA 7131 | 12/12/94 |
| Chromium | 10 | 2 | EPA 6010A | 12/12/94 |
| Copper | 31 | 1 | EPA 6010A | 12/12/94 |
| Lead | 9 | 1 | EPA 6010A | 12/12/94 |
| Mercury | <0.1 | 0.1 | EPA 7471 | 12/12/94 |
| Selenium | <0.6 J | 0.6 | EPA 7740 | 12/12/94 |
| Silver | <0.6 J | 0.6 | EPA 6010A | 12/12/94 |
| Zinc | 20 J | 1 | EPA 6010A | 12/12/94 |

L. Knobka
1/9/95

| | | | |
|---|---|---|---|
| Sample Identification: | WDP-SB-39 (4.5-6.5') | Date Sampled: | 12/03/94 |
| Lab Number: | 001 | Date Received: | 12/05/94 |
| Sample Type: | Soil | Date Prepared: | -- |
| Preparation Method: | -- | | |
| Analyst: | WM | | |

| Analyte | Concentration (a) (mg/kg) | LOD (mg/kg) | Analytical Method | Date Analyzed |
|---|---|---|---|---|
| Cyanide | <0.3 | 0.3 | EPA 335.2 | 12/07/94 |

ROY F. WESTON
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-SB-29

| | | | |
|---|---|---|---|
| Sample Identification: | WDP-SB-39 (4.5-6.5') | Date Sampled: | 12/03/94 |
| Lab Number: | 001 | Date Received: | 12/05/94 |
| Sample Type: | Soil | Date Extracted: | 12/08/94 |
| Preparation Method: | EPA 3550 | Moisture (%): | 12 |
| Analyst: | CC | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) | Analytical Method | Date Analyzed |
|---|---|---|---|---|
| Polychlorinated Biphenyls | | | | |
| Aroclor-1016 | <330 | 330 | EPA 8080 | 12/11/94 |
| Aroclor-1221 | <330 | 330 | EPA 8080 | 12/11/94 |
| Aroclor-1232 | <330 | 330 | EPA 8080 | 12/11/94 |
| Aroclor-1242 | <330 | 330 | EPA 8080 | 12/11/94 |
| Aroclor-1248 | <330 | 330 | EPA 8080 | 12/11/94 |
| Aroclor-1254 | <330 | 330 | EPA 8080 | 12/11/94 |
| Aroclor-1260 | <330 | 330 | EPA 8080 | 12/11/94 |

(a) Results are reported on an "as received" basis.

L. Korolka
1/9/95

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24064.00

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-01 (0-1') | Date Sampled: | 02/13/95 |
| Lab Number: | 015a | Date Received: | 02/21/95 |
| Sample Type: | Solid | Moisture (%): | 18 |
| Analyst: | DB | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) | Preparation Method | and Date | Analytical Method | and Date |
|---|---|---|---|---|---|---|
| Aroclor-1016 | <0.33 J | 0.33 | EPA 3550 | 03/01/95 | EPA 8080 | 02/28/95 |
| Aroclor-1221 | <0.33 | 0.33 | EPA 3550 | 03/01/95 | EPA 8080 | 02/28/95 |
| Aroclor-1232 | <0.33 | 0.33 | EPA 3550 | 03/01/95 | EPA 8080 | 02/28/95 |
| Aroclor-1242 | <0.33 | 0.33 | EPA 3550 | 03/01/95 | EPA 8080 | 02/28/95 |
| Aroclor-1248 | <0.33 | 0.33 | EPA 3550 | 03/01/95 | EPA 8080 | 02/28/95 |
| Aroclor-1254 | <0.33 | 0.33 | EPA 3550 | 03/01/95 | EPA 8080 | 02/28/95 |
| Aroclor-1260 | <0.33 | 0.33 | EPA 3550 | 03/01/95 | EPA 8080 | 02/28/95 |

LKabb 6/15/95

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Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

ENVIRONMENTAL CONSULTANTS

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-26 (9-11') | Date Sampled: | 02/28/95 |
| Lab Number: | 001c | Date Received: | 03/06/95 |
| Sample Type: | Solid | Moisture (%): | 25 |
| Analyst: | PLEASANTON | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) | Preparation Method and Date | | Analytical Method and Date | |
|---|---|---|---|---|---|---|
| Arsenic | 5.1 J | 0.5 | EPA 3050 | 03/08/95 | EPA 7060 | 03/14/9 |
| Barium | 51 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Cadmium | <0.1 | 0.1 | EPA 3050 | 03/08/95 | EPA 7131 | 03/10/95 |
| Chromium | 24 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/9 |
| Copper | 550 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/9 |
| Lead | 130 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Mercury | 12 | 0.1 | EPA 7471 | 03/09/95 | EPA 7471 | 03/10/9 |
| Selenium | <0.5 | 0.5 | EPA 3050 | 03/08/95 | EPA 7740 | 03/14/9 |
| Silver | <0.7 | 0.7 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Zinc | 51 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/ |

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Koralka 6/30/95

for

ROY F. WESTON, INC.

Clayton Project No. 24448.00

Client Reference: --

| | | | |
|---|---|---|---|
| ample Identification: | CS2-SB-26 (9-11') | Date Sampled: | 02/28/95 |
| Lab Number: | 001a/A8740.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | -- | Date Analyzed: | 03/09/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 23 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | <10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | 20 | 10 |

L. Koebke
6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-26 (9-11') | Date Sampled: | 02/28/95 |
| Lab Number: | 001a/A8740.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | -- | Date Analyzed: | 03/09/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 23 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Kreeber 6/30/95

for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-26 (9-11') | Date Sampled: | 02/28/95 |
| Lab Number: | 001b/F4039.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 27 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka
6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

ENVIRONMENTAL CONSULTANTS

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-25 (17-19') | Date Sampled: | 02/28/9 |
| Lab Number: | 002c | Date Received: | 03/06/95 |
| Sample Type: | Solid | Moisture (%): | 23 |
| Analyst: | PLEASANTON | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) | Preparation Method and Date | | Analytical Method and Date | |
|---|---|---|---|---|---|---|
| Arsenic | 1.4 J | 0.5 | EPA 3050 | 03/08/95 | EPA 7060 | 03/14/ |
| Barium | 5 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Cadmium | 0.1 | 0.1 | EPA 3050 | 03/08/95 | EPA 7131 | 03/10/95 |
| Chromium | 3 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/ |
| Copper | 3 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/ |
| Lead | 5 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Mercury | <0.1 | 0.1 | EPA 7471 | 03/09/95 | EPA 7471 | 03/10/ |
| Selenium | <0.5 | 0.5 | EPA 3050 | 03/08/95 | EPA 7740 | 03/14/ |
| Silver | <0.6 | 0.6 | EPA 3050 | 03/08/95 | EPA 6010A | 03/08/95 |
| Zinc | 19 | 1 | EPA 3050 | 03/08/95 | EPA 6010A | 03/ |

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L Kordka
6/30/95

for

ROY F. WESTON, INC.

Clayton Project No. 24448.00

Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-25 (17-19') | Date Sampled: | 02/28/95 |
| Lab Number: | 002a/A8741.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | -- | Date Analyzed: | 03/09/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 20 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | <10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

L. Koebke
6/30/95

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

| | | | |
|---|---|---|---|
| Sample Identification: | CS2-SB-25 (17-19') | Date Sampled: | 02/28/95 |
| Lab Number: | 002a/A8741.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | -- | Date Analyzed: | 03/09/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 20 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Koebke 6/30/95

*ATTACHMENT 9*

*ANALYTICAL RESULTS FOR ETG 1995 INVESTIGATION*

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification: SB-5 (3-5')
Lab Number: 001a/A8753.D
Sample Type: Soil
Preparation Method: --
Analytical Method: EPA 8260
Analyst: TF

Date Sampled: 02/28/95
Date Received: 03/06/95
Date Prepared: 03/10/95
Date Analyzed: 03/10/95
Moisture(%): 11

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | SB-5 (3-5') | Date Sampled: | 02/28/95 |
| Lab Number: | 001a/A8753.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | SB-5 (3-5') | Date Sampled: | 02/28/95 |
| Lab Number: | 001b/F4055.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 10 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | SB-5 (5-7') | Date Sampled: | 02/28/95 |
| Lab Number: | 002a/A8754.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 20 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | 10 | 10 |

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | SB-5 (5-7') | Date Sampled: | 02/28/95 |
| Lab Number: | 002a/A8754.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | SB-5 (5-7') | Date Sampled: | 02/28/95 |
| Lab Number: | 002b/F4056.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/17/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 12 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
## for
## ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification: MW-10 (0-2')
Lab Number: 003a/A8755.D
Sample Type: Soil
Preparation Method: --
Analytical Method: EPA 8260
Analyst: TF

Date Sampled: 03/01/95
Date Received: 03/06/95
Date Prepared: 03/10/95
Date Analyzed: 03/10/95
Moisture(%): 12

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethane | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 20 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | MW-10 (0-2') | Date Sampled: | 03/01/95 |
| Lab Number: | 003a/A8755.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 12 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification: MW-10 (0-2')
Lab Number: 003b/F4057.D
Sample Type: Soil
Preparation Method: EPA 3550
Analytical Method: EPA 8270
Analyst: TF

Date Sampled: 03/01/95
Date Received: 03/06/95
Date Prepared: 03/09/95
Date Analyzed: 03/17/95
Moisture(%): 13

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | SB-3 (0-2') | Date Sampled: | 03/01/95 |
| Lab Number: | 004a/A8756.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 20 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | SB-3 (0-2') | Date Sampled: | 03/01/95 |
| Lab Number: | 004a/A8756.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | MW-3 (0-2') | Date Sampled: | 03/01/95 |
| Lab Number: | 004b/F4058.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/18/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 12 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Clayton ENVIRONMENTAL CONSULTANTS

Sample Identification: SB-3 (2-4')
Lab Number: 005a/A8757.D
Sample Type: Soil
Preparation Method: --
Analytical Method: EPA 8260
Analyst: TF

Date Sampled: 03/01/95
Date Received: 03/06/95
Date Prepared: 03/10/95
Date Analyzed: 03/10/95
Moisture(%): 11

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | SB-3 (2-4') | Date Sampled: | 03/01/95 |
| Lab Number: | 005a/A8757.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

ENVIRONMENTAL CONSULTANTS

# Analytical Results
## for
## ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | MW-3 (2-4') | Date Sampled: | 03/01/95 |
| Lab Number: | 005b/F4059.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/18/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | SB-4 (5-7') | Date Sampled: | 03/01/95 |
| Lab Number: | 006a/A8758.D,A8764.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 12 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| **Volatile Compounds** | | |
| Acetone | <100 | 100 |
| Benzene | 670 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | 280 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 20 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | 10 | 10 |

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | SB-4 (5-7') | Date Sampled: | 03/01/95 |
| Lab Number: | 006a/A8758.D,A8764.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/10/95 |
| Preparation Method: | -- | Date Analyzed: | 03/10/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 12 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | 40 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | MW-4 (5-7') | Date Sampled: | 03/01/95 |
| Lab Number: | 006b/F4065.D | Date Received: | 03/06/95 |
| Sample Type: | Soil | Date Prepared: | 03/09/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/19/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 13 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | 2,600 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Southwestern Operations
22445 Ruehner Drive
P.O. Box 8022
Novi, MI 48375
(313) 344-1770
Fax (313) 344-2634

Clayton
ENVIRONMENTAL
CONSULTANTS

# LABORATORY
# FAX TRANSMITTAL FORM

**TO:** MR. LOU MIDDLETON

**FROM:** CLIENT SERVICES

**DATE:** MARCH 20, 1995

**FAX NO.:** (518) 322-2936

19 **Pages After Transmittal Form**

**SPECIAL INSTRUCTIONS:**

Detroit Regional Office

22345 Roethel Drive
P.O. Box 8022
Novi, MI 48375
(810) 344-1770
Fax (810) 344-2654

Clayton
ENVIRONMENTAL
CONSULTANTS

March 20, 1995

Mr. Lou Middleton
ETG ENVIRONMENTAL, INC.
7707 Rickle Road
Lansing, MI 48917

Clayton Project No. 24241.00
Purchase Order No. 1257
Client Reference: 1076

Dear Mr. Middleton:

Attached is our analytical laboratory report for the samples received on February 27, 1995. Also enclosed is a copy of the Chain-of-Custody record acknowledging receipt of these samples.

Please note that any unused portion of the samples will be discarded after April 19, 1995, unless you have requested otherwise.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (810) 344-2650.

Sincerely,

Robert Lieckfield, Jr., CIH
Director, Laboratory Services
Detroit Regional Office

RL/al

Attachments

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076.

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB6, 5-7' | Date Sampled: | 02/21/95 |
| Lab Number: | 001a/C6840.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 13 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | 300 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | <10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB6, 5-7' | Date Sampled: | 02/21/95 |
| Lab Number: | 001a/C6840.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 13 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | 270 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
## for
## ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB6, 5-7' | Date Sampled: | 02/21/95 |
| Lab Number: | 001b/G0234.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/03/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/16/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 15 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB6, 7-9' | Date Sampled: | 02/21/95 |
| Lab Number: | 002a/C6841.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 14 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | 180 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | <10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076.

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB6, 7-9' | Date Sampled: | 02/21/95 |
| Lab Number: | 002a/C6841.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 14 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | 80 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB6, 7-9' | Date Sampled: | 02/21/95 |
| Lab Number: | 002b/G0235.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/03/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/16/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 16 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076.

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB9, 2-4' | Date Sampled: | 02/20/95 |
| Lab Number: | 003a/C6859.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076.

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB9, 2-4' | Date Sampled: | 02/20/95 |
| Lab Number: | 003a/C6859.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 11 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
## for
## ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB9, 2-4' | | |
| Lab Number: | 003b/G0236.D | Date Sampled: | 02/20/95 |
| Sample Type: | Soil | Date Received: | 02/27/95 |
| Preparation Method: | EPA 3550 | Date Prepared: | 03/03/95 |
| Analytical Method: | EPA 8270 | Date Analyzed: | 03/16/95 |
| Analyst: | TF | Moisture(%): | 13 |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076.

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB9, 4-6' | Date Sampled: | 02/20/95 |
| Lab Number: | 004a/C6860.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 10 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | 10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB9, 4-6' | Date Sampled: | 02/20/95 |
| Lab Number: | 004a/C6860.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 10 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB9, 4-6' | Date Sampled: | 02/20/95 |
| Lab Number: | 004b/G0237.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/03/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/16/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 16 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

Clayton ENVIRONMENTAL CONSULTANTS

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB10, 2-4' | Date Sampled: | 02/20/95 |
| Lab Number: | 005a/C6844.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 18 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethane | <10 | 10 |
| trans-1,2-Dichloroethane | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | <10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB10, 2-4' | Date Sampled: | 02/20/95 |
| Lab Number: | 005a/C6844.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 18 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification: ETG SB10, 2-4'
Lab Number: 005b/G0238.D
Sample Type: Soil
Preparation Method: EPA 3550
Analytical Method: EPA 8270
Analyst: TF

Date Sampled: 02/20/95
Date Received: 02/27/95
Date Prepared: 03/03/95
Date Analyzed: 03/16/95
Moisture(%): 12

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB10, 4-6' | Date Sampled: | 02/20/95 |
| Lab Number: | 006a/C6845.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 12 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds | | |
| Acetone | <100 | 100 |
| Benzene | <10 | 10 |
| Bromodichloromethane | <10 | 10 |
| Bromoform | <10 | 10 |
| Bromomethane | <10 | 10 |
| 2-Butanone | <100 | 100 |
| Carbon disulfide | <100 | 100 |
| Carbon tetrachloride | <10 | 10 |
| Chlorobenzene | <10 | 10 |
| Chloroethane | <10 | 10 |
| Chloroform | <10 | 10 |
| Chloromethane | <10 | 10 |
| Dibromochloromethane | <10 | 10 |
| 1,2-Dichlorobenzene | <10 | 10 |
| 1,3-Dichlorobenzene | <10 | 10 |
| 1,4-Dichlorobenzene | <10 | 10 |
| 1,1-Dichloroethane | <10 | 10 |
| 1,2-Dichloroethane | <10 | 10 |
| 1,1-Dichloroethene | <10 | 10 |
| cis-1,2-Dichloroethene | <10 | 10 |
| trans-1,2-Dichloroethene | <10 | 10 |
| 1,2-Dichloropropane | <10 | 10 |
| cis-1,3-Dichloropropene | <10 | 10 |
| trans-1,3-Dichloropropene | <10 | 10 |
| Ethylbenzene | <10 | 10 |
| 2-Hexanone | <100 | 100 |
| Methylene chloride | <10 | 10 |
| 4-Methyl-2-pentanone | <100 | 100 |
| Styrene | <10 | 10 |
| 1,1,2,2-Tetrachloroethane | <10 | 10 |
| Tetrachloroethene | <10 | 10 |
| Toluene | <10 | 10 |

ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB10, 4-6' | Date Sampled: | 02/20/95 |
| Lab Number: | 006a/C6845.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/04/95 |
| Preparation Method: | -- | Date Analyzed: | 03/04/95 |
| Analytical Method: | EPA 8260 | Moisture(%): | 12 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <10 | 10 |
| 1,1,2-Trichloroethane | <10 | 10 |
| Trichloroethene | <10 | 10 |
| Vinyl acetate | <10 | 10 |
| Vinyl chloride | <10 | 10 |
| Xylenes [total] | <30 | 30 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

# Analytical Results
for
ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETG SB10, 4-6' | Date Sampled: | 02/20/95 |
| Lab Number: | 006b/G0239.D | Date Received: | 02/27/95 |
| Sample Type: | Soil | Date Prepared: | 03/03/95 |
| Preparation Method: | EPA 3550 | Date Analyzed: | 03/16/95 |
| Analytical Method: | EPA 8270 | Moisture(%): | 15 |
| Analyst: | TF | | |

| Analyte | Concentration (µg/kg) | LOD (µg/kg) |
|---|---|---|
| Polynuclear Aromatics | | |
| Acenaphthene | <330 | 330 |
| Acenaphthylene | <330 | 330 |
| Anthracene | <330 | 330 |
| Benzo[a]anthracene | <330 | 330 |
| Benzo[a]pyrene | <330 | 330 |
| Benzo[b]fluoranthene | <330 | 330 |
| Benzo[g,h,i]perylene | <330 | 330 |
| Benzo[k]fluoranthene | <330 | 330 |
| Chrysene | <330 | 330 |
| Dibenzo[a,h]anthracene | <330 | 330 |
| Fluoranthene | <330 | 330 |
| Fluorene | <330 | 330 |
| Indeno[1,2,3-cd]pyrene | <330 | 330 |
| Naphthalene | <330 | 330 |
| Phenanthrene | <330 | 330 |
| Pyrene | <330 | 330 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

# MEMORANDUM

**Date:** September 20, 1995

**From:** Lou Middleton, C.P.G. LHM

**To:** Susan Padley, Esq.

**Subject:** Bay City, Michigan Site

---

Enclosed are the analytical results for the oil sample collected from monitoring well ETG-MW-3S at the former Industrial Brownhoist site located in Bay City Michigan. As previously communicated, PCB compounds were not detected above the method detection limit of 0.3 mg/Kg. If you have any questions or require additional information, please call me at (517)322-9311.

**Detroit Regional Office**

22345 Roethel Drive
P.O. Box 8022
Novi, MI 48375
(810) 344-1770
Fax (810) 344-2654

**Clayton**
ENVIRONMENTAL
CONSULTANTS

September 14, 1995

Mr. Lou Middleton
ETG ENVIRONMENTAL, INC.
7707 Rickle Road
Lansing, MI 48917

Clayton Project No. 30682.00
Purchase Order No. 1532
Client Reference: 1076

Dear Mr. Middleton:

Attached is our analytical laboratory report for the samples received on September 13, 1995. Also enclosed is a copy of the Chain-of-Custody record acknowledging receipt of these samples.

Please note that any unused portion of the samples will be discarded after October 14, 1995, unless you have requested otherwise.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (810) 344-2650.

Sincerely,

Robert Lieckfield, Jr., CIH
Director, Laboratory Services
Detroit Regional Office

RL/pl

Attachments

Table 1
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 30682.00
Client Reference#: 1076

| | | | |
|---|---|---|---|
| Sample Identification: | ETGMW-35 | Date Sampled: | 09/12/95 |
| Lab Number: | 001a | Date Received: | 09/13/95 |
| Sample Type: | Oil | Date Prepared: | 09/13/95 |
| Preparation Method: | EPA 600/4-81-045 | Date Analyzed: | 09/13/95 |
| Analytical Method: | EPA 600/4-81-045 | | |
| Analyst: | JC | | |

| Analyte | Concentration (mg/kg) | LOD (mg/kg) |
|---|---|---|
| Polychlorinated Biphenyls | | |
| Aroclor-1016 | <0.3 | 0.3 |
| Aroclor-1221 | <0.3 | 0.3 |
| Aroclor-1232 | <0.3 | 0.3 |
| Aroclor-1242 | <0.3 | 0.3 |
| Aroclor-1248 | <0.3 | 0.3 |
| Aroclor-1254 | <0.3 | 0.3 |
| Aroclor-1260 | <0.3 | 0.3 |

Clayton
ENVIRONMENTAL CONSULTANTS

# REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Clayton Use Only | Page 1 of 1
Project No. 306842
Batch No.
Ind. Code | W.P.
Date Logged In | By

**REPORT RESULTS TO**
Name: Lou Middleton | Title: Hydrogeologist
Company: ETG Environmental | Dept.
Mailing Address: 7202 Rickle Rd
City, State, Zip: Lansing MI 48917
Telephone No.: 517322-8311 | Telefax No.: 517 322-2836

Purchase Order No.: 1532 | Client Job No.: 1076

**SEND INVOICE TO**
Name
Company | Dept.
Address
City, State, Zip

Date Results Req.: 9-14-95
Rush Charges Authorized? ☒ Yes ☐ No
Phone / Fax Results ☐ ☒

Special Instructions: (method, limit of detection, etc.)
Use MDL for analyze oil layer only.
* Explanation of Preservative:

Samples are: (check if applicable)
☐ Drinking Water
☐ Collected in the State of New York

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request; Enter a 'P' if Preservative added.

| CLIENT SAMPLE IDENTIFICATION | DATE SAMPLED | MATRIX/ MEDIA | AIR VOLUME (specify units) | Number of Containers | PCBs | FOR LAB USE ONLY |
|---|---|---|---|---|---|---|
| ETG-MW-3S | 9-12-95 | Oil | | 2 | X | |

Rush
Call Rush

**CHAIN OF CUSTODY**
Collected by: Lewis Middleton (print)
Relinquished by: | Date/Time: 9-12 1:30
Relinquished by: | Date/Time: 9-13-95 8:41 am
Method of Shipment:

Collector's Signature:
Received by: | Date/Time: 9-12-95 2:47 pm
Received at Lab by: | Date/Time

Sample Condition Upon Receipt: ☐ Acceptable ☐ Other (explain)

Authorized by: | Date: 9-12-95
(Client Signature Must Accompany Request)

RECEIVED SEP 13 1995

Please return completed form and samples to one of the Clayton Environmental Consultants, Inc. labs listed below:

| | | | |
|---|---|---|---|
| 22345 Roethel Drive<br>Novi, MI 48375<br>(810) 344-1770 | Raritan Center<br>160 Fieldcrest Ave.<br>Edison, NJ 08837<br>(908) 225-6040 | 400 Chastain Center Blvd., N.W.<br>Suite 490<br>Kennesaw, GA 30144<br>(404) 499-7500 | 1252 Quarry Lane<br>Pleasanton, CA 94566<br>(510) [illegible]-2657 |

DISTRIBUTION:
WHITE - Clayton Laboratory
YELLOW - Clayton Accounting
PINK - [illegible]nt Retains

2/92

* Roger is adding [illegible] PCB [illegible]

*ATTACHMENT 10*

*ETG 1995 SUMMARY REPORT OF INVESTIGATION OF COAL TAR PIT*

# PROJECT SUMMARY
# FORMER INDUSTRIAL BROWNHOIST SITE
# BAY CITY, MICHIGAN

ETG Environmental completed limited assessment and remedial activities at the former Industrial Brownhoist site located in Bay City, Michigan (**Figure 1**) in anticipation of "Due Care" issues related to the planned sale of the property. The areas of concern related to the Due Care issues are as follows:

- A area of coal tar contamination from an historical gasification facility, located at the northeast corner of Building 41, and

- A small area underlain by phase-separated hydrocarbons, surrounding monitoring well ETG MW-3S.

## COAL TAR-PIT

The coal tar pit area was investigated to ascertain whether migration of coal tar-based contamination has occurred in the approximate 90 years since abandonment of the gasification facility. It was believed at the outset that the pit lies in a low-permeability formation, and was unlikely to constitute a contaminant source to surrounding soils and groundwater. The following steps were taken to support this expectation:

- Three deep monitoring wells (ETG MW-20, MW-21, and MW-22) were installed surrounding the Coal Tar-Pit (**Figure 2**).

- As depicted on the geologic cross-sections identified on **Figure 3** and presented in **Figure 4**, no lithologic pathways have been discovered to indicate that the Coal Tar-Pit is hydraulically connected to the surrounding soils.

- MW-20, installed east of Building 41 and south of the Coal-Tar Pit (to forty-three feet below grade), produced only enough water to collect samples for VOC analysis

- MW-21, installed north of Building 41 (to forty feet below grade), produced enough water to collect samples for both VOC and PNA analysis.

- MW-22, installed west of Building 41 (to forty-one feet below grade), did not produce enough water to collect samples.

- VOC compounds were not detected in samples collected from either MW-20 or MW-21.

- PNA compounds were not detected in the groundwater sample collected from MW-21.

**Conclusions and Recommendations**

- Lack of groundwater in MW-22, which is situated west of the Coal Tar Pit, indicates that this portion of the site is not hydraulically connected with the Coal Tar Pit. Consequently, contaminants situated in the Coal Tar-Pit cannot migrate in this direction.

- The fact that VOCs were not detected in either MW-20 or MW-21, while 2,800 ug/L benzene was detected in MW-1D, indicates that contaminant migration from the Coal Tar-Pit to the surrounding area has not occurred.

Given the fact that migration of contaminants is either not possible or, if possible, has not occurred in more than 90 years, no additional actions are required for the care of the coal tar pit area.

**FREE PRODUCT AREA**

A removal action was conducted to eliminate phase-separated hydrocarbons and associated soils from the area surrounding ETG MW 3S.

- A total of 360 cubic yards of product-contaminated soil was excavated (**Figure 5**) and removed for non-hazardous disposal at Tay-Ban Corporation's landfill located in Birch Run, Michigan.

- 5,300 gallons of product and groundwater were pumped from the excavation and transported for off-site non-hazardous disposal at Environmental Waste Control's Inkster, Michigan facility.

- A trench/sump piping system was installed in the excavation to facilitate additional product removal (**Figure 6**).

- The excavation was filled in with approximately 70 cubic yards of peastone, 280 cubic yards of clean sand, and approximately 150 cubic yards of native soil.

- Approximately 110 gallons of water was pumped from the trench/sump network on November 29, 1995. A slight petroleum odor was present, as was a sheen on the water. However, no product was present.

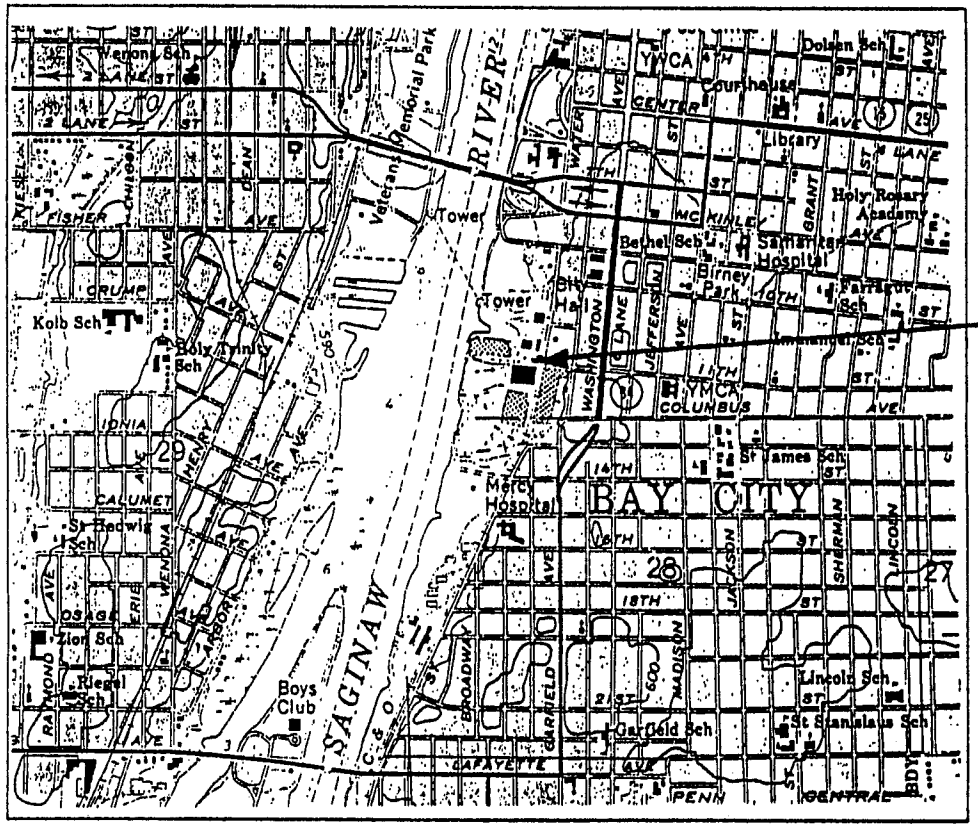
**Conclusions and Recommendations**

- Visual observations of the excavation area prior to installation of the trench/sump network indicate that the majority of product previously located in this area was removed during excavation and vacuum truck activities.

- The lack of free product present in the trench/sump network confirms that the amount of product remaining, if any, is minimal.

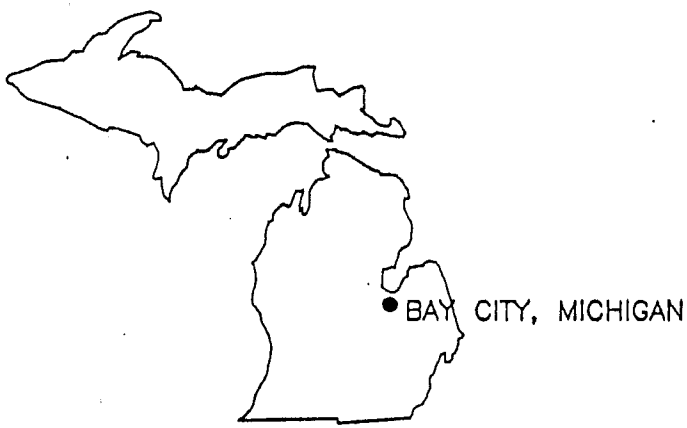
- The slight petroleum odor and visible sheen present on the water removed from the trench/sump network warrants an additional pumping event, which will be completed during the week of December 4, 1995.

Contingent on no additional recoverable free product during the week of December 4, 1995, the sump system will be removed and no additional actions will be required for this area.




Map reference from United States Geological Survey

SITE:
AMDURA
BAY CITY, MICHIGAN



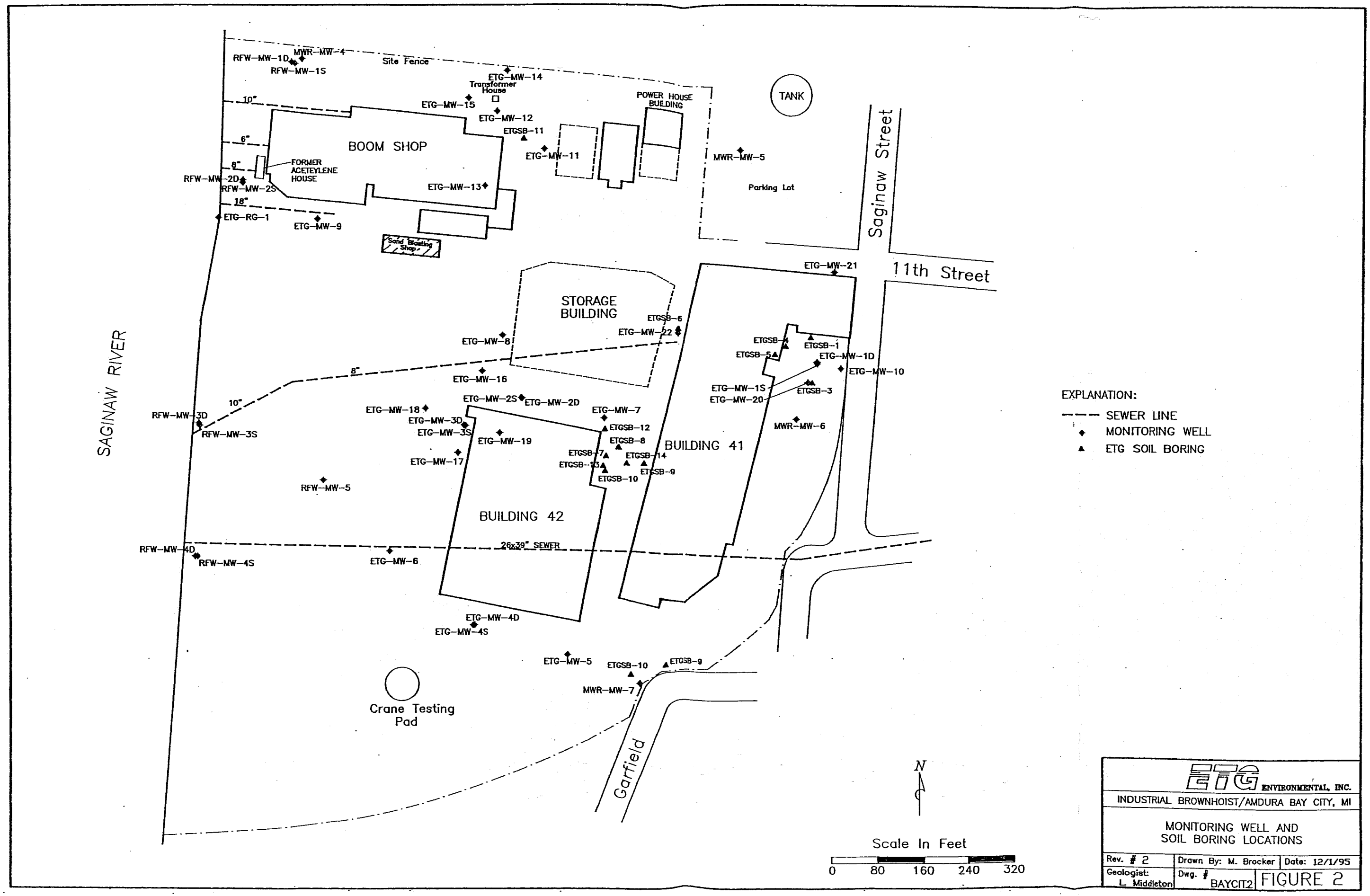

N

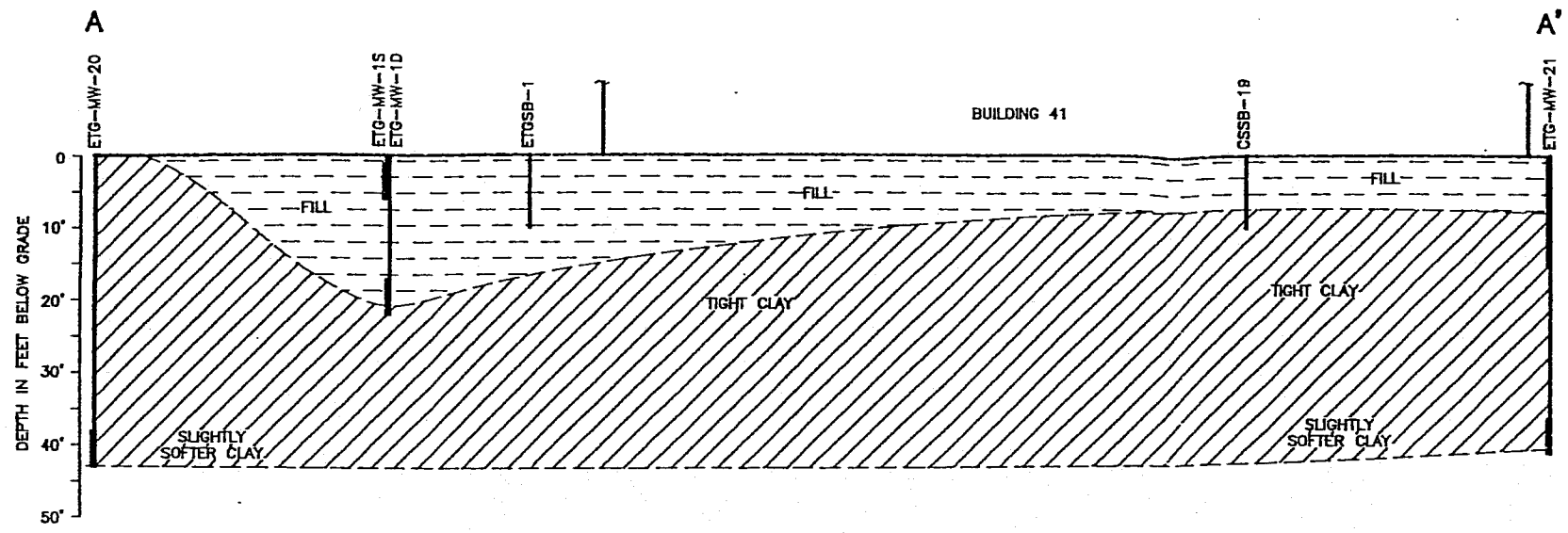
ETG ENVIRONMENTAL, INC.

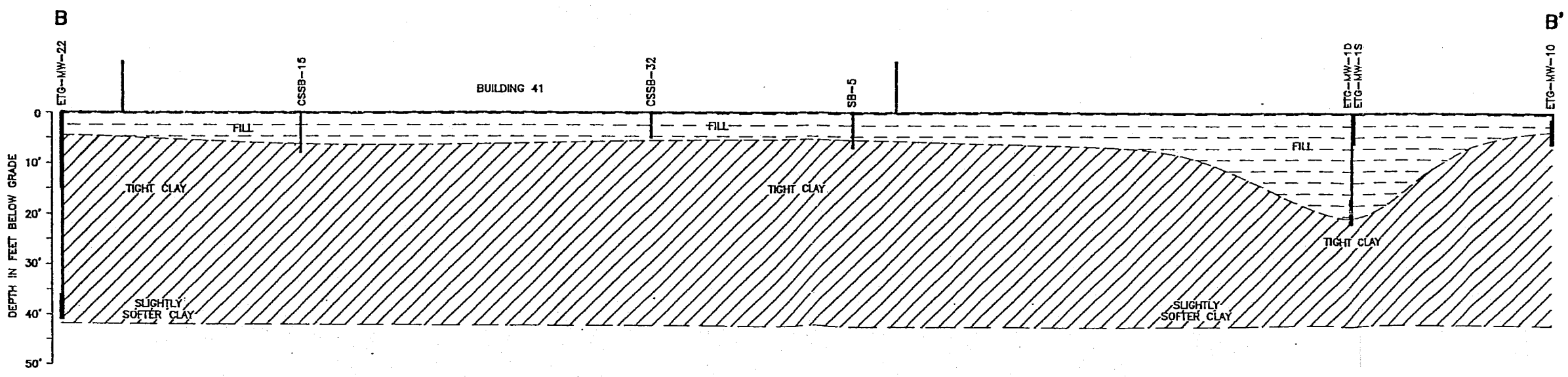
AMDURA BAY CITY, MICHIGAN

SITE LOCATION MAP

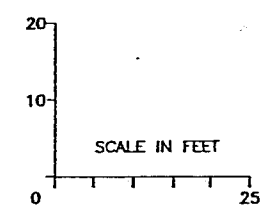
| | | |
|---|---|---|
| Rev. # 1 | Drawn By: M. Brocker | Date: 1/20/93 |
| Geologist: | Dwg. # SITELOC | FIGURE 1 |


RFW-MW-1D
MWR-MW-4
RFW-MW-1S
Site Fence
ETG-MW-14
Transformer House
ETG-MW-15
ETG-MW-12
ETGSB-11
ETG-MW-11
POWER HOUSE BUILDING
TANK
MWR-MW-5
Parking Lot
Saginaw Street
11th Street
10"
6"
8"
18"
BOOM SHOP
FORMER ACETEYLENE HOUSE
RFW-MW-2D
RFW-MW-2S
ETG-MW-13
ETG-RG-1
ETG-MW-9
Sand Blasting Shop
STORAGE BUILDING
ETG-MW-21
ETGSB-6
ETG-MW-22
ETG-MW-8
ETGSB-4
ETGSB-1
ETGSB-5
ETG-MW-1D
ETG-MW-10
ETG-MW-16
ETG-MW-1S
ETG-MW-20
ETGSB-3
SAGINAW RIVER
RFW-MW-3D
RFW-MW-3S
ETG-MW-18
ETG-MW-2S
ETG-MW-2D
ETG-MW-3D
ETG-MW-3S
ETG-MW-7
ETGSB-12
ETGSB-8
ETG-MW-19
MWR-MW-6
BUILDING 41
ETG-MW-17
ETGSB-7
ETGSB-14
ETGSB-13
ETGSB-9
ETGSB-10
RFW-MW-5
BUILDING 42
RFW-MW-4D
RFW-MW-4S
26x39" SEWER
ETG-MW-6
ETG-MW-4D
ETG-MW-4S
ETG-MW-5
ETGSB-10
ETGSB-9
MWR-MW-7
Crane Testing Pad
Garfield
N
Scale In Feet
0 80 160 240 320
EXPLANATION:
SEWER LINE
MONITORING WELL
ETG SOIL BORING
ETG ENVIRONMENTAL, INC.
INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI
MONITORING WELL AND SOIL BORING LOCATIONS
Rev. # 2
Drawn By: M. Brocker
Date: 12/1/95
Geologist: L. Middleton
Dwg. # BAYCIT2
FIGURE 2




NOTE: MONITORING WELLS MW-21 AND MW-22 ARE DOUBLE CASED FROM 0-15' BELOW GRADE.

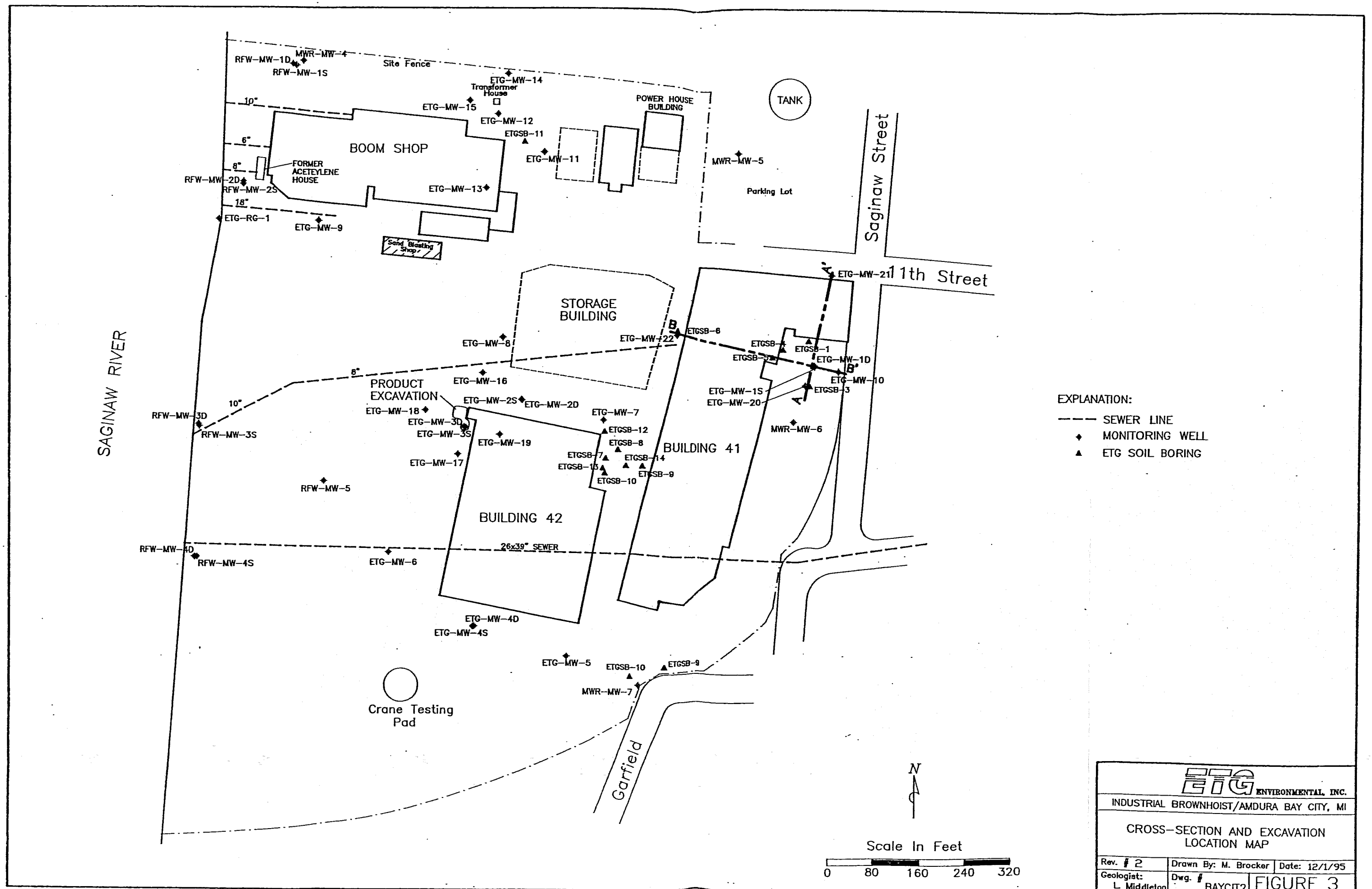


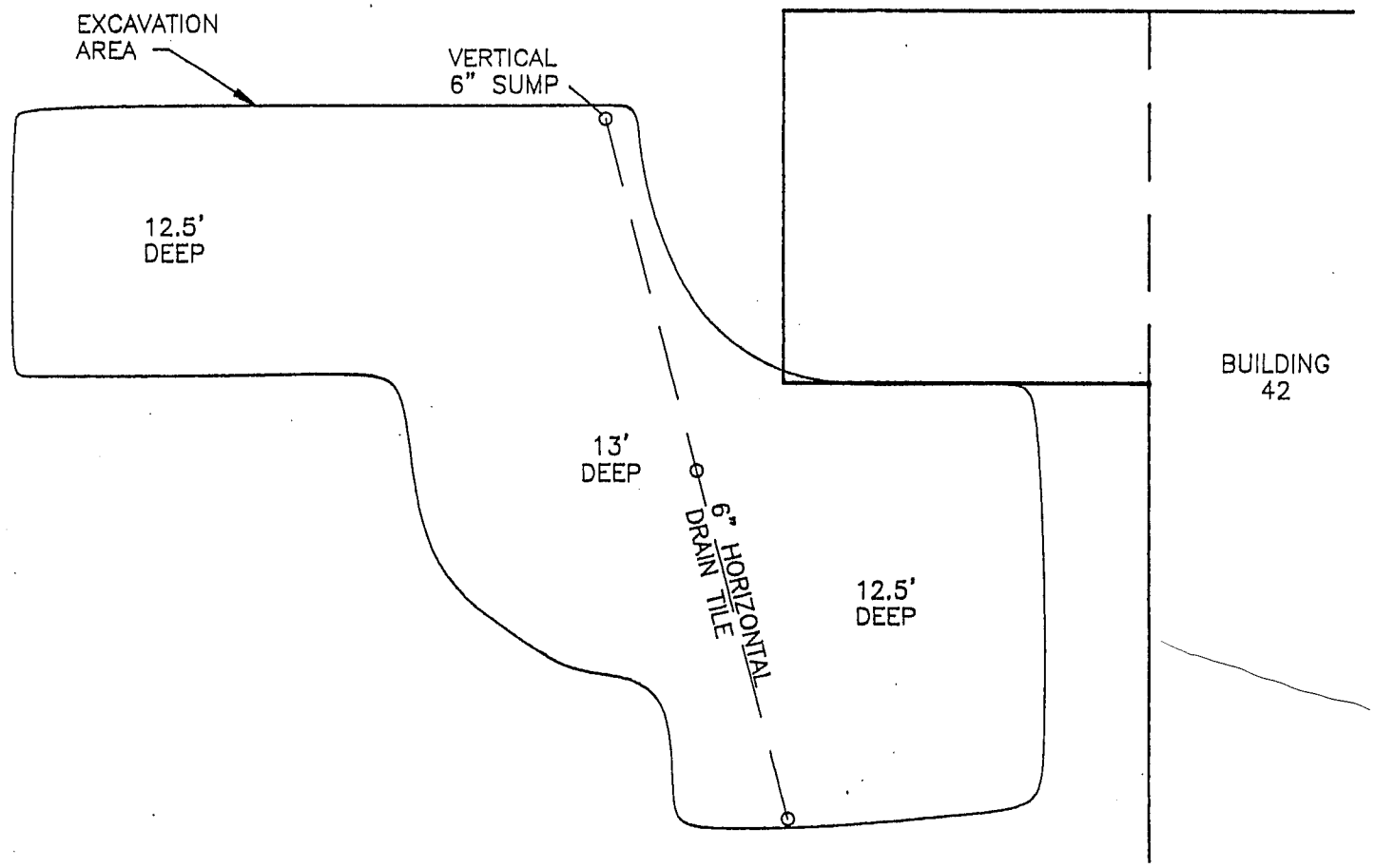

ETG ENVIRONMENTAL, INC.

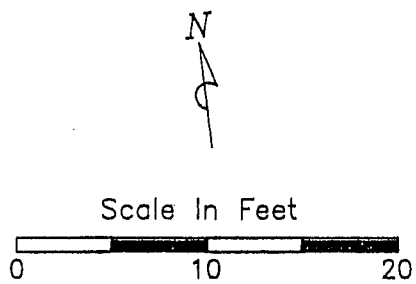
INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI

GEOLOGIC CROSS-SECTIONS

| | | |
|---|---|---|
| Rev. # 2 | Drawn By: M. Brocker | Date: 12/2/95 |
| Geologist: L. Middleton | Dwg. # BAY-CR | FIGURE 4 |


RFW-MW-1D
MWR-MW-4
RFW-MW-1S
Site Fence
ETG-MW-14
Transformer House
ETG-MW-15
ETG-MW-12
ETGSB-11
ETG-MW-11
POWER HOUSE BUILDING
TANK
MWR-MW-5
Parking Lot
Saginaw Street
10"
6"
8"
18"
BOOM SHOP
FORMER ACETEYLENE HOUSE
RFW-MW-2D
RFW-MW-2S
ETG-MW-13
ETG-RG-1
ETG-MW-9
Sand Blasting Shop
11th Street
ETG-MW-21
STORAGE BUILDING
ETG-MW-22
ETGSB-6
ETG-MW-8
ETGSB-4
ETGSB-1
ETGSB-2
ETG-MW-1D
ETG-MW-10
ETG-MW-1S
ETG-MW-20
ETGSB-3
SAGINAW RIVER
PRODUCT EXCAVATION
ETG-MW-16
ETG-MW-2S
ETG-MW-2D
ETG-MW-18
ETG-MW-3D
ETG-MW-3S
ETG-MW-19
ETG-MW-7
ETGSB-12
ETGSB-8
ETGSB-7
ETGSB-14
ETGSB-13
ETGSB-9
ETGSB-10
BUILDING 41
MWR-MW-6
RFW-MW-3D
RFW-MW-3S
ETG-MW-17
RFW-MW-5
BUILDING 42
26x39" SEWER
RFW-MW-4D
RFW-MW-4S
ETG-MW-6
ETG-MW-4D
ETG-MW-4S
ETG-MW-5
ETGSB-10
ETGSB-9
MWR-MW-7
Crane Testing Pad
Garfield
N
Scale In Feet
0 80 160 240 320
EXPLANATION:
SEWER LINE
MONITORING WELL
ETG SOIL BORING
ETG ENVIRONMENTAL, INC.
INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI
CROSS-SECTION AND EXCAVATION LOCATION MAP
Rev. # 2
Drawn By: M. Brocker
Date: 12/1/95
Geologist: L. Middleton
Dwg. # BAYCIT2
FIGURE 3




ETG ENVIRONMENTAL, INC.

INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI

PRODUCT EXCAVATION AREA

| | | |
|---|---|---|
| Rev. # 1 | Drawn By: M. Brocker | Date: 12/1/95 |
| Geologist: L. Middleton | Dwg. # BAYEXCA | FIGURE 5 |

# FORMER INDUSTRIAL BROWNHOIST SITE
## BAY CITY, MICHIGAN
## MONITORING WELL #MW-20

PROJECT NUMBER: 1076 LOGGED BY: J.A.

DRILLING CO: T&T DRILLING DATE DRILLED: 11/8/95

BORING METHOD: 8 1/4" HOLLOW STEM AUGER

SAMPLING METHOD: CONTINUOS SPLIT SPOON

FIELD SCREENING EQUIP.: Hnu PID

ANALYTICAL METHOD: NA

NOTES: WELL APPEARED TO BE DRY AT TIME OF INSTALLATION.

SCREEN INTERVAL BASED ON SOFTER CLAY PRESENT 37–40'

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| 1' CONCRETE W/ 2' STICK-UP SECURITY COVER | 0 | FILL | FILL | | 0 | |
| | | CL | LIGHT REDDISH BROWN SILTY CLAY WITH GRAVEL, LOW PLASTICITY AND SLIGHTLY MOIST | | 0 | |
| | 10 | | | | 0 | |
| BENTONITE/CEMENT GROUT | | | LIGHT GRAYISH BROWN SILTY CLAY WITH GRAVEL | | 0 | |
| | 20 | | | | 0 | |
| 2" SCH. 40 PVC RISER | | CL | | | 0 | |
| | 30 | | | | 0 | |
| BENTONITE CHIPS | | | MOISTURE CONTENT INCREASES, BUT NOT TO POINT OF SATURATION | | 0 | |
| 10 SLOT SCH. 40 PVC SCREEN | 40 | | | | 0 | |
| | | | END OF BORING @43' | | | |
| | 50 | | | | | |

ETG ENVIRONMENTAL, INC.

# FORMER INDUSTRIAL BROWNHOIST SITE
# BAY CITY, MICHIGAN
# MONITORING WELL #MW-22

PROJECT NUMBER: 1076 LOGGED BY: J.A.

DRILLING CO: T&T DRILLING DATE DRILLED: 11/9-11/10/95

BORING METHOD: 8 1/4" HOLLOW STEM AUGER

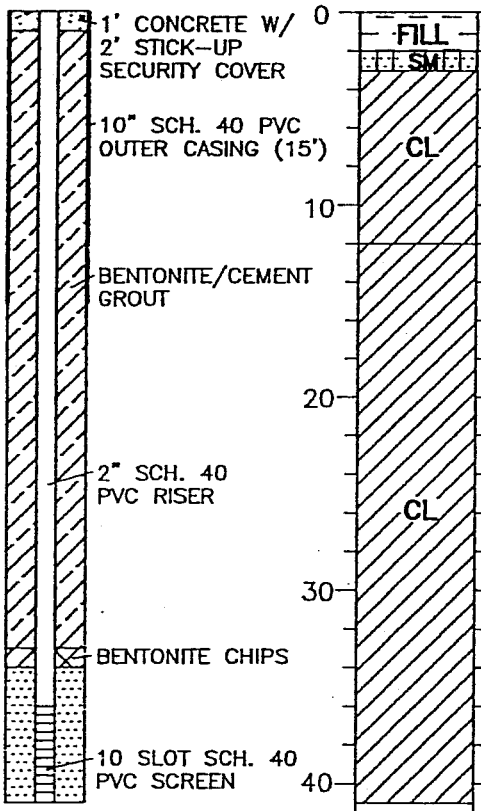
SAMPLING METHOD: CONTINUOS SPLIT SPOON

FIELD SCREENING EQUIP.: Hnu PID

ANALYTICAL METHOD: NA

NOTES: WELL APPEARED TO BE DRY AT TIME OF INSTALLATION.

SCREEN INTERVAL BASED ON SOFTER CLAY PRESENT 36-41'




| DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|
| 0 | FILL | FILL | | 0 | |
| | SM | LIGHT GRAY SILTY FINE SAND | | 0 | |
| | CL | LIGHT GRAY SILTY CLAY WITH GRAVEL. TIGHT WITH LOW PLASTICITY | | 0 | |
| 10 | | LIGHT-MEDIUM BROWN SILTY CLAY WITH GRAVEL. PREDOMINATELY TIGHT AND SLIGHTLY MOIST. | | 0 | |
| 20 | CL | | | 0 | |
| 30 | | MOISTURE CONTENT INCREASES. CLAY BECOMES SOFT AND PLASTICITY INCREASES | | 0 | |
| 40 | | END OF BORING @41' | | 0 | |
| 50 | | | | | |

ETG ENVIRONMENTAL, INC.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 32741.00
Client Reference: 1076.00

| | | | |
|---|---|---|---|
| Sample Identification: | MW-20 | Date Sampled: | -- |
| Lab Number: | 001a/D9075.D | Date Received: | 11/20/95 |
| Sample Type: | Water | Date Prepared: | 11/20/95 |
| Preparation Method: | -- | Date Analyzed: | 11/20/95 |
| Analytical Method: | EPA 8260 | | |
| Analyst: | DS | | |

| Analyte | Concentration (µg/L) | LOD (µg/L) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <1 | 1 |
| 1,1,2-Trichloroethane | <1 | 1 |
| Trichloroethene | <1 | 1 |
| Vinyl acetate | <1 | 1 |
| Vinyl chloride | <1 | 1 |
| Xylenes [total] | <3 | 3 |

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 32741.00
Client Reference: 1076.00

| | | | |
|---|---|---|---|
| Sample Identification: | MW-21 | Date Sampled: | -- |
| Lab Number: | 002a/D9073.D | Date Received: | 11/20/95 |
| Sample Type: | Water | Date Prepared: | 11/20/95 |
| Preparation Method: | -- | Date Analyzed: | 11/20/95 |
| Analytical Method: | EPA 8260 | | |
| Analyst: | DS | | |

| Analyte | Concentration (µg/L) | LOD (µg/L) |
|---|---|---|
| Volatile Compounds (continued) | | |
| 1,1,1-Trichloroethane | <1 | 1 |
| 1,1,2-Trichloroethane | <1 | 1 |
| Trichloroethene | <1 | 1 |
| Vinyl acetate | <1 | 1 |
| Vinyl chloride | <1 | 1 |
| Xylenes [total] | <3 | 3 |

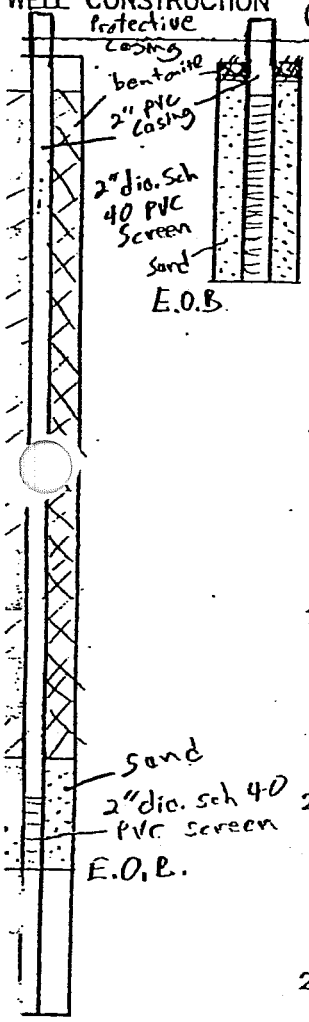
General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

-D 1-S

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW-1S,1D

| | |
|---|---|
| PROJECT NUMBER: 1076 | LOGGED BY: L H M |
| DRILLING CO: T & T | DATE DRILLED: 2-23-95 |
| BORING METHOD: H. S. A. | |
| SAMPLING METHOD: Split spoon | |
| FIELD SCREENING EQUIP.: H. Nu PID 101 | |
| ANALYTICAL METHOD: N/A | |
| NOTES: Wells installed in the approximate center of the coal tar-pit. | |

WELL CONSTRUCTION

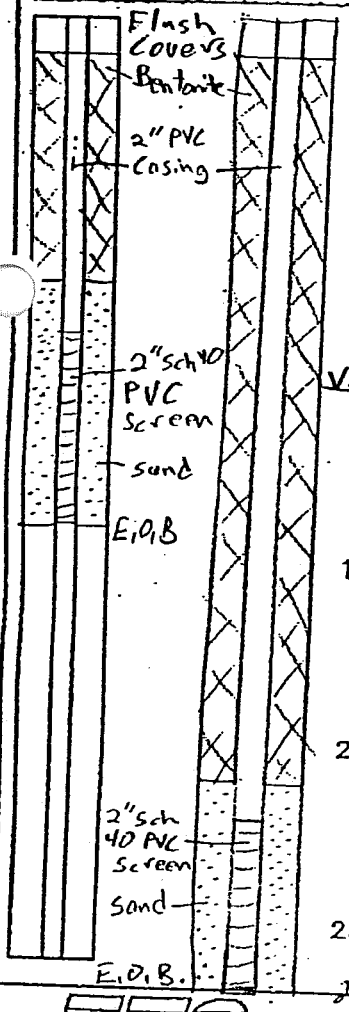



| DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|
| 0 | | dark gray sand, glass & gravel | X | N.D. | 50% |
| | | | X | 3 | 50% |
| 5 | | | X | 0.5 | 40% |
| | fill | | X | N.D. | 10% |
| | | | X | N.D. | 60% |
| 10 | | sand w/gravel & slag | X | N/A | 0% |
| | | | X | 1 | 40% |
| 15 | | silty sand w/ gravel | X | N.D. | 40% |
| | fill | | X | N.D. | 10% |
| | | | X | N.D. | 5% |
| 20 | CL | gray-brown tight clay w/trace gravel | X | 3 | 50% |
| 25 | | | | | |

ETG ENVIRONMENTAL, INC.

SITE: IB
CITY, STATE: Bay City
BORING NUMBER: ETG MW 2S, 2D

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 2-22-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: HrNu PID-101
ANALYTICAL METHOD: N/A
NOTES:



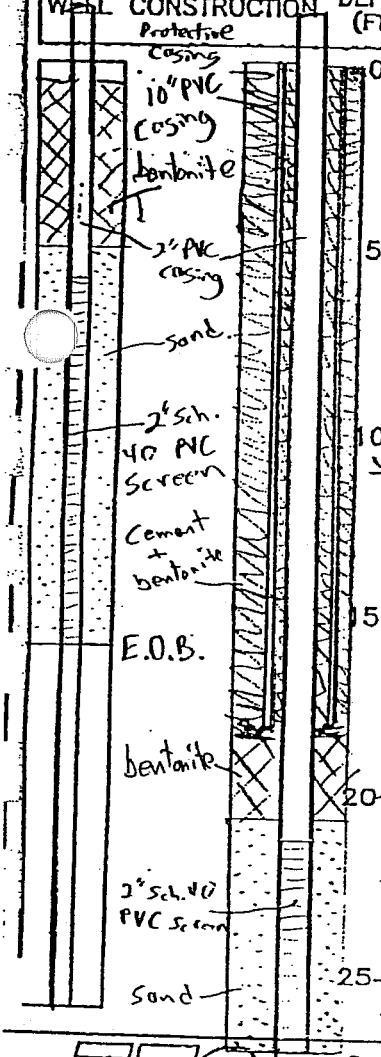

| DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|
| 0 | | | X | N.D. | 70% |
| | | medium-dark brown sand w/silt & slag | X | N.D. | 20% |
| 5 | | | X | 0.5 | 60% |
| | fill | | X | 0.5 | 70% |
| 10 | | medium-fine grained silty sand with slag, sewer-like odor | X | 1 | 60% |
| | | | X | 4 | 20% |
| 15 | | | X | 4 | 0% |
| | | Wood fill with silt. | X | 5.5 | 5% |
| | | | X | 4 | 5% |
| 20 | | | X | N/A | 0% |
| | SM | Light-medium gray & gray-brown fine-medium grained slightly silty sand. | X | 1 | 100% |
| | ML | | X | 0.5 | 80% |
| 25 | | Plastic clay interbedded with sandy silt. | X | 0.5 | 80% |
| 27 | CL | | | | |

ETG ENVIRONMENTAL, INC.

35 3 D

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW 35, 3D

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 12-5-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split Spoon
FIELD SCREENING EQUIP.: HNu PID 101
ANALYTICAL METHOD: N/A
NOTES: moist samples @ 5' B.G., wet @ 8.5', static water level @ ≈ 11' B.G. w/free product Oil ⇒ "light bunker oil", greenish-brown & greasy



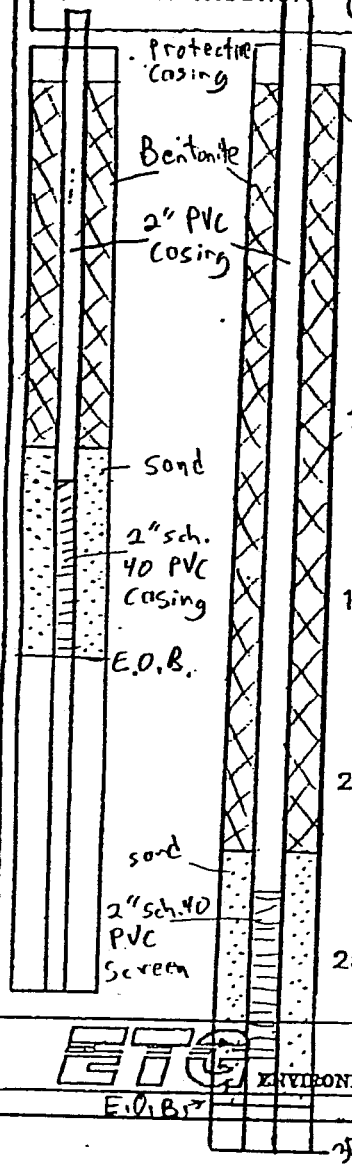

| DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|
| 0 | fill | sand w/slag | X | N.D. | 20% |
| 5 | | slightly moist dark gray | X | N.D. | 90% |
| | | | X | 3 | 40% |
| | | moist silty sand w/ slag, slight odor | X | 7 | 70% |
| 10 | | | X | 13 | 70% |
| | | greasy silty sand, slag & wood w/oil-like odor | X | 14 | 60% |
| | | greasy-oily silty sand w/trace slag | X | 15 | 50% |
| 15 | fill | | No samples @ base of 10" casing | | |
| | | Very silty soft clay w/ odor | X | 45 | 20% |
| 20 | | fine grained silty sand w/ wood (sl odor) | X | 40 | 20% |
| | fill | wood | X | N/A | 0% |
| 25 | CL | medium gray slightly silty moderately hard tight clay | X | N.D. | 30% |

E.O.B.

ETG ENVIRONMENTAL, INC.

SITE I B
CITY, STATE Bay City
BORING NUMBER ETG MW4S, 4D

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 2-22-95
BORING METHOD: H. S. A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID 101
ANALYTICAL METHOD: N/A
NOTES:




| DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|
| 0 | | Sand w/silt | X | 4 | 80% |
| | fill | | X | 2 | 80% |
| 5 | | Clay w/tr gravel | X | 0.5 | 80% |
| | | | X | 0.5 | 70% |
| 10 | | | X | 0.5 | |
| | | Sand w/slag | X | 0.5 | |
| 15 | | | X | 0.5 | 80% |
| | | | X | 0.5 | |
| 20 | fill | silty sand w/wood | X | 1 | 80% |
| | | | X | 0.5 | 80% |
| | | | X | N.D. | |
| 25 | | sand, wood & clay | X | N.D. | |
| | | | X | N.D. | |
| | | | X | N.D. | |
| 30 | CL | med. grey brown stiff, slightly plastic clay | X | N.D. | |

ETG ENVIRONMENTAL, INC.
E.O.B.

SITE: IB
CITY, STATE: Bay City
BORING NUMBER: ETG MW-5

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 2-21-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well appeared to be dry at time of installation, yet recharged O.K. at time of sampling.

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| Flush mount cover | 0 | | | | | |
| 2" dia Sch. 40 casing | | | | X | 0.5 | 95% |
| Bentonite | 5 | fill | sand, slag, wood, and brick fill | X | 0.5 | 95% |
| | | | | X | 0.5 | 50% |
| 2" dia. Sch. 40 PVC screen | | | paint odor | X | 0.5 | 70% |
| sand | 10 | | wood | X | 1.5 | 50% |
| | | | | X | 2 | 90% |
| Hole Plug | 15 | CL | Light to medium gray tight, slightly plastic clay with trace gravel | X | 11 | 95% |
| E.O.B. | | | | X | N.D. | 90% |
| | 20 | | | | | |
| | 25 | | | | | |

ETG ENVIRONMENTAL, INC.

| | |
|---|---|
| SITE | IB |
| CITY, STATE | Bay City, MI |
| BORING NUMBER | ETG MW-6 |
| PROJECT NUMBER: 1076 | LOGGED BY: LHM |
| DRILLING CO: T&T | DATE DRILLED: 2-21-95 |
| BORING METHOD: H.S.A. | |
| SAMPLING METHOD: Split Spoon | |
| FIELD SCREENING EQUIP.: H-Nu PID-101 | |
| ANALYTICAL METHOD: N/A | |
| NOTES: | |

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| | 0 | | Concrete/debris | X | N/A | 0 |
| | | | | X | 1 | 95% |
| | 5 | fill | Clay, silt, and sand fill | X | N.D. | 90% |
| | | | | X | N.D. | 10% |
| | | | Sand, silt & gravel | X | N.D. | 50% |
| | 10 | | | X | N.D. | 10% |
| | | | sand, silt and wood fill | X | N.D. | 10% |
| | 15 | | | | | |
| | 20 | | | | | |
| | 25 | | | | | |

ETG ENVIRONMENTAL, INC.

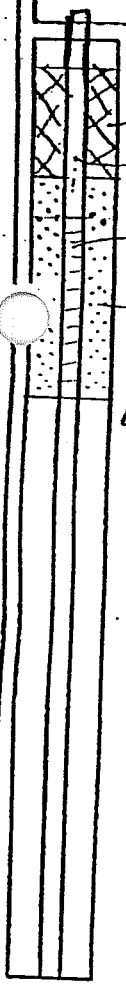
| | |
|---|---|
| SITE | IB |
| CITY, STATE | Bay City |
| BORING NUMBER | ETG MW-7 |
| PROJECT NUMBER: 1076 | LOGGED BY: LHM |
| DRILLING CO: T & T | DATE DRILLED: 2-20-95 |
| BORING METHOD: H.S.A. | |
| SAMPLING METHOD: Split spoon | |
| FIELD SCREENING EQUIP.: H.Nu PID-101 | |
| ANALYTICAL METHOD: N/A | |

NOTES: well screen set in only saturated zone. While saturation was oil-like at time of well installation, no oil was present during development

| DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|
| 0 | | Sand, slag & wood fill | NO Sample | N/A | N/A |
| | fill | | X | N.D. | 95% |
| 5 | | moist wood, organic odor | X | 3 | 10% |
| | | | X | N/A | 50% |
| | | saturated wood, poss. oil | X | 3.5 | 70% |
| 10 | Fill | | | | |
| | Fill | Wood, dry w/ sl odor | X | 7 | 80% |
| | | | X | N.D. | 50% |
| 15 | CL | medium gray-hard, stiff clay | X | N.D. | 90% |
| 20 | | | | | |
| 25 | | | | | |

ETG ENVIRONMENTAL, INC.

| | |
|---|---|
| SITE | IB |
| CITY, STATE | Bay City, |
| BORING NUMBER | ETG MW-8 |
| PROJECT NUMBER: 1076 | LOGGED BY: LHM |
| DRILLING CO: T&T | DATE DRILLED: 2-21-95 |
| BORING METHOD: H.S.A. | |
| SAMPLING METHOD: Split Spoon | |
| FIELD SCREENING EQUIP.: H.Nu PID-101 | |
| ANALYTICAL METHOD: N/A | |
| NOTES: soil sample wet @ 6' during drilling, however well was dry at time of development | |




| DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|
| | | silty sand fill | Hand dig | | |
| | fill | sandy Clay with trace gravel | X | N/A | 5% |
| | | wet silty to clayey fill with gravel. sewer odor. | X | 1.5 | 50% |
| 10 | | | X | 3 | 90% |
| 15 | | | | | |
| 20 | | | | | |
| 25 | | | | | |

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETGMW-9

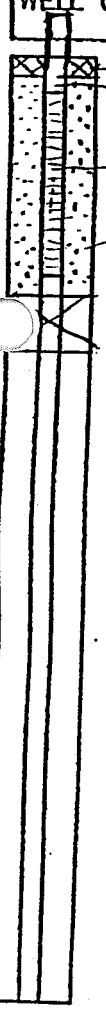
PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 2-21-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID 101
ANALYTICAL METHOD: N/A
NOTES:

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| flush mount | 0 | | | | | |
| 2" PVC riser | | | sand, silt, and slag fill | X | N.D. | 80% |
| Bentonite | | fill | | X | 0.5 | 70% |
| | 5 | | | X | 0.5 | 20% |
| 2" dia. Sch. 40 PVC screen | | | wet silty sand & wood fill | X | N.D. | 10% |
| sand | 10 | | | X | N/A | 0% |
| E.O.B. | | | | | | |
| | 15 | | | | | |
| | 20 | | | | | |
| | 25 | | | | | |

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW-10

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 3-1-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split Spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: Analyzed 0-2' sample for VOCs, PNAs, etc.
NOTES:




| DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|
| 0 | CL | light brown tight clay | X | N.D. | 60% |
| | ML | fine-medium grained slightly silty sand. | X | 1 | 60% |
| 5 | CL | gray slightly silty tight clay | X | 1.2 | 30% |
| | | | X | 1 | 70% |
| 10 | | | | | |
| 15 | | | | | |
| 20 | | | | | |
| 25 | | | | | |

ETG ENVIRONMENTAL, INC.

| | |
|---|---|
| SITE | IB |
| CITY, STATE | Bay City |
| BORING NUMBER | ETG MW-11 |
| PROJECT NUMBER: 1076 | LOGGED BY: LHM |
| DRILLING CO: T & T | DATE DRILLED: 3-14-95 |
| BORING METHOD: H.S.A. | |
| SAMPLING METHOD: Split spoon | |
| FIELD SCREENING EQUIP.: H-Nu PID-101 | |
| ANALYTICAL METHOD: N/A | |
| NOTES: Well installed just west of Weston location #9, where Weston reported possible free product. | |

| DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|
| 0 | fill | sl silty sand w/ slag | X | N.D | 60% |
| | | | X | N.D. | 70% |
| 5 | | moist brown & gy-brn fine-medium gr. sand/slag | X | 0.5 | 50% |
| | | dark gray slag, | X | N.D. | 50% |
| 10 | | wet gravel & sand w/strong petro. odor | X | 6 | 40% |
| | | slag, wood & sand | X | 9 | 50% |
| 15 | | No product was encountered | | | |
| 20 | | | | | |
| 25 | | | | | |

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETGMW-12

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 3-14-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Installed near transformer shed, hydraulically down-gradient from Weston location #9.

| DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|
| 0 | Fill | slag | X | N/A | 0% |
| | | | X | N/A | 0% |
| 5 | | apparent free product present during Install. | X | N/A | 0% |
| | SM | * gray fine-medium grained slightly silty sand (strong odor) | X | N/A | 0% |
| 10 | | | X | 10 | 50% |
| | | No product present during development/sampling | | | |
| 15 | | | | | |
| 20 | | | | | |
| 25 | | | | | |

ETG ENVIRONMENTAL, INC.

SITE: IB
CITY, STATE: Bay City
BORING NUMBER: ETG MW-13

PROJECT NUMBER: 1076 LOGGED BY: CHM
DRILLING CO: T & T DATE DRILLED: 3-14-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split Spoon
FIELD SCREENING EQUIP.: H.Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well installed south of apparent product discovered @ ETG MW-12.

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| flush mount cover | 0 | | | X | N.D | 0% |
| bentonite | | | | X | N.D. | |
| 2" PVC casing | 5 | | | X | 0.5 | |
| sand | | fill | sand w/slag | X | 0.5 | |
| 2" PVC screen | 10 | | silty sand & clay | X | N.D. | 80% |
| | | | | X | N.D. | |
| E.O.B. | 15 | | wet fine-medium grained sand | X | N.D. | |
| | 20 | | | | | |
| | 25 | | | | | |

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW-14

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 3-15-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H.Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well installed north of possible product discovered @ ETG MW-12.

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| Protective casing | 0 | | silty sand w/clay & slag | X | N.D. | 30% |
| bentonite | | | silty sand | X | N.D. | 60% |
| 2"PVC | | | wet | X | N.D. | 50% |
| 2" screen | 5 | fill | sand w/ slag (slight odor) | X | N.D. | 50% |
| sand | | | silty clay | X | 2 | 60% |
| E.O.B | 10 | | | | | |
| | 15 | | | | | |
| | 20 | | | | | |
| | 25 | | | | | |

ETG ENVIRONMENTAL, INC.

SITE
CITY, STATE Bay City TX
BORING NUMBER ETG MW-15

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 3-15-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: well installed hydraulically down-gradient of apparent product discovered @ ETG MW-12.

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| flush mount Bentonite, 2" PVC, sand | 0 | | | | | |
| | | SM | fine grained silty sand | X | N.D. | 40% |
| 2" Screen | 5 | | | X | N.D. | 60% |
| | | | | X | N.D. | 60% |
| | | CL | silty plastic clay | X | N.D. | |
| E.O.B. | | | | | | |
| | 10 | | | | | |
| | 15 | | | | | |
| | 20 | | | | | |
| | 25 | | | | | |

ETG ENVIRONMENTAL, INC.

| | |
|---|---|
| SITE | IB |
| CITY, STATE | Bay City |
| BORING NUMBER | ETG MW-16 |
| PROJECT NUMBER: 1076 | LOGGED BY: LHM |
| DRILLING CO: T & T | DATE DRILLED: 3-15-95 |
| BORING METHOD: H.S.A. | |
| SAMPLING METHOD: Split Spoon | |
| FIELD SCREENING EQUIP.: H.Nu PID-101 | |
| ANALYTICAL METHOD: N/A | |
| NOTES: Well installed north of product zone @ ETG MW-3 | |

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| Flush mount | 0 | | | X | N.D. | 40% |
| 2" PVC | | | Slag w/ sand, trace wood | X | N.D. | 50% |
| Bentonite | 5 | Fill | | X | N.D. | 60% |
| | | | silty to sandy clay | X | N.D. | 60% |
| sand | | | | X | N.D. | 60% |
| 2" PVC screen | 10 | | sand, wood & slag | X | N.D | 70% |
| | | | silty sand w/tr clay | X | 1 | 80% |
| E.O.B. | 15 | | silty clay & sand | | | |
| | 20 | | | | | |
| | 25 | | | | | |

ETG ENVIRONMENTAL, INC.

SITE: IB
CITY, STATE: Bay City
BORING NUMBER: ETG MW-17

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 3-15-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H. Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Installed south of product zone @ ETG MW-3.

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| Protective Casing | 0 | | | X | N/A | 0% |
| 2" PVC | | | Silty sand | X | N.D | 30% |
| Bentonite | 5 | fill | | X | N/A | 0% |
| | | | Sand, slag, clay & concrete fill | X | N.D. | 30% |
| sand | | | | X | N.D. | 30% |
| | 10 | | | X | N.D. | 90% |
| 2" screen | | | light medium brown clean sand | X | N/A | 0% |
| E.O.B. | 15 | | | | | |
| | 20 | | | | | |
| | 25 | | | | | |

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW-18

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 3-16-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well installed hydraulically downgradient from product @ ETG MW-3.

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| Protective Casing | 0 | | Sand w/ slag | X | 0.5 | 30% |
| 2" PVC | | | | X | 3 | 80% |
| Bentonite | 5 | | Sand, slag & clay | X | N.D. | 70% |
| | | fill | | X | N.D. | 90% |
| sand | | | | X | N.D. | 20% |
| 2" PVC screen | 10 | | | X | N/A | 5% |
| | | | silty clay w/ gravel | X | N.D. | 90% |
| E.O.B. | 15 | | silt, sand & wood | X | N.D. | 20% |
| | 20 | | | | | |
| | 25 | | | | | |

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW-19

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 3-16-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well installed hydraulically up-gradient of product @ ETG-MW-3

| WELL CONSTRUCTION | DEPTH (FT) | BORING LOG | DESCRIPTION AND COMMENTS | SAMPLES | HEAD SPACE (ppm) | RECOVERY |
|---|---|---|---|---|---|---|
| Flush mount | 0 | | | | | |
| bentonite | | | Sand w/slag | X | N.D. | 5% |
| | 5 | | | X | N.D. | 10% |
| 2" PVC | | | | X | N.D. | 40% |
| | | fill | Slag, sand and building debris | X | N.D. | 5% |
| | 10 | | | X | | 30% |
| 2" PVC Screen | | | | X | | 30% |
| sand | | | | X | | 40% |
| Hole Plug | 15 | | Silty sand w/wood Petroleum odor | X | | 30% |
| E.O.B. | | | | | | |
| | 20 | | | | | |
| | 25 | | | | | |

ETG ENVIRONMENTAL, INC.

*ATTACHMENT 11*

# *SUMMARY TABLES FOR HISTORICAL SOIL AND GROUND WATER ANALYTICAL RESULTS*

# Appendix D
# EDR Report

# The EDR Radius Map
## with GeoCheck®

**Fmr. Ind. Brownhoist Site**
**206 South Water Street**
**Bay City, MI 48708**

**Inquiry Number: 734792.1s**

**February 14, 2002**


Environmental Data Resources, Inc.

*The* Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06490

**Nationwide Customer Service**

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com


FORM-BJR

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## GEOCHECK ADDENDUM

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***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.


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# EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The report meets the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. Search distances are per ASTM standard or custom distances requested by the user.

**TARGET PROPERTY INFORMATION**

**ADDRESS**

206 SOUTH WATER STREET
BAY CITY, MI 48708

**COORDINATES**

| | |
|---|---|
| Latitude (North): | 43.591000 - 43' 35' 27.6" |
| Longitude (West): | 83.893000 - 83' 53' 34.8" |
| Universal Tranverse Mercator: | Zone 17 |
| UTM X (Meters): | 266457.2 |
| UTM Y (Meters): | 4830299.0 |

**USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY**

| | |
|---|---|
| Target Property: | 2443083-E8 BAY CITY, MI |
| Source: | USGS 7.5 min quad index |

**TARGET PROPERTY SEARCH RESULTS**

The target property was identified in the following government records. For more information on this property see page 5 of the attached EDR Radius Map report:

| Site | Database(s) | EPA ID |
|---|---|---|
| FORMER INDUSTRIAL BROWNHOIST PROPERTY<br>206 S. WATER ST.<br>BAY CITY, MI | BEA | N/A |

**DATABASES WITH NO MAPPED SITES**

No mapped sites were found in EDR's search of available ( "reasonably ascertainable ") government records either on the target property or within the ASTM E 1527-00 search radius around the target property for the following databases:

**FEDERAL ASTM STANDARD**

**CERCLIS**..... Comprehensive Environmental Response, Compensation, and Liability Information System
**CORRACTS**..... Corrective Action Report
**RCRIS-TSD**..... Resource Conservation and Recovery Information System
**RCRIS-LQG**..... Resource Conservation and Recovery Information System

**STATE ASTM STANDARD**

**SWF/LF**..... Solid Waste Facilities Database

**FEDERAL ASTM SUPPLEMENTAL**

**CONSENT**..... Superfund (CERCLA) Consent Decrees

# EXECUTIVE SUMMARY

**ROD**..... Records Of Decision
**Delisted NPL**..... National Priority List Deletions
**FINDS**..... Facility Index System/Facility Identification Initiative Program Summary Report
**HMIRS**..... Hazardous Materials Information Reporting System
**MLTS**..... Material Licensing Tracking System
**MINES**..... Mines Master Index File
**NPL Liens**..... Federal Superfund Liens
**PADS**..... PCB Activity Database System
**RAATS**..... RCRA Administrative Action Tracking System
**TRIS**..... Toxic Chemical Release Inventory System
**TSCA**..... Toxic Substances Control Act
**FTTS**..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

**STATE OR LOCAL ASTM SUPPLEMENTAL**

**AST**..... Aboveground Tanks

**SURROUNDING SITES: SEARCH RESULTS**

Surrounding sites were identified.

Elevations have been determined from the USGS 1 degree Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. EDR's definition of a site with an elevation equal to the target property includes a tolerance of +/- 10 feet. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property (by more than 10 feet). Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

**FEDERAL ASTM STANDARD**

**NPL:** Also known as Superfund, the National Priority List database is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA.

A review of the NPL list, as provided by EDR, and dated 10/22/2001 has revealed that there is 1 NPL site within approximately 1.25 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | | Map ID | Page |
|---|---|---|---|---|---|
| *BAY CITY MIDDLEGROUNDS* | *800 EVERGREEN DRIVE* | *1 - 2* | *SSW* | *69* | *43* |

**Proposed NPL:**Proposed NPL sites . The source of this database is the U.S. EPA.

A review of the Proposed NPL list, as provided by EDR, and dated 10/22/2001 has revealed that there is 1 Proposed NPL site within approximately 1.25 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | | Map ID | Page |
|---|---|---|---|---|---|
| *BAY CITY MIDDLEGROUNDS* | *800 EVERGREEN DRIVE* | *1 - 2* | *SSW* | *69* | *43* |

# EXECUTIVE SUMMARY

**CERCLIS-NFRAP:** As of February 1995. CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund Action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

A review of the CERC-NFRAP list, as provided by EDR, and dated 11/21/2001 has revealed that there is 1 CERC-NFRAP site within approximately 0.5 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *LABADIE OLDSMOBILE* | *244 SAGINAW* | *1/8 - 1/4 ENE* | *B15* | *11* |

**RCRIS:** The Resource Conservation and Recovery Act database includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act. The source of this database is the U.S. EPA.

A review of the RCRIS-SQG list, as provided by EDR, and dated 06/21/2000 has revealed that there are 17 RCRIS-SQG sites within approximately 0.5 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *GODDEYNE MFG CO* | *242 N WATER* | *0 - 1/8 NE* | *A3* | *5* |
| *LABADIE OLDS CADILLAC INC* | *245 SAGINAW ST* | *1/8 - 1/4 E* | *B5* | *6* |
| *AMERICAN HOIST DERRICK CO* | *112 N WATER* | *1/8 - 1/4 SSE* | *C7* | *7* |
| *GREAT LAKES WATER BLASTING INC* | *109 S SAGINAW* | *1/8 - 1/4 SE* | *D9* | *8* |
| *PROMATEC INC* | *109 SAGINAW ST B* | *1/8 - 1/4 SE* | *D12* | *9* |
| *STANDARD UNIVERSAL* | *109 SAGINAW ST A* | *1/8 - 1/4 SE* | *D13* | *9* |
| *LABADIE OLDSMOBILE* | *244 SAGINAW* | *1/8 - 1/4 ENE* | *B15* | *11* |
| *KAI INDUSTRIES* | *109 SAGINAW* | *1/8 - 1/4 SE* | *D18* | *13* |
| *GLIC ENVIRONMENTAL INC* | *109 S SAGINAW ST* | *1/8 - 1/4 SE* | *D19* | *14* |
| *HORAK CO THE* | *401 SAGINAW ST* | *1/4 - 1/2 NE* | *H32* | *20* |
| *US EPA BAY CITY CERT SITE* | *9TH AND 18TH W SAGINAW* | *1/4 - 1/2 NE* | *H33* | *21* |
| *DUNLOP PONTIAC INC* | *517 W WASHINGTON* | *1/4 - 1/2 NE* | *I36* | *22* |
| *CITY AUTO PARTS CO OF BAY CITY* | *611 SAGINAW ST* | *1/4 - 1/2 NNE* | *J41* | *25* |
| *SHERWIN WILLIAMS CO* | *601 WASHINGTON AVE* | *1/4 - 1/2 NE* | *43* | *26* |
| *RESEARCH VESSEL HYDRA* | *24 SIXTH ST B* | *1/4 - 1/2 N* | *K44* | *26* |
| *MIDLAND CONTRACTING* | *613 S WATER ST* | *1/4 - 1/2 SSW* | *L46* | *27* |
| *R V LAKE GUARDIAN* | *24 SIXTH ST* | *1/4 - 1/2 N* | *K49* | *29* |

**ERNS:** The Emergency Response Notification System records and stores information on reported releases of oil and hazardous substances. The source of this database is the U.S. EPA.

A review of the ERNS list, as provided by EDR, and dated 08/08/2000 has revealed that there is 1 ERNS site within approximately 0.25 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| Not reported | | 1/8 - 1/4 E | E21 | 14 |

# EXECUTIVE SUMMARY

**STATE ASTM STANDARD**

**SHWS:** The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Environmental Quality's' Contaminated Sites List on Diskette With Address.

A review of the SHWS list, as provided by EDR, has revealed that there are 11 SHWS sites within approximately 1.25 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| SAGINAW BAY INDUSTRIES | 242 N. WATER STREET | 0 - 1/8 NE | A4 | 6 |
| INDUSTRIAL BROWNHOIST | 112 N WATER STREET | 1/8 - 1/4 SSE | C6 | 6 |
| ***LABADIE OLDSMOBILE*** | ***244 SAGINAW*** | ***1/8 - 1/4 ENE*** | ***B15*** | ***11*** |
| MIDLAND CONTRACTING | 612 S. WATER | 1/4 - 1/2 SSW | L45 | 27 |
| PAINTERS SUPPLY BAY CITY | 406 E MIDLAND | 1/2 - 1 NNW | 66 | 42 |
| ULTRA-CARBON | 1310 MADISON AVE | 1/2 - 1 NNE | O67 | 42 |
| ***HIRSCHFIELD H SONS CO*** | ***1414 N MADISON AVE*** | ***1/2 - 1 NNE*** | ***O68*** | ***42*** |
| MORTON STREET, 209 | 209 MORTON STREET | 1 - 2 SW | 70 | 44 |
| MARCAN COMPANY | 800 WOODSIDE | 1 - 2 NE | 71 | 44 |
| KUHLMAN ELECTRIC | 1601 GARFIELD | 1 - 2 S | 72 | 44 |
| MARQUETTE AVE, 480 | 480 MARQUETTE AVE | 1 - 2 N | 73 | 45 |

**LUST:** The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Environmental Quality's Leaking Underground Storage Tank (LUST) Database.

A review of the LUST list, as provided by EDR, and dated 06/01/2001 has revealed that there are 31 LUST sites within approximately 0.75 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| BAY CITY INDUSTRIAL COMPLEX | 112 N WATER ST | 1/8 - 1/4 SSE | C8 | 7 |
| ***G.L. LTD*** | ***244 SAGINAW ST*** | ***1/8 - 1/4 ENE*** | ***B14*** | ***10*** |
| ***W GERBER OTTO*** | ***205 S WATER*** | ***1/8 - 1/4 SSE*** | ***C16*** | ***12*** |
| ***OLD TOWN GARAGE & TIRE INC*** | ***200 WASHINGTON AVE*** | ***1/8 - 1/4 E*** | ***E22*** | ***15*** |
| FORMER GAS STATION | 250 WASHINGTON | 1/8 - 1/4 ENE | 23 | 16 |
| ***NORCO REALTY CO*** | ***110 S WASHINGTON*** | ***1/8 - 1/4 SE*** | ***F24*** | ***17*** |
| ***SAGINAW ROCK PRODUCT CO*** | ***300 S WATER*** | ***1/8 - 1/4 S*** | ***G25*** | ***17*** |
| ***MCCOY HEATING & COOLING*** | ***303 S WATER*** | ***1/8 - 1/4 S*** | ***G26*** | ***17*** |
| ***MICHIGAN AIRGAS, INC*** | ***311 COLUMBUS AVE*** | ***1/8 - 1/4 ESE*** | ***F27*** | ***18*** |
| ***BOSCO FOOD SERVICE INC*** | ***407 11TH ST*** | ***1/4 - 1/2 E*** | ***28*** | ***18*** |
| ***CLARK STORE #1464*** | ***322 GARFIELD*** | ***1/4 - 1/2 SSE*** | ***29*** | ***18*** |
| ***BAY COUNTY HISTORICAL SOCIETY*** | ***321 N WASHINGTON AVE*** | ***1/4 - 1/2 NE*** | ***30*** | ***19*** |
| ***FIRESTONE STORE #2541/006483*** | ***416 WASHINGTON AVE*** | ***1/4 - 1/2 NE*** | ***35*** | ***21*** |
| ***DUNLOP PONTIAC, INC*** | ***517 WASHINGTON AVE*** | ***1/4 - 1/2 NE*** | ***I37*** | ***23*** |
| FORMER AUTO SALES & SERVICE | 600 SAGINAW ST | 1/4 - 1/2 NNE | J39 | 24 |
| TRIPLE CLEAN INC | 601 GARFIELD ST | 1/4 - 1/2 SSE | M48 | 28 |
| ***SAMARITAN HEALTH CENTER*** | ***713 NINTH ST*** | ***1/4 - 1/2 ENE*** | ***51*** | ***29*** |
| ***GREGORY CONSTRUCTION CO*** | ***1009 S HENRY ST*** | ***1/2 - 1 W*** | ***52*** | ***30*** |
| ***BAY CITY DPW*** | ***800 S WATER ST*** | ***1/2 - 1 SSW*** | ***53*** | ***31*** |
| ***HENRY REALTY*** | ***823 GARFIELD*** | ***1/2 - 1 SSE*** | ***54*** | ***32*** |
| CREDIT UNION PLUS | 1001 COLUMBUS | 1/2 - 1 E | 55 | 33 |
| ***BAY CITY ELECTRIC LIGHT AND PO*** | ***900 S WATER ST*** | ***1/2 - 1 SSW*** | ***56*** | ***33*** |

# EXECUTIVE SUMMARY

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| *OLD GOODYEAR TIRE FACILITY* | *520 CENTER AVE* | *1/2 - 1 NE* | *57* | *33* |
| *HOWARD H. HERZBERGER* | *1101 COLUMBUS* | *1/2 - 1 E* | *58* | *34* |
| *BAY VALLEY OIL CO* | *1309/1311 S HENRY ST* | *1/2 - 1 WSW* | *59* | *35* |
| *KONKLES MOBIL SERVICE* | *715 CENTER AVE* | *1/2 - 1 NE* | *N60* | *36* |
| *BAY CITY MAIN* | *1000 WASHINGTON* | *1/2 - 1 NNE* | *61* | *37* |
| *AMOCO OIL CO MORGANS AUTO REPA* | *800 CENTER AVE* | *1/2 - 1 NE* | *N62* | *38* |
| *BAY COUNTY BUILDING* | *911 N MADISON* | *1/2 - 1 NE* | *63* | *40* |
| *VACANT LAND (FORMER MONARCH GA* | *1000 ADAMS ST* | *1/2 - 1 NNE* | *64* | *40* |
| *THE BRAKE SHOP* | *103 THIRD ST* | *1/2 - 1 N* | *65* | *41* |

**UST:** The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Quality's Michigan UST database.

A review of the UST list, as provided by EDR, and dated 07/01/2001 has revealed that there are 18 UST sites within approximately 0.5 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| BAY AGGREGATES INC | 301 N WATERS | 0 - 1/8 S | 2 | 5 |
| *G.L. LTD* | *244 SAGINAW ST* | *1/8 - 1/4 ENE* | *B14* | *10* |
| *W GERBER OTTO* | *205 S WATER* | *1/8 - 1/4 SSE* | *C16* | *12* |
| *OLD TOWN GARAGE & TIRE INC* | *200 WASHINGTON AVE* | *1/8 - 1/4 E* | *E22* | *15* |
| *NORCO REALTY CO* | *110 S WASHINGTON* | *1/8 - 1/4 SE* | *F24* | *17* |
| *SAGINAW ROCK PRODUCT CO* | *300 S WATER* | *1/8 - 1/4 S* | *G25* | *17* |
| *MCCOY HEATING & COOLING* | *303 S WATER* | *1/8 - 1/4 S* | *G26* | *17* |
| *MICHIGAN AIRGAS, INC* | *311 COLUMBUS AVE* | *1/8 - 1/4 ESE* | *F27* | *18* |
| *BOSCO FOOD SERVICE INC* | *407 11TH ST* | *1/4 - 1/2 E* | *28* | *18* |
| *CLARK STORE #1464* | *322 GARFIELD* | *1/4 - 1/2 SSE* | *29* | *18* |
| *BAY COUNTY HISTORICAL SOCIETY* | *321 N WASHINGTON AVE* | *1/4 - 1/2 NE* | *30* | *19* |
| SEARS, ROEBUCK & CO | 401 SAGINAW ST | 1/4 - 1/2 NE | H31 | 19 |
| *FIRESTONE STORE #2541/006483* | *416 WASHINGTON AVE* | *1/4 - 1/2 NE* | *35* | *21* |
| *DUNLOP PONTIAC, INC* | *517 WASHINGTON AVE* | *1/4 - 1/2 NE* | *I37* | *23* |
| BAY COUNTY CONFERENCE CENTER | 621 N WATER | 1/4 - 1/2 NNE | 38 | 24 |
| TRIPLE CLEAN INC | 601 GARFIELD ST | 1/4 - 1/2 SSE | M47 | 28 |
| A.W. EURICH PLUMBING & HEATING | 610 ADAMS ST | 1/4 - 1/2 NE | 50 | 29 |
| *SAMARITAN HEALTH CENTER* | *713 NINTH ST* | *1/4 - 1/2 ENE* | *51* | *29* |

**BEA:** Baseline Environmental Assessment.

A review of the BEA list, as provided by EDR, and dated 09/28/2001 has revealed that there are 5 BEA sites within approximately 0.5 miles of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| INDUSTRIAL BROWNHOIST | 112 N. WATER ST. | 1/8 - 1/4 SSE | C10 | 8 |
| Not reported | 205 SOUTH WATER STREET | 1/8 - 1/4 SSE | C17 | 13 |
| 210 COLUMBUS AVE./110 S. WASHI | 210 COLUMBUS AVE. | 1/8 - 1/4 SE | D20 | 14 |
| 600 SAGINAW ST. | 600 SAGINAW ST. | 1/4 - 1/2 NNE | J40 | 24 |
| Not reported | 613 SAGINAW ST. | 1/4 - 1/2 NNE | J42 | 26 |

# EXECUTIVE SUMMARY

## PROPRIETARY DATABASES

**Former Manufactured Gas (Coal Gas) Sites:**

The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative

A review of the Coal Gas list, as provided by EDR, has revealed that there are 2 Coal Gas sites within approximately 1 mile of the target property.

| Equal/Higher Elevation | Address | Dist / Dir | Map ID | Page |
|---|---|---|---|---|
| BAY CITY GAS CO. | 135 SAGINAW | 1/8 - 1/4 ESE | D11 | 8 |
| BAY CITY GAS CO. | 401-423 N. WATER ST. | 1/4 - 1/2 S | 34 | 21 |

# EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

| Site Name | Database(s) |
|---|---|
| DORE INDUSTRIAL DEVELOPMENT INCORPORATION | FINDS, SWF/LF, RCRIS-LQG, RCRIS-TSD, UST, CORRACTS, CERC-NFRAP |
| SAGINAW RIVER AND SAGINAW BAY | SHWS |
| BAY CO. ROAD COM. - EAST DISTRIC | SHWS |
| UNION OIL TERMINAL | SHWS |
| DELTA LANDFILL | SHWS |
| CROTTY STREET CHANNEL | SHWS |
| SAGINAW AND 10TH STREETS | SHWS |
| THIRTEENTH AND SAGINAW STS. | SHWS |
| WATER ST, N 2905 | SHWS |
| FIRST AND WATER STREETS | SHWS |
| PORTSMOUTH TWP DUMP | SHWS |
| STRAITS JP4 LOADING RACK | SHWS |
| SURATH SCRAP YARD | SHWS |
| DOW CHEM BAY REFINERY + TERMINAL | SHWS |
| CONSUMER POWER MNF GAS PLANT | SHWS |
| RIDGE ROAD, OLD PEERLESS PROP. | SHWS |
| BANGOR TWP SAN LDFL | SHWS, CERC-NFRAP |
| C AND O RAILROAD BAY CITY | SHWS |
| FISHER BROTHERS | SHWS |
| WATER STREET EAST BTWN 6TH + 7TH | SHWS |
| SAGINAW RIVER DRUM | CERCLIS |
| C & 0 RAILROAD BAY CITY | CERC-NFRAP |
| PORTSMOUTH TWP | SWF/LF |
| SPEEDWAY #3626 | LUST |
| CITY OF BAY CITY | LUST |
| LAKEHEAD PIPE LINE COMPANY, INC | UST |
| MARATHON | UST |
| DORES STORE | UST |
| MIDOT BRIDGE M-25 OVER SAGINAW RIVER | RCRIS-SQG, FINDS |
| CLEVELAND TANKERS JUPITER SITE | RCRIS-SQG, FINDS |
| AMOCO OIL CO BAY VALLEY FOOD | RCRIS-SQG, FINDS |
| AMOCO OIL CO 5007 | RCRIS-SQG, FINDS |
| SAGINAW RIVER ORPHAN DRUM | RCRIS-SQG, FINDS |
| CONSUMERS ENERGY - HORAK PARKING LOT | RCRIS-SQG, FINDS |
| 240 / 248 WASHINGTON AVE. | BEA |
| 241 & 252 AUSABLE STATE RD. | BEA |
| EASTERN PORTION OF 241 & 252 | BEA |
| BLOCK 71 / 72 LOWER SAGINAW PLAT | BEA |
| BANKRUPTCY COURT, ADJACENT TO | BEA |

# OVERVIEW MAP - 734792.1s - AKT Peerless Environmental Svc

Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Coal Gasification Sites

National Priority List Sites

Landfill Sites

0 1/2 1 2 Miles

Power transmission lines

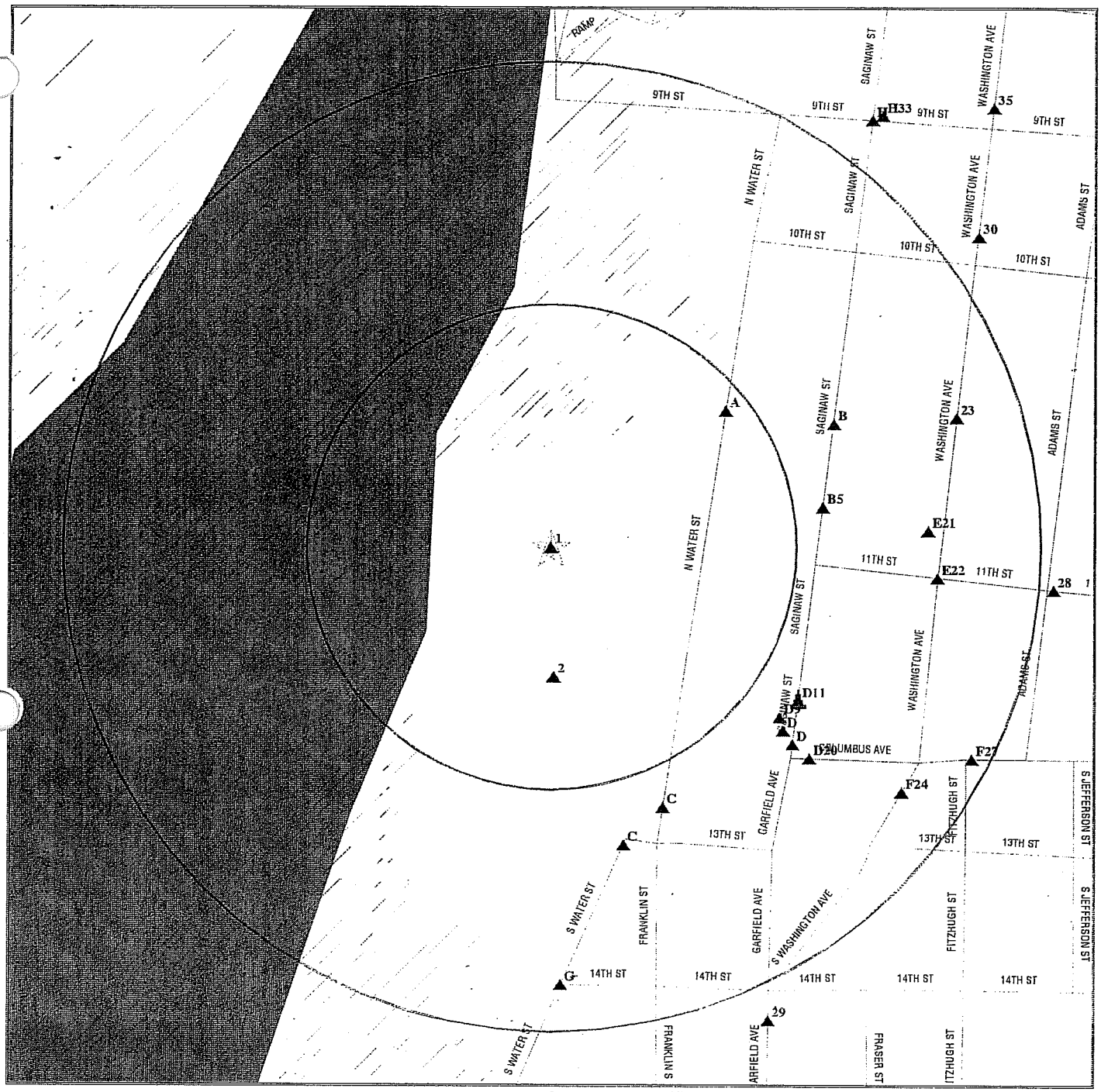
Oil & Gas pipelines

100-year flood zone

500-year flood zone

| | | | |
|---|---|---|---|
| TARGET PROPERTY: | Fmr. Ind. Brownhoist Site | CUSTOMER: | AKT Peerless Environmental Svc |
| ADDRESS: | 206 South Water Street | CONTACT: | Bev Dempsey |
| CITY/STATE/ZIP: | Bay City MI 48708 | INQUIRY #: | 734792.1s |
| LAT/LONG: | 43.5910 / 83.8930 | DATE: | February 14, 2002 1:12 pm |

# DETAIL MAP - 734792.1s - AKT Peerless Environmental Svc




- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone

| | | | |
|---|---|---|---|
| TARGET PROPERTY: | Fmr. Ind. Brownhoist Site | CUSTOMER: | AKT Peerless Environmental Svc |
| ADDRESS: | 206 South Water Street | CONTACT: | Bev Dempsey |
| CITY/STATE/ZIP: | Bay City MI 48708 | INQUIRY #: | 734792.1s |
| LAT/LONG: | 43.5910 / 83.8930 | DATE: | February 14, 2002 1:13 pm |

# MAP FINDINGS SUMMARY

| Database | Target Property | Search Distance (Miles) | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| **FEDERAL ASTM STANDARD** | | | | | | | | |
| NPL | | 1.250 | 0 | 0 | 0 | 0 | 1 | 1 |
| Proposed NPL | | 1.250 | 0 | 0 | 0 | 0 | 1 | 1 |
| CERCLIS | | 0.750 | 0 | 0 | 0 | 0 | NR | 0 |
| CERC-NFRAP | | 0.500 | 0 | 1 | 0 | NR | NR | 1 |
| CORRACTS | | 1.250 | 0 | 0 | 0 | 0 | 0 | 0 |
| RCRIS-TSD | | 0.750 | 0 | 0 | 0 | 0 | NR | 0 |
| RCRIS Lg. Quan. Gen. | | 0.500 | 0 | 0 | 0 | NR | NR | 0 |
| RCRIS Sm. Quan. Gen. | | 0.500 | 1 | 8 | 8 | NR | NR | 17 |
| ERNS | | 0.250 | 0 | 1 | NR | NR | NR | 1 |
| **STATE ASTM STANDARD** | | | | | | | | |
| State Haz. Waste | | 1.250 | 1 | 2 | 1 | 3 | 4 | 11 |
| State Landfill | | 0.750 | 0 | 0 | 0 | 0 | NR | 0 |
| LUST | | 0.750 | 0 | 9 | 8 | 14 | NR | 31 |
| UST | | 0.500 | 1 | 7 | 10 | NR | NR | 18 |
| BEA | X | 0.500 | 0 | 3 | 2 | NR | NR | 5 |
| **FEDERAL ASTM SUPPLEMENTAL** | | | | | | | | |
| CONSENT | | 1.000 | 0 | 0 | 0 | 0 | NR | 0 |
| ROD | | 1.000 | 0 | 0 | 0 | 0 | NR | 0 |
| Delisted NPL | | 1.000 | 0 | 0 | 0 | 0 | NR | 0 |
| FINDS | | TP | NR | NR | NR | NR | NR | 0 |
| HMIRS | | TP | NR | NR | NR | NR | NR | 0 |
| MLTS | | TP | NR | NR | NR | NR | NR | 0 |
| MINES | | 0.250 | 0 | 0 | NR | NR | NR | 0 |
| NPL Liens | | TP | NR | NR | NR | NR | NR | 0 |
| PADS | | TP | NR | NR | NR | NR | NR | 0 |
| RAATS | | TP | NR | NR | NR | NR | NR | 0 |
| TRIS | | TP | NR | NR | NR | NR | NR | 0 |
| TSCA | | TP | NR | NR | NR | NR | NR | 0 |
| FTTS | | TP | NR | NR | NR | NR | NR | 0 |
| **STATE OR LOCAL ASTM SUPPLEMENTAL** | | | | | | | | |
| AST | | TP | NR | NR | NR | NR | NR | 0 |
| **EDR PROPRIETARY HISTORICAL DATABASES** | | | | | | | | |
| Coal Gas | | 1.000 | 0 | 1 | 1 | 0 | NR | 2 |
| AQUIFLOW - see EDR Physical Setting Source Addendum | | | | | | | | |

TP = Target Property

NR = Not Requested at this Search Distance

* Sites may be listed in more than one database

| Map ID<br>Direction<br>Distance<br>Distance (ft.)<br>Elevation | Site | Database(s) | EDR ID Number<br>EPA ID Number |
|---|---|---|---|
| **1<br>Target<br>Property** | **FORMER INDUSTRIAL BROWNHOIST PROPERTY<br>206 S. WATER ST.<br>BAY CITY, MI** | **BEA** | **S104911166<br>N/A** |

BEA:

| | |
|---|---|
| Petition Disclosure: | 0 |
| BEA Number: | 381 |
| District: | Saginaw Bay |
| Date Received: | 04/03/2001 |
| Submitter Name: | Port Fisher LLC |
| Petition Determination: | No Request |
| Category: | Same Hazardous Substance(s) |
| Determination 20107A: | No Request |
| Reviewer: | persona |
| Division Assigned: | Environmental Response Division |

| | | | |
|---|---|---|---|
| **2<br>South<br>< 1/8<br>354<br>Higher** | **BAY AGGREGATES INC<br>301 N WATERS<br>BAY CITY, MI 48706** | **UST** | **U003425998<br>N/A** |

UST:

| | | | |
|---|---|---|---|
| Facility ID: | 0014779 | | |
| Tank ID: | 1 | | |
| Owner: | BAY AGGREGATES INC | Owner Phone: | (517) 892-6191 |
| Owner Address: | 301 NORTH WATER<br>BAY CITY, MI | | |
| Product: | Diesel | | |
| Capacity: | 6,000 | | |
| Tank Status: | Removed from Ground | | |

| | | | |
|---|---|---|---|
| **A3<br>NE<br>< 1/8<br>598<br>Higher** | **GODDEYNE MFG CO<br>242 N WATER<br>BAY CITY, MI 48708** | **RCRIS-SQG<br>FINDS** | **1000188703<br>MID005371000** |

**Site 1 of 2 in cluster A**

RCRIS:

| | |
|---|---|
| Owner: | CARD L LETHERER B<br>(312) 555-1212 |
| Contact: | LYNN CARD<br>(517) 892-1561 |
| Record Date: | 10/03/1980 |
| Classification: | Small Quantity Generator |
| Used Oil Recyc: | No |
| Violation Status: | No violations found |

FINDS:

Other Pertinent Environmental Activity Identified at Site:
- Facility Registry System (FRS)
- Resource Conservation and Recovery Act Information system (RCRAINFO)
- Toxic Chemical Release Inventory System (TRIS)

| Map ID<br>Direction<br>Distance<br>Distance (ft.)<br>Elevation | Site | Database(s) | EDR ID Number<br>EPA ID Number |
|---|---|---|---|
| **A4<br>NE<br>< 1/8<br>598<br>Higher** | **SAGINAW BAY INDUSTRIES<br>242 N. WATER STREET<br>BAY CITY, MI 48708** | **SHWS** | **S105143871<br>N/A** |

**Site 2 of 2 in cluster A**

SHWS:

| | |
|---|---|
| Facility ID: | 09000181 |
| Facility Status: | Active |
| Source: | Plating & Polishing |
| Pollutant(s): | Pb Cu Zn, Cd CN, PCBs |
| SAM Score: | 41 |
| SAM Score Date: | 1994-08-19 00:00 |
| Township: | 14N |
| Range: | 05E |
| Section: | 28 |
| Quarter: | N |
| Quarter/Quarter: | N |

---

| | | | |
|---|---|---|---|
| **B5<br>East<br>1/8-1/4<br>739<br>Higher** | **LABADIE OLDS CADILLAC INC<br>245 SAGINAW ST<br>BAY CITY, MI 48706** | **RCRIS-SQG<br>FINDS** | **1000145519<br>MID982610651** |

**Site 1 of 3 in cluster B**

RCRIS:

| | |
|---|---|
| Owner: | LABADIE GARY<br>(312) 555-1212 |
| Contact: | THOMAS SHARP<br>(517) 893-9593 |
| Record Date: | 07/05/1988 |
| Classification: | Small Quantity Generator |
| Used Oil Recyc: | No |

Violation Status: No violations found

FINDS:

Other Pertinent Environmental Activity Identified at Site:

Facility Registry System (FRS)

Resource Conservation and Recovery Act Information system (RCRAINFO)

---

| | | | |
|---|---|---|---|
| **C6<br>SSE<br>1/8-1/4<br>771<br>Higher** | **INDUSTRIAL BROWNHOIST<br>112 N WATER STREET<br>BAY CITY, MI 48706** | **SHWS** | **S105143863<br>N/A** |

**Site 1 of 6 in cluster C**

SHWS:

| | |
|---|---|
| Facility ID: | 09000045 |
| Facility Status: | Active |
| Source: | Hoist Manufacturing |
| Pollutant(s): | Benzene Chlorobenzen, Metals PERC Xylenes, null |
| SAM Score: | 28 |
| SAM Score Date: | 1991-09-19 00:00 |
| Township: | 14N |
| Range: | 05E |
| Section: | 28 |
| Quarter: | N |
| Quarter/Quarter: | n |

| Map ID<br>Direction<br>Distance<br>Distance (ft.)<br>Elevation | Site | Database(s) | EDR ID Number<br>EPA ID Number |
|---|---|---|---|
| **C7<br>SSE<br>1/8-1/4<br>771<br>Higher** | **AMERICAN HOIST DERRICK CO<br>112 N WATER<br>BAY CITY, MI 48708** | **RCRIS-SQG<br>FINDS** | **1000359485<br>MID086744208** |

**Site 2 of 6 in cluster C**

RCRIS:

Owner: NAME NOT REPORTED
(312) 555-1212

Contact: CHUCK HAYWARD
(517) 894-2961

Record Date: 08/11/1980
Classification: Small Quantity Generator
Used Oil Recyc: No

Violation Status: Violations exist

| | |
|---|---|
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-All Requirements |
| Date Violation Determined: | 10/19/1988 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 12/08/1988 |
| Actual Date Achieved Compliance: | 09/28/1992 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 11/14/1988 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-All Requirements |
| Date Violation Determined: | 02/14/1990 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 04/02/1990 |
| Actual Date Achieved Compliance: | 09/28/1992 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 03/15/1990 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |

There are 2 violation record(s) reported at this site:

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Compliance Evaluation Inspection (CEI) | Generator-All Requirements | 09/28/1992 |
| Compliance Evaluation Inspection (CEI) | Generator-All Requirements | 09/28/1992 |

FINDS:

Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

| | | | |
|---|---|---|---|
| **C8<br>SSE<br>1/8-1/4<br>771<br>Higher** | **BAY CITY INDUSTRIAL COMPLEX<br>112 N WATER ST<br>BAY CITY, MI 48708** | **LUST** | **1001713386<br>N/A** |

**Site 3 of 6 in cluster C**

LUST:

Facility ID: 0-037246
Release Number: CR-210-93
Release Date: 01-11-1993

**BAY CITY INDUSTRIAL COMPLEX (Continued)** **1001713386**

Facility Status: OPEN

---

**D9 SE 1/8-1/4 771 Higher** | **GREAT LAKES WATER BLASTING INC** | **RCRIS-SQG** **1000158568**
**109 S SAGINAW** | **FINDS** **MID985569979**
**BAY CITY, MI 48708**

**Site 1 of 7 in cluster D**

RCRIS:
Owner: NA
(312) 555-1212
Contact: WM YOCUM
(517) 771-1731
Record Date: Not reported
Classification: Not reported
Used Oil Recyc: No
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

**C10 SSE 1/8-1/4 772 Higher** | **INDUSTRIAL BROWNHOIST** | **BEA** **S104909527**
**112 N. WATER ST.** **N/A**
**BAY CITY, MI**

**Site 4 of 6 in cluster C**

BEA:
Petition Disclosure: 1
BEA Number: 13
District: Saginaw Bay
Date Received: 12/06/1995
Submitter Name: David E. Ives/I.B. Industrial Park, Inc.
Petition Determination: Affirmed
Category: No Hazardous Substance(s)
Determination 20107A: Affirmed
Reviewer: klannr
Division Assigned: Environmental Response Division

---

**D11 ESE 1/8-1/4 786 Higher** | **BAY CITY GAS CO.** | **Coal Gas** **G000001354**
**135 SAGINAW** **N/A**
**BAY CITY, MI 48708**

**Site 2 of 7 in cluster D**

COAL GAS SITE DESCRIPTION:
1912 Bay City Gas Co. has additional gasometer and machine shop on the we st side of Saginaw, south of 11th Street and north of N. Columbus St. Site exten ds west to the railroad tracks.
1942, site owned by Industrial Brownhoist Corp, gas holder no longer shown.

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| Map ID<br>Direction<br>Distance<br>Distance (ft.)<br>Elevation | Site | Database(s) | EDR ID Number<br>EPA ID Number |
|---|---|---|---|
| **D12<br>SE<br>1/8-1/4<br>801<br>Higher** | **PROMATEC INC<br>109 SAGINAW ST B<br>BAY CITY, MI 48708** | **RCRIS-SQG<br>FINDS** | **1000296603<br>MID985567544** |

**Site 3 of 7 in cluster D**

RCRIS:

Owner: NOT AVAILABLE
(312) 555-1212

Contact: JANET HAFF
(312) 353-7923

Record Date: 03/15/1989
Classification: Conditionally Exempt Small Quantity Generator
Used Oil Recyc: No

Violation Status: Violations exist

| | |
|---|---|
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-All Requirements |
| Date Violation Determined: | 10/19/1988 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 11/30/1988 |
| Actual Date Achieved Compliance: | 09/28/1992 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 11/14/1988 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-All Requirements |
| Date Violation Determined: | 03/25/1991 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 04/30/1991 |
| Actual Date Achieved Compliance: | 09/28/1992 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 04/17/1991 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |

There are 2 violation record(s) reported at this site:

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Other Evaluation | Generator-All Requirements | 09/28/1992 |
| Compliance Schedule Evaluation (CSE) | Generator-All Requirements | 09/28/1992 |

FINDS:

Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

| | | | |
|---|---|---|---|
| **D13<br>SE<br>1/8-1/4<br>801<br>Higher** | **STANDARD UNIVERSAL<br>109 SAGINAW ST A<br>BAY CITY, MI 48707** | **RCRIS-SQG<br>FINDS** | **1000310452<br>MID985567882** |

**Site 4 of 7 in cluster D**

**STANDARD UNIVERSAL (Continued)** **1000310452**

RCRIS:
Owner: NOT AVAILABLE
(312) 555-1212

Contact: JANET HAFF
(312) 353-7923

Record Date: 03/15/1989
Classification: Small Quantity Generator
Used Oil Recyc: No

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

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**B14** **G.L. LTD** **LUST** **U000249980**
**ENE** **244 SAGINAW ST** **UST** **N/A**
**1/8-1/4** **BAY CITY, MI 48708**
**831**
**Higher** **Site 2 of 3 in cluster B**

LUST:
Facility ID: 0-006296
Release Number: C-304-00
Release Date: 03-24-2000
Facility Status: OPEN

UST:
Facility ID: 0006296
Tank ID: 1
Owner: G.L. LTD Owner Phone: (517) 667-2000
Owner Address: 711 S EUCLID AVE
BAY CITY, MI
Product: Used Oil
Capacity: 560
Tank Status: Removed from Ground

Facility ID: 0006296
Tank ID: 2
Owner: G.L. LTD Owner Phone: (517) 667-2000
Owner Address: 711 S EUCLID AVE
BAY CITY, MI
Product: Used Oil
Capacity: 1,000
Tank Status: Removed from Ground

Facility ID: 0006296
Tank ID: 3
Owner: G.L. LTD Owner Phone: (517) 667-2000
Owner Address: 711 S EUCLID AVE
BAY CITY, MI
Product: Used Oil
Capacity: 1,000
Tank Status: Removed from Ground

| Map ID<br>Direction<br>Distance<br>Distance (ft.)<br>Elevation | Site | Database(s) | EDR ID Number<br>EPA ID Number |
|---|---|---|---|
| **B15<br>ENE<br>1/8-1/4<br>831<br>Higher** | **LABADIE OLDSMOBILE<br>244 SAGINAW<br>BAY CITY, MI 48706<br><br>Site 3 of 3 in cluster B** | **RCRIS-SQG<br>SHWS<br>FINDS<br>CERC-NFRAP** | **1000145517<br>MID055662936** |

CERCLIS-NFRAP Classification Data:

| | | | |
|---|---|---|---|
| Site Incident Category: | Not reported | Federal Facility: | Not a Federal Facility |
| Non NPL Code: | NFRAP | | |
| Ownership Status: | Other | NPL Status: | Not on the NPL |

CERCLIS-NFRAP Assessment History:

| | | | |
|---|---|---|---|
| Assessment: | DISCOVERY | Completed: | 12/04/1985 |
| Assessment: | PRELIMINARY ASSESSMENT | Completed: | 06/18/1986 |

RCRIS:

Owner: NAME NOT REPORTED
(312) 555-1212

Contact: LARRY SILVER
(517) 893-9593

Record Date: 10/25/1993
Classification: Small Quantity Generator
Used Oil Recyc: No

Violation Status: Violations exist

| | |
|---|---|
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-All Requirements |
| Date Violation Determined: | 06/24/1988 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 07/24/1988 |
| Actual Date Achieved Compliance: | 02/17/1989 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 07/07/1988 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-All Requirements |
| Date Violation Determined: | 06/24/1988 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 07/24/1988 |
| Actual Date Achieved Compliance: | 02/17/1989 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 07/07/1988 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-Land Ban Requirements |
| Date Violation Determined: | 06/24/1988 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 07/24/1988 |
| Actual Date Achieved Compliance: | 02/17/1989 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 07/07/1988 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-All Requirements |

**LABADIE OLDSMOBILE (Continued)** **1000145517**

| | |
|---|---|
| Date Violation Determined: | 07/14/1994 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 07/29/1994 |
| Actual Date Achieved Compliance: | 09/30/1994 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 07/14/1994 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-All Requirements |
| Date Violation Determined: | 10/14/1993 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 11/12/1993 |
| Actual Date Achieved Compliance: | 09/30/1994 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 10/14/1993 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |

There are 5 violation record(s) reported at this site:

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Other Evaluation | Generator-All Requirements | 09/30/1994 |
| Compliance Evaluation Inspection (CEI) | Generator-All Requirements | 09/30/1994 |
| Compliance Evaluation Inspection (CEI) | Generator-All Requirements | 02/17/1989 |
| | Generator-All Requirements | 02/17/1989 |
| | Generator-Land Ban Requirements | 02/17/1989 |

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

SHWS:

| | |
|---|---|
| Facility ID: | 09000017 |
| Facility Status: | Active |
| Source: | Car dealer |
| Pollutant(s): | Light Industrial, Paint Wastes, null |
| SAM Score: | 17 |
| SAM Score Date: | 1991-10-19 00:00 |
| Township: | 14N |
| Range: | 05E |
| Section: | 28 |
| Quarter: | N |
| Quarter/Quarter: | n |

---

**C16** **W GERBER OTTO** **LUST** **U000249964**
**SSE** **205 S WATER** **UST** **N/A**
**1/8-1/4** **BAY CITY, MI 48708**
**835**
**Higher** **Site 5 of 6 in cluster C**

LUST:

| | |
|---|---|
| Facility ID: | 0-013156 |
| Release Number: | C-1202-93 |
| Release Date: | 09-30-1993 |
| Facility Status: | CLOSED |

**W GERBER OTTO (Continued)** **U000249964**

UST:

| | | | |
|---|---|---|---|
| Facility ID: | 0013156 | | |
| Tank ID: | 1 | | |
| Owner: | W GERBER OTTO | Owner Phone: | (517) 792-1581 |
| Owner Address: | 4343 STATE ST<br>SAGINAW, MI | | |
| Product: | UNK | | |
| Capacity: | 8,000 | | |
| Tank Status: | Removed from Ground | | |

| | | | |
|---|---|---|---|
| Facility ID: | 0013156 | | |
| Tank ID: | 2 | | |
| Owner: | W GERBER OTTO | Owner Phone: | (517) 792-1581 |
| Owner Address: | 4343 STATE ST<br>SAGINAW, MI | | |
| Product: | Gasoline | | |
| Capacity: | 10,000 | | |
| Tank Status: | Removed from Ground | | |

---

**C17**
**SSE**
**1/8-1/4**
**835**
**Higher**

**205 SOUTH WATER STREET**
**BAY CITY, MI**

**BEA** **S105094678**
**N/A**

**Site 6 of 6 in cluster C**

BEA:

| | |
|---|---|
| Petition Disclosure: | 0 |
| BEA Number: | 383 |
| District: | Saginaw Bay |
| Date Received: | 05/09/2001 |
| Submitter Name: | City of Bay City |
| Petition Determination: | No Request |
| Category: | No Hazardous Substance(s) |
| Determination 20107A: | No Request |
| Reviewer: | persona |
| Division Assigned: | Environmental Response Division |

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**D18**
**SE**
**1/8-1/4**
**844**
**Higher**

**KAI INDUSTRIES**
**109 SAGINAW**
**BAY CITY, MI 48708**

**RCRIS-SQG** **1000528526**
**FINDS** **MID985609452**

**Site 5 of 7 in cluster D**

RCRIS:

| | |
|---|---|
| Owner: | KAI INDUSTRIES |
| Contact: | RANDALL BROWN<br>(517) 894-2190 |
| Record Date: | 03/20/1991 |
| Classification: | Small Quantity Generator |

**KAI INDUSTRIES (Continued)** **1000528526**

Used Oil Recyc: No

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

**D19 SE 1/8-1/4 844 Higher** — **GLIC ENVIRONMENTAL INC**, **109 S SAGINAW ST**, **BAY CITY, MI 48708** — **RCRIS-SQG, FINDS** — **1000165766, MID985568757**

**Site 6 of 7 in cluster D**

RCRIS:
Owner: AMERICAN HOIST CO
(312) 555-1212

Contact: AL SCZTUCKO
(517) 894-4994

Record Date: 05/04/1989
Classification: Hazardous Waste Transporter
Used Oil Recyc: No

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

**D20 SE 1/8-1/4 903 Higher** — **210 COLUMBUS AVE./110 S. WASHINGTON**, **210 COLUMBUS AVE.**, **BAY CITY, MI** — **BEA** — **S104910139, N/A**

**Site 7 of 7 in cluster D**

BEA:
Petition Disclosure: 1
BEA Number: 133
District: Saginaw Bay
Date Received: 04/10/1998
Submitter Name: Bay Health Systems
Petition Determination: Affirmed
Category: No Hazardous Substance(s)
Determination 20107A: Pending
Reviewer: klannr
Division Assigned: Environmental Response Division

---

**E21 East 1/8-1/4 1017 Higher** — **BAY CITY, MI 48708** — **ERNS** — **95307914, N/A**

**Site 1 of 2 in cluster E**

| Map ID / Direction / Distance / Distance (ft.) / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number |
|---|---|---|---|
| **E22 East 1/8-1/4 1045 Higher** | **OLD TOWN GARAGE & TIRE INC<br>200 WASHINGTON AVE<br>BAY CITY, MI 48708<br><br>Site 2 of 2 in cluster E** | **LUST<br>UST** | **1000691458<br>N/A** |

LUST:
Facility ID: 0-037042
Release Number: C-2057-92
Release Date: 11-25-1992
Facility Status: CLOSED

UST:
Facility ID: 0037042
Tank ID: 1
Owner: HAROLD H & JACQUELINE DAY Owner Phone: ( ) -
Owner Address: 530 RODEO RD
SEDONA, AZ
Product: Used Oil
Capacity: 500
Tank Status: Removed from Ground

Facility ID: 0037042
Tank ID: 10
Owner: HAROLD H & JACQUELINE DAY Owner Phone: ( ) -
Owner Address: 530 RODEO RD
SEDONA, AZ
Product: Gasoline
Capacity: 500
Tank Status: Removed from Ground

Facility ID: 0037042
Tank ID: 2
Owner: HAROLD H & JACQUELINE DAY Owner Phone: ( ) -
Owner Address: 530 RODEO RD
SEDONA, AZ
Product: UNKNOWN
Capacity: 500
Tank Status: Removed from Ground

Facility ID: 0037042
Tank ID: 3
Owner: HAROLD H & JACQUELINE DAY Owner Phone: ( ) -
Owner Address: 530 RODEO RD
SEDONA, AZ
Product: Gasoline
Capacity: 500
Tank Status: Removed from Ground

Facility ID: 0037042
Tank ID: 4
Owner: HAROLD H & JACQUELINE DAY Owner Phone: ( ) -
Owner Address: 530 RODEO RD
SEDONA, AZ
Product: Gasoline
Capacity: 500
Tank Status: Removed from Ground

Facility ID: 0037042
Tank ID: 5

**OLD TOWN GARAGE & TIRE INC (Continued)** **1000691458**

Owner: HAROLD H & JACQUELINE DAY Owner Phone: ( ) -
Owner Address: 530 RODEO RD
SEDONA, AZ
Product: Gasoline
Capacity: 500
Tank Status: Removed from Ground

Facility ID: 0037042
Tank ID: 6
Owner: HAROLD H & JACQUELINE DAY Owner Phone: ( ) -
Owner Address: 530 RODEO RD
SEDONA, AZ
Product: Gasoline
Capacity: 500
Tank Status: Removed from Ground

Facility ID: 0037042
Tank ID: 7
Owner: HAROLD H & JACQUELINE DAY Owner Phone: ( ) -
Owner Address: 530 RODEO RD
SEDONA, AZ
Product: Not reported
Capacity: 500
Tank Status: Removed from Ground

Facility ID: 0037042
Tank ID: 8
Owner: HAROLD H & JACQUELINE DAY Owner Phone: ( ) -
Owner Address: 530 RODEO RD
SEDONA, AZ
Product: Gasoline
Capacity: 500
Tank Status: Removed from Ground

Facility ID: 0037042
Tank ID: 9
Owner: HAROLD H & JACQUELINE DAY Owner Phone: ( ) -
Owner Address: 530 RODEO RD
SEDONA, AZ
Product: Gasoline
Capacity: 500
Tank Status: Removed from Ground

---

**23 ENE 1/8-1/4 1148 Higher**

**FORMER GAS STATION**
**250 WASHINGTON**
**BAY CITY, MI 48708**

**LUST** **S102353176**
**N/A**

LUST:
Facility ID: 5-001905
Release Number: C-629-96
Release Date: 08-08-1996
Facility Status: OPEN

| Map ID / Direction / Distance / Distance (ft.) / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number |
|---|---|---|---|
| **F24 SE 1/8-1/4 1157 Higher** | **NORCO REALTY CO<br>110 S WASHINGTON<br>BAY CITY, MI 48706** | **LUST<br>UST** | **U002300662<br>N/A** |

**Site 1 of 2 in cluster F**

LUST:
- Facility ID: 0-038507
- Release Number: C-971-97
- Release Date: 08-12-1997
- Facility Status: CLOSED

UST:
- Facility ID: 0038507
- Tank ID: 1
- Owner: NORCO REALTY CO — Owner Phone: (517) 753-2414
- Owner Address: 2800 E HOLLAND AVE, SAGINAW, MI
- Product: Used Oil
- Capacity: 250
- Tank Status: Removed from Ground

---

| | | | |
|---|---|---|---|
| **G25 South 1/8-1/4 1193 Higher** | **SAGINAW ROCK PRODUCT CO<br>300 S WATER<br>BAY CITY, MI 48706** | **LUST<br>UST** | **U002300674<br>N/A** |

**Site 1 of 2 in cluster G**

LUST:
- Facility ID: 0-016564
- Release Number: CR-66-93
- Release Date: 01-07-1993
- Facility Status: CLOSED

UST:
- Facility ID: 0016564
- Tank ID: 1
- Owner: SAGINAW ROCK PRODUCT — Owner Phone: (517) 754-5861
- Owner Address: 1701 N FIRST ST, SAGINAW, MI
- Product: Diesel
- Capacity: 6,000
- Tank Status: Removed from Ground

---

| | | | |
|---|---|---|---|
| **G26 South 1/8-1/4 1200 Higher** | **MCCOY HEATING & COOLING<br>303 S WATER<br>BAY CITY, MI 48708** | **LUST<br>UST** | **U001777365<br>N/A** |

**Site 2 of 2 in cluster G**

LUST:
- Facility ID: 0-037629
- Release Number: C-896-99
- Release Date: 08-30-1999
- Facility Status: CLOSED

UST:
- Facility ID: 0037629
- Tank ID: 1
- Owner: MCCOY HEATING & COOLING — Owner Phone: (517) 895-8569
- Owner Address: 303 S WATER ST, BAY CITY, MI

**MCCOY HEATING & COOLING (Continued)** — **U001777365**

Product: Gasohol
Capacity: 500
Tank Status: Removed from Ground

---

**F27 ESE 1/8-1/4 1274 Higher**

**MICHIGAN AIRGAS, INC**
**311 COLUMBUS AVE**
**BAY CITY, MI 48708**

**LUST** **U000250009**
**UST** **N/A**

**Site 2 of 2 in cluster F**

LUST:
Facility ID: 0-017575
Release Number: C-2319-91
Release Date: 10-24-1991
Facility Status: CLOSED

UST:
Facility ID: 0017575
Tank ID: 1
Owner: AIRGAS MICHIGAN
Owner Phone: (517) 894-4101
Owner Address: 311 COLUMBUS AVE
BAY CITY, MI
Product: Gasoline
Capacity: 3,000
Tank Status: Removed from Ground

---

**28 East 1/4-1/2 1360 Higher**

**BOSCO FOOD SERVICE INC**
**407 11TH ST**
**BAY CITY, MI 48708**

**LUST** **U000250055**
**UST** **N/A**

LUST:
Facility ID: 0-021424
Release Number: C-1037-99
Release Date: 10-07-1999
Facility Status: CLOSED

UST:
Facility ID: 0021424
Tank ID: 1
Owner: BOSCO FOOD SERV INC
Owner Phone: (517) 892-1052
Owner Address: 407 11TH ST
BAY CITY, MI
Product: Diesel
Capacity: 2,000
Tank Status: Removed from Ground

---

**29 SSE 1/4-1/2 1416 Higher**

**CLARK STORE #1464**
**322 GARFIELD**
**BAY CITY, MI 48706**

**LUST** **U000250156**
**UST** **N/A**

LUST:
Facility ID: 0-012223
Release Number: C-491-85
Release Date: 10-21-1988
Facility Status: OPEN

**CLARK STORE #1464 (Continued)** **U000250156**

Facility ID: 0-012223
Release Number: C-615-95
Release Date: 05-31-1995
Facility Status: OPEN

UST:
Facility ID: 0012223
Tank ID: 1
Owner: CLARK REFINING & MARKETING INC Owner Phone: (630) 942-5300
Owner Address: 800 ROOSEVELT RD
GLEN ELLYN, IL
Product: Gasoline
Capacity: 10,000
Tank Status: Currently in Use

Facility ID: 0012223
Tank ID: 2
Owner: CLARK REFINING & MARKETING INC Owner Phone: (630) 942-5300
Owner Address: 800 ROOSEVELT RD
GLEN ELLYN, IL
Product: Gasoline
Capacity: 10,000
Tank Status: Currently in Use

---

**30 NE 1/4-1/2 1427 Higher** | **BAY COUNTY HISTORICAL SOCIETY**
**321 N WASHINGTON AVE**
**BAY CITY, MI 48708** | **LUST UST** | **U003082236 N/A**

LUST:
Facility ID: 0-012710
Release Number: C-414-95
Release Date: 04-13-1995
Facility Status: CLOSED

UST:
Facility ID: 0012710
Tank ID: 1
Owner: BAY COUNTY HISTORICAL SOCIETY Owner Phone: (517) 893-5733
Owner Address: 321 WASHINGTON AVE
BAY CITY, MI
Product: Gasoline
Capacity: 275
Tank Status: Removed from Ground

---

**H31 NE 1/4-1/2 1444 Higher** | **SEARS, ROEBUCK & CO**
**401 SAGINAW ST**
**BAY CITY, MI 48708** | **UST** | **U000250051 N/A**

**Site 1 of 3 in cluster H**

UST:
Facility ID: 0021452
Tank ID: 1
Owner: SEARS, ROEBUCK & CO Owner Phone: (517) 892-2553
Owner Address: 401 SAGINAW ST
BAY CITY, MI

**SEARS, ROEBUCK & CO (Continued)** **U000250051**

Product: Not reported
Capacity: 500
Tank Status: Removed from Ground

Facility ID: 0021452
Tank ID: 2
Owner: SEARS, ROEBUCK & CO Owner Phone: (517) 892-2553
Owner Address: 401 SAGINAW ST
BAY CITY, MI
Product: Used Oil
Capacity: 1,500
Tank Status: Removed from Ground

Facility ID: 0021452
Tank ID: 3
Owner: SEARS, ROEBUCK & CO Owner Phone: (517) 892-2553
Owner Address: 401 SAGINAW ST
BAY CITY, MI
Product: Not reported
Capacity: 1,500
Tank Status: Removed from Ground

Facility ID: 0021452
Tank ID: 4
Owner: SEARS, ROEBUCK & CO Owner Phone: (517) 892-2553
Owner Address: 401 SAGINAW ST
BAY CITY, MI
Product: Not reported
Capacity: 1,500
Tank Status: Removed from Ground

---

**H32** **HORAK CO THE** **RCRIS-SQG** **1000369197**
**NE** **401 SAGINAW ST** **FINDS** **MID020836441**
**1/4-1/2** **BAY CITY, MI 48708**
**1444**
**Higher** **Site 2 of 3 in cluster H**

RCRIS:
Owner: FRITZ HORAK
(312) 555-1212
Contact: STEVE ROUSSE
(517) 892-6505

Record Date: 07/09/1999
Classification: Small Quantity Generator
Used Oil Recyc: No

Violation Status: Violations exist

Regulation Violated: Not reported
Area of Violation: Generator-All Requirements
Date Violation Determined: 07/14/1999
Priority of Violation: Low
Schedule Date to Achieve Compliance: 08/01/1999
Actual Date Achieved Compliance: 08/19/1999

Enforcement Action: Written Informal
Enforcement Action Date: 07/14/1999
Proposed Monetary Penalty: Not reported
Final Monetary Penalty: Not reported

**HORAK CO THE (Continued)** **1000369197**

There are 1 violation record(s) reported at this site:

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Compliance Evaluation Inspection (CEI) | Generator-All Requirements | 08/19/1999 |

FINDS:
Other Pertinent Environmental Activity Identified at Site:
AIRS Facility System (AIRS/AFS)
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

**H33**
**NE**
**1/4-1/2**
**1470**
**Higher**

**US EPA BAY CITY CERT SITE**
**9TH AND 18TH W SAGINAW AND WAT**
**BAY CITY, MI 48708**

**RCRIS-SQG** **1000865503**
**FINDS** **MI0000058446**

**Site 3 of 3 in cluster H**

RCRIS:
Owner: U S EPA
(513) 569-7951

Contact: ANDREW AVEL
(513) 569-7951

Record Date: 02/18/1994
Classification: Not reported
Used Oil Recyc: No

Violation Status: No violations found

NY MANIFEST
Additional detail is available in NY MANIFEST. Please contact your EDR Account Executive for more information.

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Resource Conservation and Recovery Act Information system (RCRAINFO)

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**34**
**South**
**1/4-1/2**
**1566**
**Higher**

**BAY CITY GAS CO.**
**401-423 N. WATER ST.**
**BAY CITY, MI 48708**

**Coal Gas** **G000001353**
**N/A**

COAL GAS SITE DESCRIPTION:
1912 Site is located on the west side of the northern extension of N. Wat er Street, south of McKinley Ave. and east of the Saginaw River. Site is north of 9th Street. Gasometers are located on the eastern side of N. Water between 9t h St. and 10th St. 1942, site owned by Consumers Power Co.

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**35**
**NE**
**1/4-1/2**
**1685**
**Higher**

**FIRESTONE STORE #2541/006483**
**416 WASHINGTON AVE**
**BAY CITY, MI 48706**

**LUST** **U000250060**
**UST** **N/A**

**FIRESTONE STORE #2541/006483 (Continued)** **U000250060**

LUST:
Facility ID: 0-007419
Release Number: C-494-85
Release Date: 11-30-1988
Facility Status: CLOSED

UST:
Facility ID: 0007419
Tank ID: 1
Owner: FIRESTONE TIRE & RUBBER CO Owner Phone: (216) 379-7000
Owner Address: 1200 FIRESTONE PKWY
AKRON, OH
Product: Used Oil
Capacity: 1,000
Tank Status: Removed from Ground

Facility ID: 0007419
Tank ID: 2
Owner: FIRESTONE TIRE & RUBBER CO Owner Phone: (216) 379-7000
Owner Address: 1200 FIRESTONE PKWY
AKRON, OH
Product: Used Oil
Capacity: 1,000
Tank Status: Removed from Ground

---

**I36 NE 1/4-1/2 1965 Higher** | **DUNLOP PONTIAC INC**
**517 W WASHINGTON**
**BAY CITY, MI 48706** | **RCRIS-SQG 1000290539**
**FINDS MID016733776**

**Site 1 of 2 in cluster I**

RCRIS:
Owner: BEATTLE ROBERT
(312) 555-1212

Contact: ROBT BEATTIE
(517) 895-8583

Record Date: 05/12/1986
Classification: Small Quantity Generator
Used Oil Recyc: No

Violation Status: Violations exist

Regulation Violated: Not reported
Area of Violation: Generator-All Requirements
Date Violation Determined: 10/15/1993
Priority of Violation: Low
Schedule Date to Achieve Compliance: 11/12/1993
Actual Date Achieved Compliance: 02/10/1994

Enforcement Action: Written Informal
Enforcement Action Date: 10/15/1993
Proposed Monetary Penalty: Not reported
Final Monetary Penalty: Not reported

There are 1 violation record(s) reported at this site:

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Compliance Evaluation Inspection (CEI) | Generator-All Requirements | 02/10/1994 |

**DUNLOP PONTIAC INC (Continued)** **1000290539**

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

**I37 NE 1/4-1/2 1967 Higher** | **DUNLOP PONTIAC, INC** | **LUST UST** | **U000250083 N/A**
**517 WASHINGTON AVE**
**BAY CITY, MI 48707**

**Site 2 of 2 in cluster I**

LUST:
Facility ID: 0-017828
Release Number: C-2489-91
Release Date: 11-22-1991
Facility Status: CLOSED

UST:
Facility ID: 0017828
Tank ID: 1
Owner: DUNLOP PONTIAC, INC Owner Phone: (517) 895-8583
Owner Address: 517 WASHINGTON AVE
BAY CITY, MI
Product: Gasoline
Capacity: 1,000
Tank Status: Removed from Ground

Facility ID: 0017828
Tank ID: 2
Owner: DUNLOP PONTIAC, INC Owner Phone: (517) 895-8583
Owner Address: 517 WASHINGTON AVE
BAY CITY, MI
Product: Used Oil
Capacity: 1,000
Tank Status: Closed in Ground

Facility ID: 0017828
Tank ID: 3
Owner: DUNLOP PONTIAC, INC Owner Phone: (517) 895-8583
Owner Address: 517 WASHINGTON AVE
BAY CITY, MI
Product: HYDRAULIC FLUID
Capacity: 25
Tank Status: Currently in Use

Facility ID: 0017828
Tank ID: 4
Owner: DUNLOP PONTIAC, INC Owner Phone: (517) 895-8583
Owner Address: 517 WASHINGTON AVE
BAY CITY, MI
Product: HYDRAULIC FLUID
Capacity: 25
Tank Status: Currently in Use

Facility ID: 0017828
Tank ID: 5
Owner: DUNLOP PONTIAC, INC Owner Phone: (517) 895-8583
Owner Address: 517 WASHINGTON AVE
BAY CITY, MI

**DUNLOP PONTIAC, INC (Continued)** **U000250083**

Product: HYDRAULIC FLUID
Capacity: 40
Tank Status: Removed from Ground

---

**38 NNE 1/4-1/2 2069 Higher**

**BAY COUNTY CONFERENCE CENTER** **UST** **U002300691**
**621 N WATER** **N/A**
**BAY CITY, MI 48708**

UST:
Facility ID: 0038769
Tank ID: 1
Owner: CITY OF BAY CITY Owner Phone: (517) 894-8200
Owner Address: 301 WASHINGTON AVE
BAY CITY, MI
Product: UNK
Capacity: 750
Tank Status: Removed from Ground

Facility ID: 0038769
Tank ID: 2
Owner: CITY OF BAY CITY Owner Phone: (517) 894-8200
Owner Address: 301 WASHINGTON AVE
BAY CITY, MI
Product: UNK
Capacity: 750
Tank Status: Removed from Ground

---

**J39 NNE 1/4-1/2 2091 Higher**

**FORMER AUTO SALES & SERVICE** **LUST** **S104872702**
**600 SAGINAW ST** **N/A**
**BAY CITY, MI 48706**

**Site 1 of 4 in cluster J**

LUST:
Facility ID: 5-002644
Release Number: C-617-00
Release Date: 05-18-2000
Facility Status: OPEN

---

**J40 NNE 1/4-1/2 2091 Higher**

**600 SAGINAW ST.** **BEA** **S104910952**
**600 SAGINAW ST.** **N/A**
**BAY CITY, MI**

**Site 2 of 4 in cluster J**

**600 SAGINAW ST. (Continued)** **S104910952**

BEA:

| | |
|---|---|
| Petition Disclosure: | 0 |
| BEA Number: | 320 |
| District: | Saginaw Bay |
| Date Received: | 06/23/2000 |
| Submitter Name: | Brennan Construction Company |
| Petition Determination: | No Request |
| Category: | No Hazardous Substance(s) |
| Determination 20107A: | No Request |
| Reviewer: | temppm |
| Division Assigned: | Storage Tank Division |

---

**J41 NNE 1/4-1/2 2132 Higher**

**CITY AUTO PARTS CO OF BAY CITY**
**611 SAGINAW ST**
**BAY CITY, MI 48708**

**RCRIS-SQG 1000439517**
**FINDS MID016733164**

**Site 3 of 4 in cluster J**

RCRIS:

Owner: ROGERS ALBERT K
(312) 555-1212

Contact: DAVID PRUDEN
(517) 892-3581

Record Date: 06/12/1987
Classification: Small Quantity Generator
Used Oil Recyc: No

Violation Status: Violations exist

| | |
|---|---|
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-All Requirements |
| Date Violation Determined: | 04/13/1989 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 05/22/1989 |
| Actual Date Achieved Compliance: | 04/27/1990 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 05/16/1989 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |
| Regulation Violated: | Not reported |
| Area of Violation: | Generator-All Requirements |
| Date Violation Determined: | 03/21/1990 |
| Priority of Violation: | Low |
| Schedule Date to Achieve Compliance: | 05/01/1990 |
| Actual Date Achieved Compliance: | 04/27/1990 |
| Enforcement Action: | Written Informal |
| Enforcement Action Date: | 04/17/1990 |
| Proposed Monetary Penalty: | Not reported |
| Final Monetary Penalty: | Not reported |

There are 2 violation record(s) reported at this site:

| Evaluation | Area of Violation | Date of Compliance |
|---|---|---|
| Compliance Schedule Evaluation (CSE) | Generator-All Requirements | 04/27/1990 |
| Compliance Evaluation Inspection (CEI) | Generator-All Requirements | 04/27/1990 |

**CITY AUTO PARTS CO OF BAY CITY (Continued)** **1000439517**

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

**J42**
**NNE**
**1/4-1/2**
**2140**
**Higher**

**613 SAGINAW ST.**
**BAY CITY, MI**

**Site 4 of 4 in cluster J**

**BEA** **S105094699**
**N/A**

BEA:

| | |
|---|---|
| Petition Disclosure: | 0 |
| BEA Number: | 418 |
| District: | Saginaw Bay |
| Date Received: | 08/23/2001 |
| Submitter Name: | Great Lakes Center Foundation |
| Petition Determination: | No Request |
| Category: | No Hazardous Substance(s) |
| Determination 20107A: | No Request |
| Reviewer: | persona |
| Division Assigned: | Environmental Response Division |

---

**43**
**NE**
**1/4-1/2**
**2222**
**Higher**

**SHERWIN WILLIAMS CO**
**601 WASHINGTON AVE**
**BAY CITY, MI 48706**

**RCRIS-SQG** **1000371236**
**FINDS** **MID020837191**

RCRIS:

| | |
|---|---|
| Owner: | SHERWIN WILLIAMS CO<br>(216) 566-2000 |
| Contact: | D ALEXANDER<br>(216) 566-3096 |
| Record Date: | 08/18/1980 |
| Classification: | Not reported |
| Used Oil Recyc: | No |
| Violation Status: | No violations found |

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

**K44**
**North**
**1/4-1/2**
**2292**
**Higher**

**RESEARCH VESSEL HYDRA**
**24 SIXTH ST B**
**BAY CITY, MI 48708**

**Site 1 of 2 in cluster K**

**RCRIS-SQG** **1000531239**
**FINDS** **MI1680090320**

**RESEARCH VESSEL HYDRA (Continued)** **1000531239**

RCRIS:
Owner: US EPA
(312) 353-1373

Contact: DAVID ROCKWELL
(312) 353-1373

Record Date: 04/22/1991
Classification: Small Quantity Generator
Used Oil Recyc: No

Violation Status: No violations found.

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

**L45** **MIDLAND CONTRACTING** **SHWS** **S105143873**
**SSW** **612 S. WATER** **N/A**
**1/4-1/2** **BAY CITY, MI 48708**
**2348**
**Higher** **Site 1 of 2 in cluster L**

SHWS:
Facility ID: 09000218
Facility Status: Active
Source: null
Pollutant(s): Benzene, Pb, PCBs
SAM Score: 38
SAM Score Date: 1994-08-19 00:00
Township: 14N
Range: 05E
Section: 21
Quarter: S
Quarter/Quarter: N

---

**L46** **MIDLAND CONTRACTING** **RCRIS-SQG** **1000277005**
**SSW** **613 S WATER ST** **FINDS** **MID981803299**
**1/4-1/2** **BAY CITY, MI 48708**
**2348**
**Higher** **Site 2 of 2 in cluster L**

RCRIS:
Owner: MIDLAND CONTRACTING
(312) 555-1212

Contact: TERRY BURGER
(517) 893-6261

Record Date: 02/12/1987
Classification: Small Quantity Generator

**MIDLAND CONTRACTING (Continued)** **1000277005**

Used Oil Recyc: No

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
AIRS Facility System (AIRS/AFS)
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

**M47 SSE 1/4-1/2 2353 Higher** | **TRIPLE CLEAN INC** | **601 GARFIELD ST** | **BAY CITY, MI 48708** | **UST** | **U003082494** **N/A**

**Site 1 of 2 in cluster M**

UST:

| | | | |
|---|---|---|---|
| Facility ID: | 0017298 | | |
| Tank ID: | 1 | | |
| Owner: | TRIPLE CLEAN INC | Owner Phone: | (517) 893-3065 |
| Owner Address: | 601 GARFIELD ST<br>BAY CITY, MI | | |
| Product: | Diesel | | |
| Capacity: | 8,000 | | |
| Tank Status: | Currently in Use | | |
| Facility ID: | 0017298 | | |
| Tank ID: | 2 | | |
| Owner: | TRIPLE CLEAN INC | Owner Phone: | (517) 893-3065 |
| Owner Address: | 601 GARFIELD ST<br>BAY CITY, MI | | |
| Product: | Gasoline | | |
| Capacity: | 8,000 | | |
| Tank Status: | Currently in Use | | |
| Facility ID: | 0017298 | | |
| Tank ID: | 3 | | |
| Owner: | TRIPLE CLEAN INC | Owner Phone: | (517) 893-3065 |
| Owner Address: | 601 GARFIELD ST<br>BAY CITY, MI | | |
| Product: | Gasoline | | |
| Capacity: | 8,000 | | |
| Tank Status: | Currently in Use | | |
| Facility ID: | 0017298 | | |
| Tank ID: | 4 | | |
| Owner: | TRIPLE CLEAN INC | Owner Phone: | (517) 893-3065 |
| Owner Address: | 601 GARFIELD ST<br>BAY CITY, MI | | |
| Product: | Gasoline | | |
| Capacity: | 8,000 | | |
| Tank Status: | Currently in Use | | |

---

**M48 SSE 1/4-1/2 2353 Higher** | **TRIPLE CLEAN INC** | **601 GARFIELD ST** | **BAY CITY, MI 48708** | **LUST** | **S104872698** **N/A**

**Site 2 of 2 in cluster M**

**TRIPLE CLEAN INC (Continued)** — **S104872698**

LUST:
Facility ID: 0-017298
Release Number: C-453-00
Release Date: 05-17-2000
Facility Status: OPEN

---

**K49 North 1/4-1/2 2389 Higher**

**R V LAKE GUARDIAN**
**24 SIXTH ST**
**BAY CITY, MI 48708**

**RCRIS-SQG** — **1000531284**
**FINDS** — **MI6680090317**

**Site 2 of 2 in cluster K**

RCRIS:
Owner: U S EPA
Contact: DAVID ROCKWELL
(312) 353-1373
Record Date: 04/03/1991
Classification: Small Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

---

**50 NE 1/4-1/2 2422 Higher**

**A.W. EURICH PLUMBING & HEATING C**
**610 ADAMS ST**
**BAY CITY, MI 48708**

**UST** — **U000250093**
**N/A**

UST:
Facility ID: 0013200
Tank ID: 1
Owner: SAGINAW BAY UNDERWRITERS
Owner Phone: (517) 894-2716
Owner Address: 610 ADAMS ST
BAY CITY, MI
Product: Gasoline
Capacity: 500
Tank Status: Removed from Ground

---

**51 ENE 1/4-1/2 2568 Higher**

**SAMARITAN HEALTH CENTER**
**713 NINTH ST**
**BAY CITY, MI 48708**

**LUST** — **U003082586**
**UST** — **N/A**

LUST:
Facility ID: 0-018846
Release Number: C-0580-91
Release Date: 04-16-1991
Facility Status: CLOSED

UST:
Facility ID: 0018846

**SAMARITAN HEALTH CENTER (Continued)** **U003082586**

Tank ID: 1
Owner: BAY MEDICAL CTR — Owner Phone: (517) 894-3760
Owner Address: 1900 COLUMBUS AVE
BAY CITY, MI
Product: #2 HEATING FUEL
Capacity: 10,000
Tank Status: Currently in Use

Facility ID: 0018846
Tank ID: 2
Owner: BAY MEDICAL CTR — Owner Phone: (517) 894-3760
Owner Address: 1900 COLUMBUS AVE
BAY CITY, MI
Product: Diesel
Capacity: 500
Tank Status: Removed from Ground

---

**52 West 1/2-1 2669 Higher** — **GREGORY CONSTRUCTION CO**, **1009 S HENRY ST**, **BAY CITY, MI 48706** — **LUST** **UST** — **U003082222** **N/A**

LUST:
Facility ID: 0-012443
Release Number: C-307-00
Release Date: 03-21-2000
Facility Status: OPEN

UST:
Facility ID: 0012443
Tank ID: 1
Owner: GREGORY CONST CO — Owner Phone: (517) 892-4553
Owner Address: 1009 S HENRY ST
BAY CITY, MI
Product: Gasoline
Capacity: 1,000
Tank Status: Removed from Ground

Facility ID: 0012443
Tank ID: 2
Owner: GREGORY CONST CO — Owner Phone: (517) 892-4553
Owner Address: 1009 S HENRY ST
BAY CITY, MI
Product: Gasoline
Capacity: 1,000
Tank Status: Removed from Ground

Facility ID: 0012443
Tank ID: 3
Owner: GREGORY CONST CO — Owner Phone: (517) 892-4553
Owner Address: 1009 S HENRY ST
BAY CITY, MI
Product: Gasoline
Capacity: 1,500
Tank Status: Removed from Ground

Facility ID: 0012443
Tank ID: 4

**GREGORY CONSTRUCTION CO (Continued)** **U003082222**

Owner: GREGORY CONST CO — Owner Phone: (517) 892-4553
Owner Address: 1009 S HENRY ST
BAY CITY, MI
Product: Gasoline
Capacity: 1,500
Tank Status: Removed from Ground

Facility ID: 0012443
Tank ID: 5
Owner: GREGORY CONST CO — Owner Phone: (517) 892-4553
Owner Address: 1009 S HENRY ST
BAY CITY, MI
Product: Diesel
Capacity: 1,500
Tank Status: Removed from Ground

---

**53 SSW 1/2-1 2921 Higher** — **BAY CITY DPW**, **800 S WATER ST**, **BAY CITY, MI 48708** — **LUST** **UST** — **U003082220** **N/A**

LUST:
Facility ID: 0-012417
Release Number: C-0983-89
Release Date: 11-30-1989
Facility Status: OPEN

Facility ID: 0-012417
Release Number: C-894-97
Release Date: 09-24-1997
Facility Status: OPEN

UST:
Facility ID: 0012417
Tank ID: 1
Owner: CITY OF BAY CITY — Owner Phone: (517) 894-8319
Owner Address: 301 WASHINGTON
BAY CITY, MI
Product: Gasoline
Capacity: 10,000
Tank Status: Removed from Ground

Facility ID: 0012417
Tank ID: 2
Owner: CITY OF BAY CITY — Owner Phone: (517) 894-8319
Owner Address: 301 WASHINGTON
BAY CITY, MI
Product: Gasoline
Capacity: 10,000
Tank Status: Removed from Ground

Facility ID: 0012417
Tank ID: 3
Owner: CITY OF BAY CITY — Owner Phone: (517) 894-8319
Owner Address: 301 WASHINGTON
BAY CITY, MI
Product: Diesel
Capacity: 12,000

**BAY CITY DPW (Continued)** **U003082220**

Tank Status: Removed from Ground

Facility ID: 0012417
Tank ID: 4
Owner: CITY OF BAY CITY
Owner Address: 301 WASHINGTON
BAY CITY, MI
Owner Phone: (517) 894-8319
Product: Diesel
Capacity: 10,000
Tank Status: Currently in Use

Facility ID: 0012417
Tank ID: 5
Owner: CITY OF BAY CITY
Owner Address: 301 WASHINGTON
BAY CITY, MI
Owner Phone: (517) 894-8319
Product: Gasoline
Capacity: 10,000
Tank Status: Currently in Use

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**54**
**SSE**
**1/2-1**
**2973**
**Higher**

**HENRY REALTY**
**823 GARFIELD**
**BAY CITY, MI 48706**

**LUST U000250131**
**UST N/A**

LUST:
Facility ID: 0-002764
Release Number: C-142-00
Release Date: 02-09-2000
Facility Status: OPEN

UST:
Facility ID: 0002764
Tank ID: 1
Owner: HENRY REALTY
Owner Address: 256 FIFTH AVE
NEW YORK, NY
Owner Phone: (212) 682-1170
Product: Not reported
Capacity: UNK
Tank Status: Removed from Ground

Facility ID: 0002764
Tank ID: 2
Owner: HENRY REALTY
Owner Address: 256 FIFTH AVE
NEW YORK, NY
Owner Phone: (212) 682-1170
Product: Not reported
Capacity: UNK
Tank Status: Removed from Ground

Facility ID: 0002764
Tank ID: 3
Owner: HENRY REALTY
Owner Address: 256 FIFTH AVE
NEW YORK, NY
Owner Phone: (212) 682-1170
Product: Not reported
Capacity: UNK
Tank Status: Removed from Ground

| Map ID<br>Direction<br>Distance<br>Distance (ft.)<br>Elevation | Site | Database(s) | EDR ID Number<br>EPA ID Number |
|---|---|---|---|
| **55<br>East<br>1/2-1<br>3057<br>Higher** | **CREDIT UNION PLUS<br>1001 COLUMBUS<br>BAY CITY, MI 48708** | **LUST** | **S104235404<br>N/A** |

LUST:
Facility ID: 0-040193
Release Number: C-888-99
Release Date: 08-23-1999
Facility Status: OPEN

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| | | | |
|---|---|---|---|
| **56<br>SSW<br>1/2-1<br>3195<br>Higher** | **BAY CITY ELECTRIC LIGHT AND POWER<br>900 S WATER ST<br>BAY CITY, MI 48708** | **PADS<br>RCRIS-SQG<br>FINDS<br>LUST** | **1000526674<br>MID044512465<br>-** |

RCRIS:
Owner: BAY CITY CITY OF
(517) 894-8246

Contact: LARRY SCHULZ
(517) 894-8356

Record Date: 01/26/1998
Classification: Small Quantity Generator
Used Oil Recyc: No

Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
AIRS Facility System (AIRS/AFS)
Facility Registry System (FRS)
National Compliance Database (NCDB)
PCB Handler Activity Data System (PADS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

LUST:
Facility ID: 5-001492
Release Number: C-490-85
Release Date: 12-06-1988
Facility Status: OPEN

---

| | | | |
|---|---|---|---|
| **57<br>NE<br>1/2-1<br>3222<br>Higher** | **OLD GOODYEAR TIRE FACILITY<br>520 CENTER AVE<br>BAY CITY, MI 48708** | **LUST<br>UST** | **U002300686<br>N/A** |

LUST:
Facility ID: 0-038699
Release Number: C-740-95
Release Date: 06-19-1995
Facility Status: CLOSED

UST:
Facility ID: 0038699
Tank ID: 1
Owner: FIRST OF AMERICA
Owner Address: 300 CENTER AVE
Owner Phone: (517) 893-5533

**OLD GOODYEAR TIRE FACILITY (Continued)** **U002300686**

BAY CITY, MI
Product: Gasoline
Capacity: 8,000
Tank Status: Removed from Ground

Facility ID: 0038699
Tank ID: 2
Owner: FIRST OF AMERICA Owner Phone: (517) 893-5533
Owner Address: 300 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 880
Tank Status: Removed from Ground

---

**58 East 1/2-1 3360 Higher** **HOWARD H. HERZBERGER** **LUST U000249902**
**1101 COLUMBUS** **UST N/A**
**BAY CITY, MI 48708**

LUST:
Facility ID: 0-017613
Release Number: CR-2115-92
Release Date: 11-30-1992
Facility Status: CLOSED

UST:
Facility ID: 0017613
Tank ID: 1
Owner: HOWARD HERZBERGER Owner Phone: (517) 892-1092
Owner Address: 1101 COLUMBUS
BAY CITY, MI
Product: Gasoline
Capacity: 2,000
Tank Status: Removed from Ground

Facility ID: 0017613
Tank ID: 2
Owner: HOWARD HERZBERGER Owner Phone: (517) 892-1092
Owner Address: 1101 COLUMBUS
BAY CITY, MI
Product: Gasoline
Capacity: 4,000
Tank Status: Removed from Ground

Facility ID: 0017613
Tank ID: 3
Owner: HOWARD HERZBERGER Owner Phone: (517) 892-1092
Owner Address: 1101 COLUMBUS
BAY CITY, MI
Product: Gasoline
Capacity: 6,000
Tank Status: Removed from Ground

Facility ID: 0017613
Tank ID: 4
Owner: HOWARD HERZBERGER Owner Phone: (517) 892-1092
Owner Address: 1101 COLUMBUS
BAY CITY, MI

**HOWARD H. HERZBERGER (Continued)** **U000249902**

Product: UNKNOWN
Capacity: 300
Tank Status: Removed from Ground

Facility ID: 0017613
Tank ID: 5
Owner: HOWARD HERZBERGER Owner Phone: (517) 892-1092
Owner Address: 1101 COLUMBUS
BAY CITY, MI
Product: UNKNOWN
Capacity: 1,000
Tank Status: Removed from Ground

Facility ID: 0017613
Tank ID: 6
Owner: HOWARD HERZBERGER Owner Phone: (517) 892-1092
Owner Address: 1101 COLUMBUS
BAY CITY, MI
Product: UNKNOWN
Capacity: 2,000
Tank Status: Removed from Ground

Facility ID: 0017613
Tank ID: 7
Owner: HOWARD HERZBERGER Owner Phone: (517) 892-1092
Owner Address: 1101 COLUMBUS
BAY CITY, MI
Product: UNKNOWN
Capacity: 2,000
Tank Status: Removed from Ground

---

**59 WSW 1/2-1 3455 Higher**

**BAY VALLEY OIL CO** **LUST U003103067**
**1309/1311 S HENRY ST** **UST N/A**
**BAY CITY, MI 48706**

LUST:
Facility ID: 0-017937
Release Number: C-624-96
Release Date: 04-26-1996
Facility Status: CLOSED

Facility ID: 0-017937
Release Number: C-134-96
Release Date: 08-03-1994
Facility Status: OPEN

UST:
Facility ID: 0017937
Tank ID: 1
Owner: BAY VALLEY OIL CO Owner Phone: (517) 667-0741
Owner Address: 700 MARQUETTE
BAY CITY, MI
Product: Not reported
Capacity: 25,000
Tank Status: Removed from Ground

Facility ID: 0017937

**BAY VALLEY OIL CO (Continued)** **U003103067**

Tank ID: 2
Owner: BAY VALLEY OIL CO — Owner Phone: (517) 667-0741
Owner Address: 700 MARQUETTE
BAY CITY, MI
Product: Not reported
Capacity: 25,000
Tank Status: Removed from Ground

Facility ID: 0017937
Tank ID: 3
Owner: BAY VALLEY OIL CO — Owner Phone: (517) 667-0741
Owner Address: 700 MARQUETTE
BAY CITY, MI
Product: Not reported
Capacity: 20,000
Tank Status: Removed from Ground

Facility ID: 0017937
Tank ID: 4
Owner: BAY VALLEY OIL CO — Owner Phone: (517) 667-0741
Owner Address: 700 MARQUETTE
BAY CITY, MI
Product: Not reported
Capacity: 20,000
Tank Status: Removed from Ground

Facility ID: 0017937
Tank ID: 5
Owner: BAY VALLEY OIL CO — Owner Phone: (517) 667-0741
Owner Address: 700 MARQUETTE
BAY CITY, MI
Product: Not reported
Capacity: 1,000
Tank Status: Removed from Ground

Facility ID: 0017937
Tank ID: 6
Owner: BAY VALLEY OIL CO — Owner Phone: (517) 667-0741
Owner Address: 700 MARQUETTE
BAY CITY, MI
Product: UNK
Capacity: 500
Tank Status: Removed from Ground

---

**N60 NE 1/2-1 3564 Higher** — **KONKLES MOBIL SERVICE** — **LUST U000250107** / **UST N/A**
**715 CENTER AVE**
**BAY CITY, MI 48708**

**Site 1 of 2 in cluster N**

LUST:
Facility ID: 0-019470
Release Number: C-1363-99
Release Date: 12-21-1999
Facility Status: OPEN

UST:
Facility ID: 0019470
Tank ID: 1

**KONKLES MOBIL SERVICE (Continued)** **U000250107**

Owner: KONKLES MOBIL SERV Owner Phone: (517) 894-0044
Owner Address: 715 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 4,000
Tank Status: Removed from Ground

Facility ID: 0019470
Tank ID: 2
Owner: KONKLES MOBIL SERV Owner Phone: (517) 894-0044
Owner Address: 715 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 4,000
Tank Status: Removed from Ground

Facility ID: 0019470
Tank ID: 3
Owner: KONKLES MOBIL SERV Owner Phone: (517) 894-0044
Owner Address: 715 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 4,000
Tank Status: Removed from Ground

Facility ID: 0019470
Tank ID: 4
Owner: KONKLES MOBIL SERV Owner Phone: (517) 894-0044
Owner Address: 715 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 4,000
Tank Status: Removed from Ground

Facility ID: 0019470
Tank ID: 5
Owner: KONKLES MOBIL SERV Owner Phone: (517) 894-0044
Owner Address: 715 CENTER AVE
BAY CITY, MI
Product: Used Oil
Capacity: 500
Tank Status: Removed from Ground

---

**61 NNE 1/2-1 3658 Higher** | **BAY CITY MAIN**
**1000 WASHINGTON**
**BAY CITY, MI 48707** | **LUST U003330610**
**UST N/A**

LUST:
Facility ID: 0-014426
Release Number: C-0332-90
Release Date: 04-16-1990
Facility Status: CLOSED

Facility ID: 0-014426
Release Number: C-410-97
Release Date: 06-12-1997
Facility Status: CLOSED

**BAY CITY MAIN (Continued)** **U003330610**

UST:

| | | | |
|---|---|---|---|
| Facility ID: | 0014426 | | |
| Tank ID: | 1 | | |
| Owner: | US POSTAL SERV | Owner Phone: | (616) 776-6133 |
| Owner Address: | 678 FRONT AVE NW<br>GRAND RAPIDS, MI | | |
| Product: | Gasoline | | |
| Capacity: | 6,000 | | |
| Tank Status: | Removed from Ground | | |

| | | | |
|---|---|---|---|
| Facility ID: | 0014426 | | |
| Tank ID: | 2 | | |
| Owner: | US POSTAL SERV | Owner Phone: | (616) 776-6133 |
| Owner Address: | 678 FRONT AVE NW<br>GRAND RAPIDS, MI | | |
| Product: | Gasoline | | |
| Capacity: | 10,000 | | |
| Tank Status: | Removed from Ground | | |

---

**N62 NE 1/2-1 3723 Higher** — **AMOCO OIL CO MORGANS AUTO REPAIR**, **800 CENTER AVE**, **BAY CITY, MI 48708** — **RCRIS-SQG, FINDS, LUST, UST** — **1000529194**, **MID985616275**

**Site 2 of 2 in cluster N**

RCRIS:

| | |
|---|---|
| Owner: | MD VENTURES INC<br>(517) 895-8199 |
| Contact: | DIANA DALTON<br>(517) 895-8199 |
| Record Date: | 06/07/1991 |
| Classification: | Small Quantity Generator |
| Used Oil Recyc: | No |
| Violation Status: | No violations found |

FINDS:

Other Pertinent Environmental Activity Identified at Site:
- Facility Registry System (FRS)
- Resource Conservation and Recovery Act Information system (RCRAINFO)

LUST:

| | |
|---|---|
| Facility ID: | 0-010698 |
| Release Number: | C-590-96 |
| Release Date: | 08-26-1996 |
| Facility Status: | CLOSED |

| | |
|---|---|
| Facility ID: | 0-010698 |
| Release Number: | C-258-01 |
| Release Date: | 04-25-2001 |
| Facility Status: | OPEN |

UST:

| | | | |
|---|---|---|---|
| Facility ID: | 0010698 | | |
| Tank ID: | 1 | | |
| Owner: | MD VENTURES INC | Owner Phone: | (517) 892-0567 |
| Owner Address: | 800 CENTER AVE<br>BAY CITY, MI | | |

**AMOCO OIL CO MORGANS AUTO REPAIR (Continued)** **1000529194**

Product: Gasoline
Capacity: 6,000
Tank Status: Removed from Ground

Facility ID: 0010698
Tank ID: 11
Owner: MD VENTURES INC Owner Phone: (517) 892-0567
Owner Address: 800 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 8,000
Tank Status: Removed from Ground

Facility ID: 0010698
Tank ID: 12
Owner: MD VENTURES INC Owner Phone: (517) 892-0567
Owner Address: 800 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 6,000
Tank Status: Removed from Ground

Facility ID: 0010698
Tank ID: 13
Owner: MD VENTURES INC Owner Phone: (517) 892-0567
Owner Address: 800 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 6,000
Tank Status: Removed from Ground

Facility ID: 0010698
Tank ID: 2
Owner: MD VENTURES INC Owner Phone: (517) 892-0567
Owner Address: 800 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 6,000
Tank Status: Removed from Ground

Facility ID: 0010698
Tank ID: 3
Owner: MD VENTURES INC Owner Phone: (517) 892-0567
Owner Address: 800 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 6,000
Tank Status: Removed from Ground

Facility ID: 0010698
Tank ID: 4
Owner: MD VENTURES INC Owner Phone: (517) 892-0567
Owner Address: 800 CENTER AVE
BAY CITY, MI
Product: Gasoline
Capacity: 6,000
Tank Status: Removed from Ground

**AMOCO OIL CO MORGANS AUTO REPAIR (Continued)** **1000529194**

Facility ID: 0010698
Tank ID: 5
Owner: MD VENTURES INC — Owner Phone: (517) 892-0567
Owner Address: 800 CENTER AVE
BAY CITY, MI
Product: Used Oil
Capacity: 550
Tank Status: Removed from Ground

---

**63 NE 1/2-1 3724 Higher**

**BAY COUNTY BUILDING**
**911 N MADISON**
**BAY CITY, MI 48708**

**LUST U003330753**
**UST N/A**

LUST:
Facility ID: 0-039446
Release Number: C-631-97
Release Date: 07-30-1997
Facility Status: CLOSED

UST:
Facility ID: 0039446
Tank ID: 1
Owner: BAY COUNTY BLDG & GROUNDS — Owner Phone: (517) 895-4097
Owner Address: 1212 WASHINGTON AVE
BAY CITY, MI
Product: Gasoline
Capacity: 1,500
Tank Status: Removed from Ground

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**64 NNE 1/2-1 3754 Higher**

**VACANT LAND (FORMER MONARCH GAS)**
**1000 ADAMS ST**
**BAY CITY, MI 48708**

**LUST U002300658**
**UST N/A**

LUST:
Facility ID: 0-038258
Release Number: C-954-94
Release Date: 08-30-1994
Facility Status: CLOSED

UST:
Facility ID: 0038258
Tank ID: 1
Owner: BAY METRO TRANSIT AUTHORITY — Owner Phone: (517) 894-2900
Owner Address: 1510 N JOHNSON ST
BAY CITY, MI
Product: Gasoline
Capacity: 15,000
Tank Status: Removed from Ground

Facility ID: 0038258
Tank ID: 2
Owner: BAY METRO TRANSIT AUTHORITY — Owner Phone: (517) 894-2900
Owner Address: 1510 N JOHNSON ST
BAY CITY, MI

**VACANT LAND (FORMER MONARCH GAS) (Continued)** **U002300658**

Product: Gasoline
Capacity: 15,000
Tank Status: Removed from Ground

Facility ID: 0038258
Tank ID: 3
Owner: BAY METRO TRANSIT AUTHORITY Owner Phone: (517) 894-2900
Owner Address: 1510 N JOHNSON ST
BAY CITY, MI
Product: Gasoline
Capacity: 1,000
Tank Status: Removed from Ground

Facility ID: 0038258
Tank ID: 4
Owner: BAY METRO TRANSIT AUTHORITY Owner Phone: (517) 894-2900
Owner Address: 1510 N JOHNSON ST
BAY CITY, MI
Product: Gasoline
Capacity: 2,000
Tank Status: Removed from Ground

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**65 North 1/2-1 3836 Higher**

**THE BRAKE SHOP**
**103 THIRD ST**
**BAY CITY, MI 48708**

**LUST U003082973**
**UST N/A**

LUST:
Facility ID: 0-037910
Release Number: C-1112-95
Release Date: 10-11-1995
Facility Status: CLOSED

UST:
Facility ID: 0037910
Tank ID: 1
Owner: MILITELLO PER FORMANCE INC Owner Phone: (517) 686-2081
Owner Address: 2340 E CHIP
KAWKAWLIN, MI
Product: Gasoline
Capacity: 1,000
Tank Status: Removed from Ground

Facility ID: 0037910
Tank ID: 2
Owner: MILITELLO PER FORMANCE INC Owner Phone: (517) 686-2081
Owner Address: 2340 E CHIP
KAWKAWLIN, MI
Product: Gasoline
Capacity: 1,000
Tank Status: Removed from Ground

Facility ID: 0037910
Tank ID: 3
Owner: MILITELLO PER FORMANCE INC Owner Phone: (517) 686-2081
Owner Address: 2340 E CHIP
KAWKAWLIN, MI
Product: Gasoline

| Map ID / Direction / Distance / Distance (ft.) / Elevation | Site | Database(s) | EDR ID Number / EPA ID Number |
|---|---|---|---|
| | **THE BRAKE SHOP (Continued)** | | **U003082973** |
| | Capacity: 1,000<br>Tank Status: Removed from Ground | | |
| **66<br>NNW<br>1/2-1<br>4701<br>Higher** | **PAINTERS SUPPLY BAY CITY<br>406 E MIDLAND<br>BAY CITY, MI 48706** | **SHWS** | **S105143862<br>N/A** |
| | SHWS:<br>Facility ID: 09000044<br>Facility Status: No Action Taken<br>Source: Paint Products<br>Pollutant(s): Paint Waste, null, null<br>SAM Score: 19<br>SAM Score Date: 1991-10-19 00:00<br>Township: 14N<br>Range: 05E<br>Section: 20<br>Quarter: N<br>Quarter/Quarter: S | | |
| **O67<br>NNE<br>1/2-1<br>5008<br>Higher** | **ULTRA-CARBON<br>1310 MADISON AVE<br>BAY CITY, MI 48708<br>Site 1 of 2 in cluster O** | **SHWS** | **S105143881<br>N/A** |
| | SHWS:<br>Facility ID: 09000267<br>Facility Status: No Action Taken<br>Source: Misc Manufacturing Industries<br>Pollutant(s): PCB, null, null<br>SAM Score: 28<br>SAM Score Date: 1998-04-10 00:00<br>Township: 14N<br>Range: 05E<br>Section: 21<br>Quarter: N<br>Quarter/Quarter: n | | |
| **O68<br>NNE<br>1/2-1<br>5203<br>Higher** | **HIRSCHFIELD H SONS CO<br>1414 N MADISON AVE<br>BAY CITY, MI 48706<br>Site 2 of 2 in cluster O** | **RCRIS-SQG<br>SHWS<br>FINDS** | **1000451824<br>MID006957138** |

**HIRSCHFIELD H SONS CO (Continued)** **1000451824**

RCRIS:
Owner: HIRSCHFIELD ROBERT
Contact: TIMOTHY NEAL
(517) 895-5571
Record Date: 08/15/1990
Classification: Small Quantity Generator
Used Oil Recyc: No
Violation Status: No violations found

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Facility Registry System (FRS)
Permit Compliance System (PCS)
Resource Conservation and Recovery Act Information system (RCRAINFO)

SHWS:
Facility ID: 09000016
Facility Status: Active
Source: Scrap & Waste Materials
Pollutant(s): PCBs Oils, null, null
SAM Score: 25
SAM Score Date: 1990-09-27 00:00
Township: 14N
Range: 05E
Section: 21
Quarter: N
Quarter/Quarter: N

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**69 SSW > 1 5489 Higher**

**BAY CITY MIDDLEGROUNDS**
**800 EVERGREEN DRIVE**
**BAY CITY, MI 48706**

**PADS 1000107052**
**CERCLIS MID981092935**
**FINDS**
**NPL**
**Proposed NPL**

CERCLIS Classification Data:
Site Incident Category: Not reported
Federal Facility: Not a Federal Facility
Non NPL Status: Not reported
Ownership Status: Other
NPL Status: Proposed for NPL
Contact: JOHN FAGIOLO
Contact Tel: (312) 886-0800
Contact Title: Not reported
Contact: LAWRENCE SCHMITT
Contact Tel: (312) 353-6565
Contact Title: Not reported

CERCLIS Assessment History:

| | | | |
|---|---|---|---|
| Assessment: | DISCOVERY | Completed: | 07/24/1985 |
| Assessment: | PRELIMINARY ASSESSMENT | Completed: | 07/24/1985 |
| Assessment: | SITE INSPECTION | Completed: | 09/09/1986 |
| Assessment: | EXPANDED SITE INSPECTION | Completed: | 10/02/1992 |
| Assessment: | HRS PACKAGE | Completed: | 02/13/1995 |
| Assessment: | PROPOSAL TO NPL | Completed: | 02/13/1995 |

CERCLIS Site Status:
Not reported

CERCLIS Alias Name(s):
BAY CITY MIDDLEGROUNDS

NPL PROPOSED:
EPA ID: MID981092935
Region: 05

**BAY CITY MIDDLEGROUNDS (Continued)** **1000107052**

Federal: General
Proposed Date: 02/13/1995

FINDS:
Other Pertinent Environmental Activity Identified at Site:
Comperhensive Environmental Response, Compensation and Liability Information System (CERCLIS)
PCB Handler Activity Data System (PADS)

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**70**
**SW**
**> 1**
**5541**
**Higher**

**MORTON STREET, 209**
**209 MORTON STREET**
**BAY CITY, MI 48706**

**SHWS** **S105143874**
**N/A**

SHWS:

| | |
|---|---|
| Facility ID: | 09000227 |
| Facility Status: | Active |
| Source: | Metal Stamping |
| Pollutant(s): | Tetrachloroethene, Trichloroehene, null |
| SAM Score: | 26 |
| SAM Score Date: | 1996-01-11 00:00 |
| Township: | 14N |
| Range: | 05E |
| Section: | 32 |
| Quarter: | N |
| Quarter/Quarter: | N |

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**71**
**NE**
**> 1**
**5625**
**Higher**

**MARCAN COMPANY**
**800 WOODSIDE**
**BAY CITY, MI 48706**

**SHWS** **S103094821**
**N/A**

SHWS:

| | |
|---|---|
| Facility ID: | 09000038 |
| Facility Status: | Closed. |
| Source: | Unknown |
| Pollutant(s): | Lead Arsenic, null, null |
| SAM Score: | null |
| SAM Score Date: | 1991-09-11 00:00 |
| Township: | 14N |
| Range: | 05E |
| Section: | 22 |
| Quarter: | N |
| Quarter/Quarter: | S |

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**72**
**South**
**> 1**
**5702**
**Higher**

**KUHLMAN ELECTRIC**
**1601 GARFIELD**
**BAY CITY, MI 48706**

**SHWS** **S105143872**
**N/A**

SHWS:

| | |
|---|---|
| Facility ID: | 09000184 |
| Facility Status: | Active |
| Source: | Transformers |
| Pollutant(s): | PCB DDT, DDE, null |
| SAM Score: | 45 |

| Map ID<br>Direction<br>Distance<br>Distance (ft.)<br>Elevation | Site | Database(s) | EDR ID Number<br>EPA ID Number |
|---|---|---|---|
| | **KUHLMAN ELECTRIC (Continued)** | | **S105143872** |

SAM Score Date: 1994-08-23 00:00
Township: 14N
Range: 05E
Section: 33
Quarter: N
Quarter/Quarter: S

| | | | |
|---|---|---|---|
| **73<br>North<br>> 1<br>6343<br>Higher** | **MARQUETTE AVE, 480<br>480 MARQUETTE AVE<br>BAY CITY, MI 48706** | **SHWS** | **S105143880<br>N/A** |

SHWS:
Facility ID: 09000264
Facility Status: No Action Taken
Source: Unknown
Pollutant(s): PNAs, null, null
SAM Score: 31
SAM Score Date: 1997-09-11 00:00
Township: 14N
Range: 05E
Section: 21
Quarter: N
Quarter/Quarter: N

ORPHAN SUMMARY

| City | EDR ID | Site Name | Site Address | Zip | Database(s) | Facility ID |
|---|---|---|---|---|---|---|
| BAY | S103084739 | SAGINAW RIVER AND SAGINAW BAY | 23 MI FROM TITTABAWA RIV TO BAY | 48706 | SHWS | 09000092 |
| BAY CITY | S104908822 | | 240 / 248 WASHINGTON AVE. | | BEA | 46 |
| BAY CITY | S104005082 | BAY CO. ROAD COM. - EAST DISTRIC | 27TH STREET | 48708 | SHWS | 09000273 |
| BAY CITY | U003082550 | LAKEHEAD PIPE LINE COMPANY, INC | ROUTE 3, MACKINAW RD | 48706 | UST | 0018270 |
| BAY CITY | S104910112 | 241 & 252 AUSABLE STATE RD. | 241 AND 252 AUSABLE STATE RD. | | BEA | 126 |
| BAY CITY | S104910164 | EASTERN PORTION OF 241 & 252 | AUSABLE STATE RD. | | BEA | 138 |
| BAY CITY | S103084635 | UNION OIL TERMINAL | BAY CITY TERMINAL | 48706 | SHWS | 09000023 |
| BAY CITY | S103594681 | DELTA LANDFILL | 1481 BAY CITY ROAD (RIVER ROAD) | | SHWS | 09000077 |
| BAY CITY | S104908870 | | BLOCK 71 / 72 LOWER SAGINAW PLAT | | BEA | 62 |
| BAY CITY | S103084838 | CROTTY STREET CHANNEL | CHANNEL BTWN GMPT AND CSX SPIT | 48708 | SHWS | 09000262 |
| BAY CITY | S103594725 | SAGINAW AND 10TH STREETS | SW CORNER OF SAGINAW AND 10TH | 48708 | SHWS | 09000099 |
| BAY CITY | S103594735 | THIRTEENTH AND SAGINAW STS. | NW CORNER THIRTEENTH AND SAGINAW ST | 48708 | SHWS | 09000259 |
| BAY CITY | S103594738 | WATER ST, N 2905 | CORNER OF JOHNSON AND WATER | 48708 | SHWS | 09000261 |
| BAY CITY | S103594724 | FIRST AND WATER STREETS | FIRST AND WATER NORTH CORNER | 48708 | SHWS | 09000211 |
| BAY CITY | S103594641 | PORTSMOUTH TWP DUMP | FOOT OF S LINCOLN RD | 48708 | SHWS | 09000047 |
| BAY CITY | S103594701 | STRAITS JP4 LOADING RACK | MARQUETTE AND PRARIE | | SHWS | 09000195 |
| BAY CITY | S103594636 | SURATH SCRAP YARD | MIDLAND / NEW LIBERTY BRIDGE | 48706 | SHWS | 09000022 |
| BAY CITY | 1000352381 | DORE INDUSTRIAL DEVELOPMENT INCORPORATION | 501-607 MORTON & BACKUS STREET | 48706 | FINDS, SWF/LF, RCRIS-LQG, RCRIS-TSD, UST, CORRACTS, CERC-NFRAP | 0013494 |
| BAY CITY | S104910158 | BANKRUPTCY COURT, ADJACENT TO | NORTH OF INTERSECTION FIRST AND WATER | | BEA | 137 |
| BAY CITY | 1000979770 | MIDOT BRIDGE M-25 OVER SAGINAW RIVER | M-25 OVER SAGINAW RIVER | 48708 | RCRIS-SQG, FINDS | |
| BAY CITY | S103084834 | DOW CHEM BAY REFINERY + TERMINAL | PRAIRIE AND TEIRNAN ROADS | | SHWS | 09000253 |
| BAY CITY | S103084761 | CONSUMER POWER MNF GAS PLANT | PROPERTY SW OF M-25 AND WATER ST. | 48708 | SHWS | 09000183 |
| BAY CITY | S103594717 | RIDGE ROAD, OLD PEERLESS PROP. | RIDGE ROAD AND CAMBRIDGE STREET | 48708 | SHWS | 09000246 |
| BAY CITY | 1000464971 | CLEVELAND TANKERS JUPITER SITE | SAGINAW RIVER 1/3 MILE U | 48706 | RCRIS-SQG, FINDS | |
| BAY CITY | 1000704705 | AMOCO OIL CO BAY VALLEY FOOD | 6354 W SAGINAW RD | 48706 | RCRIS-SQG, FINDS | |
| BAY CITY | 1000529543 | AMOCO OIL CO 5007 | 4TH S SAGINAW | 48708 | RCRIS-SQG, FINDS | |
| BAY CITY | 1000988513 | SAGINAW RIVER ORPHAN DRUM | SAGINAW RIVER | 48708 | RCRIS-SQG, FINDS | |
| BAY CITY | U002300693 | MARATHON | 6303 W SAGINAW | 48708 | UST | 0018153 |
| BAY CITY | S103724335 | SPEEDWAY #3626 | 6303 W SAGINAW | 48706 | LUST | 0-018153 |
| BAY CITY | U003561586 | DORES STORE | 6183 W SIDE SAGINAW RD (M-84) | 48706 | UST | 0037585 |
| BAY CITY | 1000707325 | SAGINAW RIVER DRUM | SOMEWHERE IN SAGINAW RIVER | | CERCLIS | |
| BAY CITY | S100069185 | PORTSMOUTH TWP | S. TO THE END OF LINCOLN RD. | 48706 | SWF/LF | 09000013 |
| BAY CITY | 1003871664 | BANGOR TWP SAN LDFL | 2370 TWO MILE RD | 48706 | SHWS, CERC-NFRAP | 09000003 |
| BAY CITY | 1000529382 | CONSUMERS ENERGY - HORAK PARKING LOT | WATER ST BETW MCKINLEY AVE AND | 48708 | RCRIS-SQG, FINDS | |
| BAY CITY | 1003871910 | C & 0 RAILROAD BAY CITY | WATER ST | 48706 | CERC-NFRAP | |
| BAY CITY | S105143856 | C AND O RAILROAD BAY CITY | WATER ST BETWEEN HIRSHFIELDS AND GMP | 48706 | SHWS | 09000007 |
| BAY CITY | S103084777 | FISHER BROTHERS | WATER STREET | 48708 | SHWS | 09000216 |
| BAY CITY | S103084809 | WATER STREET EAST BTWN 6TH + 7TH | WATER STREET | 48708 | SHWS | 09000248 |
| BAY CITY | S104235451 | CITY OF BAY CITY | 1001 WATER ST | 48708 | LUST | 5-002482 |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

**Elapsed ASTM days:** Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

**FEDERAL ASTM STANDARD RECORDS**

**NPL:** National Priority List
Source: EPA
Telephone: N/A
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/22/01
Date Made Active at EDR: 12/11/01
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 11/05/01
Elapsed ASTM days: 36
Date of Last EDR Contact: 02/04/02

**NPL Site Boundaries**

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 6
Telephone: 214-655-6659

EPA Region 8
Telephone: 303-312-6774

**Proposed NPL:** Proposed National Priority List Sites
Source: EPA
Telephone: N/A

Date of Government Version: 10/22/01
Date Made Active at EDR: 12/11/01
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 11/05/01
Elapsed ASTM days: 36
Date of Last EDR Contact: 02/04/02

**CERCLIS:** Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA
Telephone: 703-413-0223
CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 11/21/01
Date Made Active at EDR: 02/04/02
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 12/26/01
Elapsed ASTM days: 40
Date of Last EDR Contact: 12/26/01

**CERCLIS-NFRAP:** CERCLIS No Further Remedial Action Planned
Source: EPA
Telephone: 703-413-0223
As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 11/21/01
Date Made Active at EDR: 02/04/02
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 12/26/01
Elapsed ASTM days: 40
Date of Last EDR Contact: 12/16/01

**CORRACTS:** Corrective Action Report
Source: EPA
Telephone: 800-424-9346
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 11/14/01
Date Made Active at EDR: 01/14/02
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 11/14/01
Elapsed ASTM days: 61
Date of Last EDR Contact: 11/14/01

**RCRIS:** Resource Conservation and Recovery Information System
Source: EPA/NTIS
Telephone: 800-424-9346
Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Date of Government Version: 06/21/00
Date Made Active at EDR: 07/31/00
Database Release Frequency: Varies
Date of Data Arrival at EDR: 07/10/00
Elapsed ASTM days: 21
Date of Last EDR Contact: 01/14/02

**ERNS:** Emergency Response Notification System
Source: EPA/NTIS
Telephone: 202-260-2342
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 08/08/00
Date Made Active at EDR: 09/06/00
Database Release Frequency: Varies
Date of Data Arrival at EDR: 08/11/00
Elapsed ASTM days: 26
Date of Last EDR Contact: 02/01/02

## FEDERAL ASTM SUPPLEMENTAL RECORDS

**BRS:** Biennial Reporting System
Source: EPA/NTIS
Telephone: 800-424-9346
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/99
Database Release Frequency: Biennially
Date of Last EDR Contact: 12/17/01
Date of Next Scheduled EDR Contact: 03/18/02

**CONSENT:** Superfund (CERCLA) Consent Decrees
Source: EPA Regional Offices
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: N/A
Database Release Frequency: Varies
Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

**ROD:** Records Of Decision
Source: NTIS
Telephone: 703-416-0223
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 09/30/00
Database Release Frequency: Annually
Date of Last EDR Contact: 01/07/02
Date of Next Scheduled EDR Contact: 04/08/02

**DELISTED NPL:** National Priority List Deletions
Source: EPA
Telephone: N/A
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 11/13/01
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 02/04/02
Date of Next Scheduled EDR Contact: 05/06/02

**FINDS:** Facility Index System/Facility Identification Initiative Program Summary Report
Source: EPA
Telephone: N/A
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/29/01
Database Release Frequency: Quarterly
Date of Last EDR Contact: 01/07/02
Date of Next Scheduled EDR Contact: 04/08/02

**HMIRS:** Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4526
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 05/31/01
Database Release Frequency: Annually
Date of Last EDR Contact: 01/21/02
Date of Next Scheduled EDR Contact: 04/22/02

**MLTS:** Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/25/01
Database Release Frequency: Quarterly
Date of Last EDR Contact: 01/07/02
Date of Next Scheduled EDR Contact: 04/08/02

**MINES:** Mines Master Index File
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959

Date of Government Version: 12/14/01
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 01/02/02
Date of Next Scheduled EDR Contact: 04/01/02

**NPL LIENS:** Federal Superfund Liens
Source: EPA
Telephone: 205-564-4267
Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 11/19/01
Date of Next Scheduled EDR Contact: 02/18/02

**PADS:** PCB Activity Database System
Source: EPA
Telephone: 202-260-3936
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 09/30/01
Database Release Frequency: Annually
Date of Last EDR Contact: 11/13/01
Date of Next Scheduled EDR Contact: 02/12/02

**RAATS:** RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 12/11/01
Date of Next Scheduled EDR Contact: 03/11/02

**TRIS:** Toxic Chemical Release Inventory System
Source: EPA
Telephone: 202-260-1531
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/99
Database Release Frequency: Annually
Date of Last EDR Contact: 12/26/01
Date of Next Scheduled EDR Contact: 03/25/02

**TSCA:** Toxic Substances Control Act
Source: EPA
Telephone: 202-260-5521
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/98
Database Release Frequency: Every 4 Years
Date of Last EDR Contact: 01/22/02
Date of Next Scheduled EDR Contact: 04/22/02

**FTTS:** FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-564-2501
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/25/01
Database Release Frequency: Quarterly
Date of Last EDR Contact: 12/26/01
Date of Next Scheduled EDR Contact: 03/25/02

**FTTS INSP:** FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA
Telephone: 202-564-2501

Date of Government Version: 10/25/01
Database Release Frequency: Quarterly
Date of Last EDR Contact: 12/26/01
Date of Next Scheduled EDR Contact: 03/25/02

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

## STATE OF MICHIGAN ASTM STANDARD RECORDS

**SHWS:** Contaminated Sites
Source: Department of Environmental Quality
Telephone: 517-373-9541
State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 11/26/01
Date Made Active at EDR: 12/21/01
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 11/27/01
Elapsed ASTM days: 24
Date of Last EDR Contact: 11/27/01

**SWF/LF:** Solid Waste Facilities Database
Source: Department of Environmental Quality
Telephone: 517-335-4035
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 07/31/01
Date Made Active at EDR: 09/05/01
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 08/13/01
Elapsed ASTM days: 23
Date of Last EDR Contact: 01/29/02

**LUST:** Leaking Underground Storage Tank Sites
Source: Department of Environmental Quality
Telephone: 517-373-8168
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 06/01/01
Date Made Active at EDR: 07/16/01
Database Release Frequency: Annually

Date of Data Arrival at EDR: 06/18/01
Elapsed ASTM days: 28
Date of Last EDR Contact: 12/21/01

**UST:** Underground Storage Tank Facility List
Source: Department of Environmental Quality
Telephone: 517-373-8168
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 07/01/01
Date Made Active at EDR: 09/07/01
Database Release Frequency: Annually

Date of Data Arrival at EDR: 08/16/01
Elapsed ASTM days: 22
Date of Last EDR Contact: 12/21/01

**BEA:** BASELINE ENVIRONMENTAL ASSESSMENT DATABASE
Source: DEPT. OF ENVIRONMENTAL QUALITY
Telephone: 517-373-9541

Date of Government Version: 09/28/01
Date Made Active at EDR: 10/18/01
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 09/28/01
Elapsed ASTM days: 20
Date of Last EDR Contact: 12/18/01

## STATE OF MICHIGAN ASTM SUPPLEMENTAL RECORDS

**AST:** Aboveground Tanks
Source: Department of Environmental Quality
Telephone: 517-373-8168
Registered Aboveground Storage Tanks.

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/01/01
Database Release Frequency: Annually

Date of Last EDR Contact: 12/18/01
Date of Next Scheduled EDR Contact: 03/18/02

## EDR PROPRIETARY HISTORICAL DATABASES

**Former Manufactured Gas (Coal Gas) Sites:** The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

**Disclaimer Provided by Real Property Scan, Inc.**

The information contained in this report has predominantly been obtained from publicly available sources produced by entities other than Real Property Scan. While reasonable steps have been taken to insure the accuracy of this report, Real Property Scan does not guarantee the accuracy of this report. Any liability on the part of Real Property Scan is strictly limited to a refund of the amount paid. No claim is made for the actual existence of toxins at any site. This report does not constitute a legal opinion.

## OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

**Oil/Gas Pipelines/Electrical Transmission Lines:** This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines and electrical transmission lines.

**Sensitive Receptors:** There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

**Flood Zone Data:** This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

**NWI:** National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 1999 from the U.S. Fish and Wildlife Service.

# GEOCHECK®- PHYSICAL SETTING SOURCE ADDENDUM

**TARGET PROPERTY ADDRESS**

FMR. IND. BROWNHOIST SITE
206 SOUTH WATER STREET
BAY CITY, MI 48708

**TARGET PROPERTY COORDINATES**

| | |
|---|---|
| Latitude (North): | 43.591000 - 43' 35' 27.6" |
| Longitude (West): | 83.892998 - 83' 53' 34.8" |
| Universal Tranverse Mercator: | Zone 17 |
| UTM X (Meters): | 266457.2 |
| UTM Y (Meters): | 4830299.0 |

EDR's GeoCheck Physical Setting Source Addendum has been developed to assist the environmental professional with the collection of physical setting source information in accordance with ASTM 1527-00, Section 7.2.3. Section 7.2.3 requires that a current USGS 7.5 Minute Topographic Map (or equivalent, such as the USGS Digital Elevation Model) be reviewed. It also requires that one or more additional physical setting sources be sought when (1) conditions have been identified in which hazardous substances or petroleum products are likely to migrate to or from the property, and (2) more information than is provided in the current USGS 7.5 Minute Topographic Map (or equivalent) is generally obtained, pursuant to local good commercial or customary practice, to assess the impact of migration of recognized environmental conditions in connection with the property. Such additional physical setting sources generally include information about the topographic, hydrologic, hydrogeologic, and geologic characteristics of a site, and wells in the area.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata. EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

## GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

## TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

### USGS TOPOGRAPHIC MAP ASSOCIATED WITH THIS SITE

Target Property: 2443083-E8 BAY CITY, MI
Source: USGS 7.5 min quad index

### GENERAL TOPOGRAPHIC GRADIENT AT TARGET PROPERTY

Target Property: General WNW

Source: General Topographic Gradient has been determined from the USGS 1 Degree Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

## HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

### FEMA FLOOD ZONE

| Target Property County | FEMA Flood Electronic Data |
|---|---|
| BAY, MI | YES - refer to the Overview Map and Detail Map |

Flood Plain Panel at Target Property: 26017C0175D / CWPP

Additional Panels in search area: 26017C0180D / CWPP
26017C0205D / CWPP

### NATIONAL WETLAND INVENTORY

| NWI Quad at Target Property | NWI Electronic Data Coverage |
|---|---|
| BAY CITY | Not Available |

## HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

*Site-Specific Hydrogeological Data*:*

| | |
|---|---|
| Search Radius: | 2.0 miles |
| Status: | Not found |

**AQUIFLOW®**

Search Radius: 2.000 Miles.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

| MAP ID | LOCATION FROM TP | GENERAL DIRECTION GROUNDWATER FLOW |
|---|---|---|
| Not Reported | | |

**GROUNDWATER FLOW VELOCITY INFORMATION**

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

**GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY**

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

**ROCK STRATIGRAPHIC UNIT**

| | |
|---|---|
| Era: | Paleozoic |
| System: | Pennsylvanian |
| Series: | Atokan and Morrowan Series |
| Code: | PP1 *(decoded above as Era, System & Series)* |

**GEOLOGIC AGE IDENTIFICATION**

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

**DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY**

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

* ©1996 Site-specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Component Name: TAPPAN

Soil Surface Texture: loam

Hydrologic Group: Class B/D - Drained/undrained hydrology class of soils that can be drained and are classified.

Soil Drainage Class: Poorly. Soils may have a saturated zone, a layer of low hydraulic conductivity, or seepage. Depth to water table is less than 1 foot.

Hydric Status: Soil meets the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min: > 60 inches

Depth to Bedrock Max: > 60 inches

**Soil Layer Information**

| | Boundary | | | Classification | | | |
|---|---|---|---|---|---|---|---|
| **Layer** | **Upper** | **Lower** | **Soil Texture Class** | **AASHTO Group** | **Unified Soil** | **Permeability Rate (in/hr)** | **Soil Reaction (pH)** |
| 1 | 0 inches | 13 inches | loam | Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils. | FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay | Max: 2.00<br>Min: 0.60 | Max: 8.40<br>Min: 7.40 |
| 2 | 13 inches | 31 inches | loam | Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils. | FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay | Max: 2.00<br>Min: 0.20 | Max: 8.40<br>Min: 7.90 |
| 3 | 31 inches | 60 inches | loam | Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils. | FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay | Max: 0.20<br>Min: 0.06 | Max: 8.40<br>Min: 7.90 |

**OTHER SOIL TYPES IN AREA**

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: sandy loam
silt loam
loamy fine sand

Surficial Soil Types: sandy loam
silt loam
loamy fine sand

Shallow Soil Types: No Other Soil Types

Deeper Soil Types: silty clay loam

very fine sandy loam
sandy loam

## ADDITIONAL ENVIRONMENTAL RECORD SOURCES

According to ASTM E 1527-00, Section 7.2.2, "one or more additional state or local sources of environmental records may be checked, in the discretion of the environmental professional, to enhance and supplement federal and state sources... Factors to consider in determining which local or additional state records, if any, should be checked include (1) whether they are reasonably ascertainable, (2) whether they are sufficiently useful, accurate, and complete in light of the objective of the records review (see 7.1.1), and (3) whether they are obtained, pursuant to local, good commercial or customary practice." One of the record sources listed in Section 7.2.2 is water well information. Water well information can be used to assist the environmental professional in assessing sources that may impact groundwater flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

## WELL SEARCH DISTANCE INFORMATION

| DATABASE | SEARCH DISTANCE (miles) |
|---|---|
| Federal USGS | 1.000 |
| Federal FRDS PWS | Nearest PWS within 1 mile |
| State Database | 1.000 |

### FEDERAL USGS WELL INFORMATION

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| No Wells Found | | |

### FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| 1 | MI0000470 | 1/4 - 1/2 Mile NE |

Note: PWS System location is not always the same as well location.

### STATE DATABASE WELL INFORMATION

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| No Wells Found | | |

# PHYSICAL SETTING SOURCE MAP - 734792.1s

- Major Roads
- Contour Lines
- Water Wells
- Public Water Supply Wells
- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Cluster of Multiple Icons

0 1/2 1 2 Miles

- Earthquake epicenter, Richter 5 or greater
- Closest Hydrogeological Data
- Oil, gas or related wells

| | | | |
|---|---|---|---|
| TARGET PROPERTY: | Fmr. Ind. Brownhoist Site | CUSTOMER: | AKT Peerless Environmental Svc |
| ADDRESS: | 206 South Water Street | CONTACT: | Bev Dempsey |
| CITY/STATE/ZIP: | Bay City MI 48708 | INQUIRY #: | 734792.1s |
| LAT/LONG: | 43.5910 / 83.8930 | DATE: | February 14, 2002 1:13 pm |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Elevation | Database | EDR ID Number |
|---|---|---|
| **1**<br>**NE**<br>**1/4 - 1/2 Mile**<br>**Higher** | **FRDS PWS** | **MI0000470** |

| | | | |
|---|---|---|---|
| PWS ID: | MI0000470 | PWS Status: | Not Reported |
| Date Initiated: | Not Reported | Date Deactivated: | Not Reported |
| PWS Name: | BAY CITY<br>BAY CITY WATER PLANT<br>2691 N. EUCLID ROAD<br>BAY CITY, MI 48706 | | |

Treatment Objective: DISINFECTION
Treatment Process: GASEOUS CHLORINATION, POST
Source: Surface water

Addressee / Facility: Not Reported

| | | | |
|---|---|---|---|
| Facility Latitude: | Not Reported | Facility Longitude: | Not Reported |
| City Served: | Not Reported | | |
| Treatment Class: | Mixed (treated and untreated) | Population: | 38500 |

PWS currently has or had major violation(s) or enforcement: Yes

Violations information not reported.

**ENFORCEMENT INFORMATION:**

| | | | |
|---|---|---|---|
| System Name: | BAY CITY | | |
| Violation Type: | Monitoring, Repeat Minor (TCR) | | |
| Contaminant: | COLIFORM (TCR) | | |
| Compliance Period: | 1995-12-01 - 1995-12-31 | Analytical Value: | 00000000.00 |
| Violation ID: | 9610001 | Enforcement ID: | 9610001 |
| Enforcement Date: | 1996-01-12 | Enf. Action: | State Violation/Reminder Notice |

| | | | |
|---|---|---|---|
| System Name: | BAY CITY | | |
| Violation Type: | Monitoring, Repeat Minor (TCR) | | |
| Contaminant: | COLIFORM (TCR) | | |
| Compliance Period: | 1995-12-01 - 1995-12-31 | Analytical Value: | 00000000.00 |
| Violation ID: | 9610001 | Enforcement ID: | 9610002 |
| Enforcement Date: | 1996-01-12 | Enf. Action: | State Public Notif Requested |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
# RADON

## AREA RADON INFORMATION

Federal EPA Radon Zone for BAY County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Zip Code: 48708

Number of sites tested: 4

| Area | Average Activity | % <4 pCi/L | % 4-20 pCi/L | % >20 pCi/L |
|---|---|---|---|---|
| Living Area - 1st Floor | 0.400 pCi/L | 100% | 0% | 0% |
| Living Area - 2nd Floor | Not Reported | Not Reported | Not Reported | Not Reported |
| Basement | 2.300 pCi/L | 100% | 0% | 0% |

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## HYDROLOGIC INFORMATION

**Flood Zone Data:** This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

**NWI:** National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 1999 from the U.S. Fish and Wildlife Service.

## HYDROGEOLOGIC INFORMATION

**AQUIFLOW[R] Information System**
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

## GEOLOGIC INFORMATION

**Geologic Age and Rock Stratigraphic Unit**
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

**STATSGO:** State Soil Geographic Database
The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the national Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

## ADDITIONAL ENVIRONMENTAL RECORD SOURCES

### FEDERAL WATER WELLS

**PWS:** Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-260-2805
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

**PWS ENF:** Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-260-2805
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

**USGS Water Wells:** In November 1971 the United States Geological Survey (USGS) implemented a national water resource information tracking system. This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on more than 900,000 wells, springs, and other sources of groundwater.

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## STATE RECORDS

**Michigan Public and Private Water Wells**
Source: Michigan Department of Natural Resources
Locations of verified municipal and private water well sites compiled from Michigan Department of Public Health, Water Well and Pump Records. Available in the following MI counties: Calhoun, Eaton, Genesee, Ingham, Jackson, Kalamazoo, Kent, Midland, Muskegon, Oakland, Ottawaw, Saginaw, St. Clair, Washtenaw.

**Michigan Oil and Gas Wells**
Source: Michigan Department of Natural Resources
Locations of oil and gas wells are compiled from permit records on file at the Geological Survey Division (GSD), Michigan Department of Natural Resources.

## RADON

**Area Radon Information:** The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

**EPA Radon Zones:** Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

## OTHER

**Epicenters:** World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

# Appendix E
# AKT Peerless Soil Boring Logs

**AKTPEERLESS**
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Phone: (248)615-1333 Fax: (248)615-1334

# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-1**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND-AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Black to Brown Foundry Sand | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-2**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND-AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Black to Brown Foundry Sand | |
| 4 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-3**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND-AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Black to Brown Foundry Sand | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |
| 2 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-4**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND-AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Black, Crystals, Foundry Sand | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-5**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND-AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | CL | CLAY: Brown, Sandy | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-6**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND-AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | TOPSOIL | |
| 02 | | | | | | SW | SAND: Brown, Dry | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-7**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | CL | CLAY: Hard, Brown, Sandy, Trace Gravel | |
| 4 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |
| 12 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-8**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10 25 50 75 100 250 500 750 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | CL | CLAY: Hard, Brown, Sandy, Trace Gravel | |
| | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-9**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | CL | CLAY: Medium-Stiff, Brown, Sandy | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |
| 2 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-10**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE- | |
| 02 | | | | | | SW | SAND: Clayey, Brown | |
| 06 | | | | | | | 4.0' BORING TERMINATED | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

**AKTPEERLESS**
environmental services
24073 Research Drive, Farmington Hills, MI 48335
Phone: (248)615-1333 Fax: (248)615-1334

# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-11**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Clayey, Brown to Black | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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environmental services
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Phone: (248)615-1333 Fax: (248)615-1334

# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-12**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Brown to Black, Crystals | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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environmental services
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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-13**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Brown to Black, Crystals | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-14**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Brown to Black, Clayey | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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Phone: (248)615-1333 Fax: (248)615-1334

# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-15**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Brown to Black, Trace Fine Gravel, Clayey | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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Phone: (248)615-1333 Fax: (248)615-1334

# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-16**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Brown to Black, Trace Fine Gravel, Clayey | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

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Phone: (248)615-1333 Fax: (248)615-1334

# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-17**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Brown, Trace fine Gravel | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |

▽ = TOP OF GROUNDWATER

**AKTPEERLESS**
environmental services
24073 Research Drive, Farmington Hills, MI 48335
Phone: (248)615-1333 Fax: (248)615-1334

# BORING LOG

IB PROPERTY
112 NORTH WATER STREET
BAY CITY, MICHIGAN
PROJECT NUMBER: 3522F

**B-17**

DRAWN BY: JB
DATE: 03-14-02

| | | | |
|---|---|---|---|
| DRILLING COMPANY: | FIBERTEC | SURFACE ELEVATION: | |
| TECHNICIAN: | JH | BORING DEPTH: | 4.0' |
| DATE DRILLED: | 03-04-02 | DEPTH TO GW: | |
| DRILLING METHOD: | HAND AUGER | SCREEN INTERVAL: | |
| | | SCREEN MATERIAL: | |

| DEPTH FEET | SAMPLE NUMBER | BLOWS/FT. | PID (ppm) VALUES | PID (ppm) PROFILE (10, 25, 50, 75, 100, 250, 500, 750, 1000) | GRAPHIC LOG | SOIL CLASS | GEOLOGIC DESCRIPTION | TEMPORARY WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | CONCRETE | |
| 02 | | | | | | SW | SAND: Brown, Trace fine Gravel | |
| 04 | | | | | | | 4.0' BORING TERMINATED | |
| 06 | | | | | | | | |
| 08 | | | | | | | | |
| 10 | | | | | | | | |
| 2 | | | | | | | | |

▽ = TOP OF GROUNDWATER

# Appendix F
# Abandoned Containers Form EQP 4476

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL RESPONSE DIVISION

FOR DEQ USE ONLY
ITS# _____
Site ID# _____

# NOTICE REGARDING DISCARDED OR ABANDONED CONTAINERS (FORM EQP4476)

*(Under the authority of Part 201, 1994 Act 451, as amended, and the Rules promulgated thereunder)*

*Use this form to disclose information related to underground storage tanks (UST) and discarded or abandoned containers required in a Baseline Environmental Assessment (BEA) pursuant to the Part 9 Rules. Submission of this form in a BEA also satisfies the notification requirements of Rule 1015(1) of the Part 10 Rules. This form may also be used, NOT in conjunction with a BEA, to satisfy the notification requirements of Rule 1015(1) of the Part 10 Rules.*

All persons providing this notice must complete Section I. Section II must be completed by only those persons who are submitting this form NOT in conjunction with a BEA.

## SECTION I

1. Name and Address of person subject to Section 7a:
   James M. Palenick
   City of Bay City
   301 Washington Street
   Bay City, Michigan 48708

2. Address/location of property where containers are located:
   112 North Water Street
   Bay City, Michigan

   County: Saginaw

3. What is your status relative to the property?

| | Current | Prospective |
|---|---|---|
| Owner | ☒ | ☐ |
| Operator | ☐ | ☐ |

4. Provide a scaled map or drawing of the property that identifies the property boundaries and surrounding property uses. Depict the approximate location(s) of all known discarded or abandoned containers on the drawing. Refer to the locations when completing the attached table.

5. Provide photographs, if practical, that depict the location and general condition of the containers.

6. Complete the attached table.

7. If this form is being submitted in conjunction with a BEA, skip Section II and go to Signature section.

## SECTION II

8. Did you previously submit a BEA to the DEQ for this property? Yes ☐ No ☒ If yes, provide the following information:
   8a. Provide the date the BEA was submitted.
   8b. Provide the BEA Disclosure or Petition Number, if available.

9. Do you anticipate submitting a BEA for the property? Yes ☒ No ☐

10. Provide the date you became the owner or operator of this property. January 31, 2002

11. When did you first acquire knowledge of the UST(s) or discarded or abandoned container(s)? January 31, 2002

With my signature below, I certify that the information provided herein is true and accurate to the best of my knowledge and belief. I understand that intentionally submitting false information to the DEQ is a felony and may result in fines of up to $25,000 for each violation.

Signature of owner or operator or person legally authorized by owner or operator — Date: 3/15/02

James M. Palenick
Name (typed or printed)

City Manager
Title (typed or printed)

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

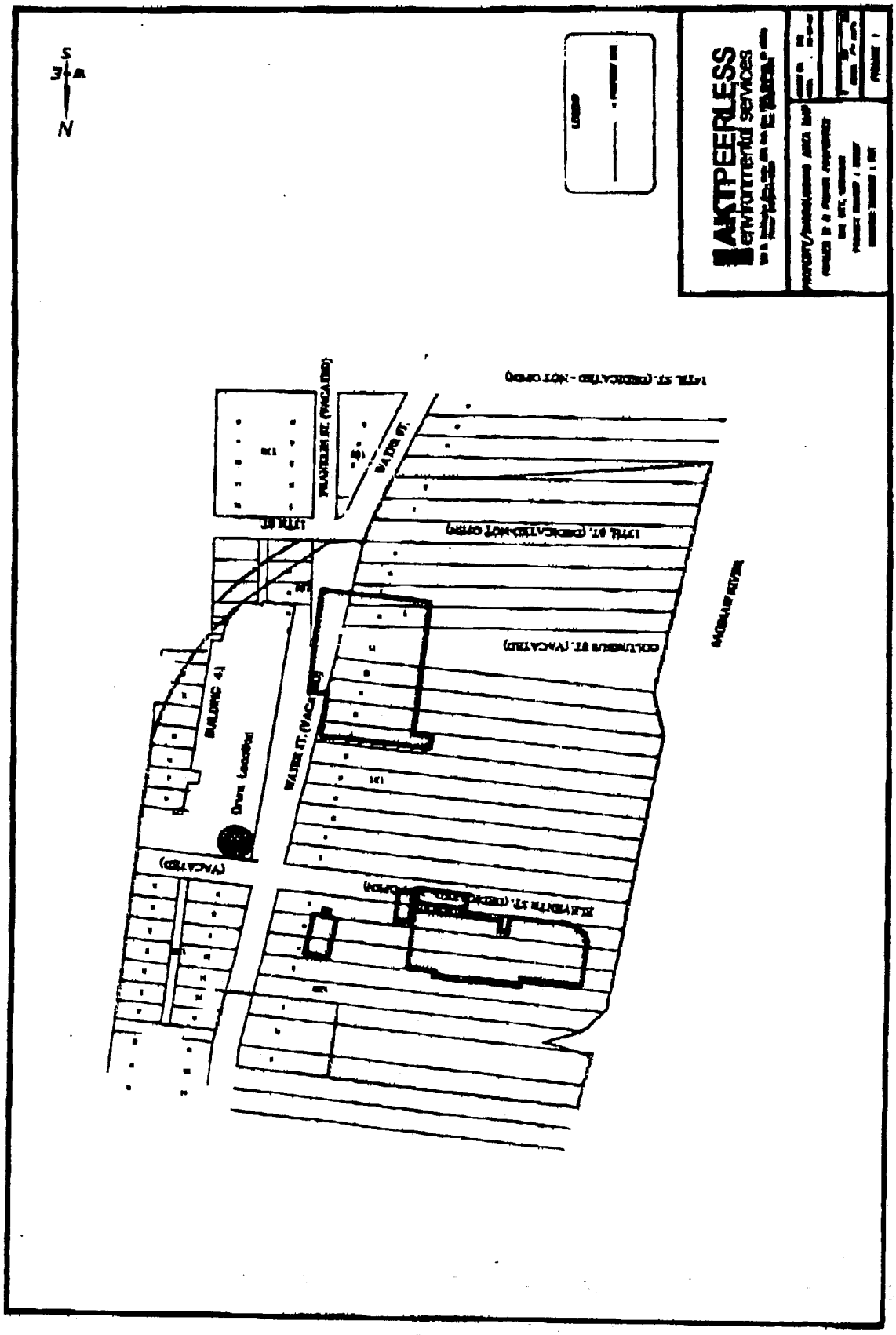
## NOTICE REGARDING UNDERGROUND STORAGE TANKS AND DISCARDED OR ABANDONED CONTAINERS

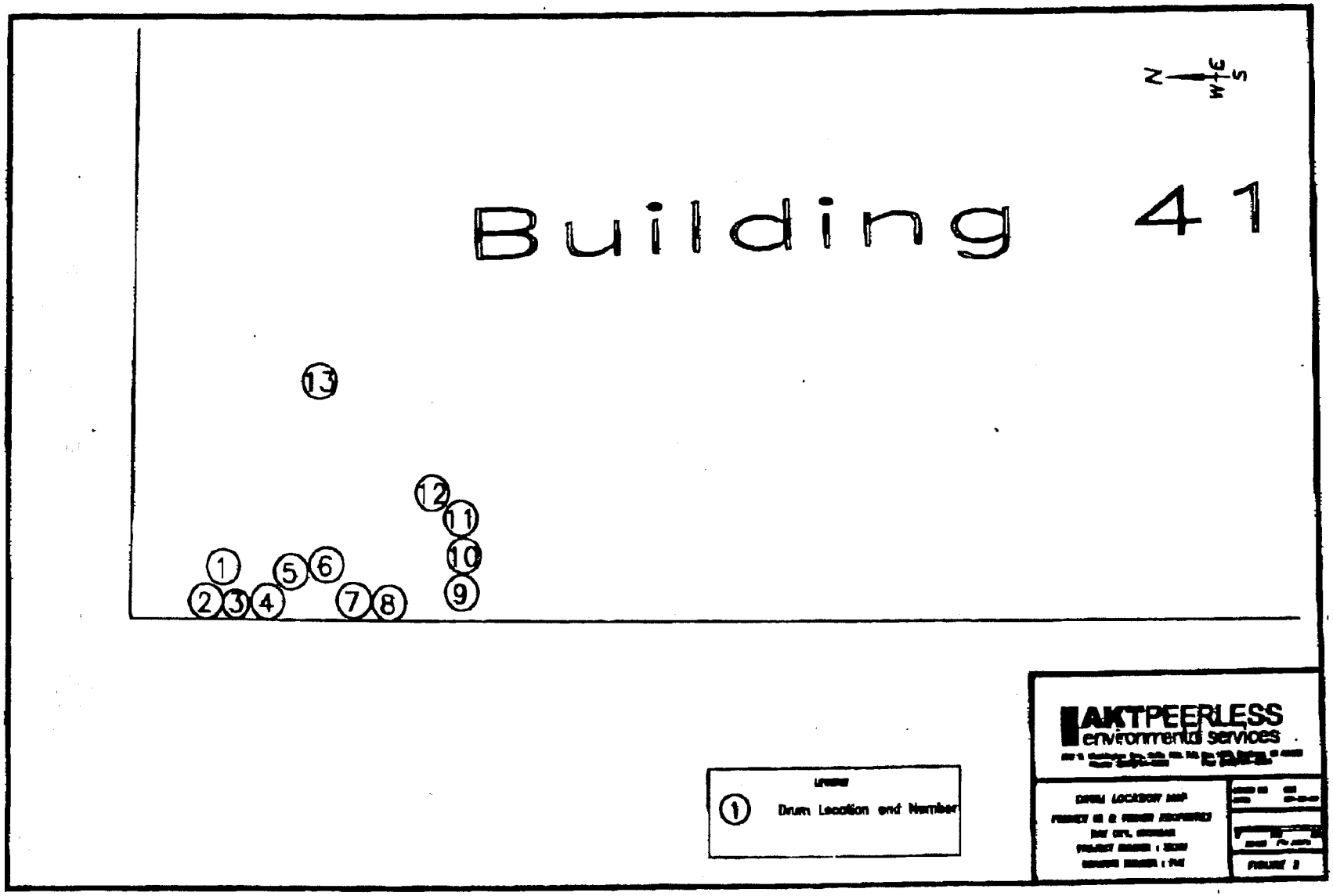
| A<br>LOCATION | B<br>CONTAINER SIZE AND TYPE | C<br>NUMBER OF CONTAINERS | D<br>VOLUME OF HAZARDOUS SUBSTANCE(S) | E<br>CONTENTS | F<br>CONDITION OF CONTAINER | G<br>PHOTOS PROVIDED |
|---|---|---|---|---|---|---|
| Northwest corner of building 41 | Metal 55-gallon drum | 1 | 0 gallons | NA | Good | NA |
| Northwest corner of building 41 | Metal 55-gallon drum | 1 | 25 gallons | Used oil | Good | NA |
| Northwest corner of building 41 | Metal 55-gallon drum | 1 | 55 gallons | Used oil | Good | NA |
| Northwest corner of building 41 | Metal 55-gallon drum | 1 | 10 gallons | Used oil | Good | NA |
| Northwest corner of building 41 | Plastic 5-gallon pail | 1 | 1 gallon | Used oil and 3 used oil filters | stained | NA |
| Northwest corner of building 41 | Plastic 5-gallon pail | 1 | 0 gallons | NA | stained | NA |
| Northwest corner of building 41 | Plastic 5-gallon pail | 1 | 0 gallons | NA | Good | NA |

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## NOTICE REGARDING UNDERGROUND STORAGE TANKS AND DISCARDED OR ABANDONED CONTAINERS

| A<br>LOCATION | B<br>CONTAINER SIZE AND TYPE | C<br>NUMBER OF CONTAINERS | D<br>VOLUME OF HAZARDOUS SUBSTANCE(S) | E<br>CONTENTS | F<br>CONDITION OF CONTAINER | G<br>PHOTOS PROVIDED |
|---|---|---|---|---|---|---|
| Northwest corner of building 41 | Plastic 5-gallon pail | 1 | 0 gallons | Used oil filters | Stained | NA |
| Northwest corner of building 41 | Metal 55-gallon drum | 1 | 0 gallons | NA | Good | NA |
| Northwest corner of building 41 | Metal 55-gallon drum | 1 | 0 gallons | NA | Good | NA |
| Northwest corner of building 41 | Metal 55-gallon drum | 1 | 0 gallons | NA | Good | NA |
| Northwest corner of building 41 | Plastic 5-gallon pail | 1 | <1 gallon | Transmission oil | stained | NA |
| Northwest corner of building 41 | Metal 10-gallon | 1 | 5 gallons | unknown | good | NA |
| | | | | | | |


AKTPEERLESS
environmental services
N
S
WATER ST.
BUILDING 41
Drum Location
(VACATED)
COLUMBUS ST. (VACATED)
13TH ST. (DEDICATED-NOT OPEN)
14TH ST. (DEDICATED - NOT OPEN)
FRANKLIN ST. (VACATED)
MAGNAW RIVER


N
W
E
S
Building 41
1
2
3
4
5
6
7
8
9
10
11
12
13
1 Drum Location and Number
AKTPEERLESS
environmental services

Picture of the abandoned drums and containers at the Former Industrial Brownhoist Property 112 North Water Street Bay City, Michigan.

# Appendix G

## Environmental Professional Experience

**AKTPEERLESS**
environmental services

**SCOTT G. KLIPA, P.E.**
**Senior Environmental Engineer**
**Environmental Engineering Services**

## EDUCATION

Michigan Technological University, Houghton, Michigan
B.S., Civil Engineering, 1994

Wayne State University, Detroit, Michigan
Graduate Certificate, Hazardous Waste Control (December 1998)

## PROFESSIONAL EXPERIENCE

Environmental Engineer, AKT Peerless Environmental Services
Environmental Engineer, FEA Management, Inc.

## AREA OF EXPERTISE

Expertise includes: (1) conducting field operations such as soil and groundwater sampling, and surveying, (2) assisting in the design, installation, and operation of soil and groundwater remediation systems, (3) preparing reports to maintain compliance with Michigan Department of Environmental Quality reporting requirements, (4) obtaining approval for waste disposal, (5) assisting with soil vapor extraction test, and hydraulic conductivity and aquifer pump tests, (6) air quality sampling, permitting, and regulatory reporting (7) creating maps, diagrams, and drawings using CAD software.

## SUMMARY OF SELECTED PROJECTS

(1) Supervised drilling operations. Activities included: selecting boring locations, collecting soil samples, field screening soil samples, installation of monitoring wells, and selecting samples for laboratory analysis.

(2) Assisted with Phase I environmental assessments. The assessments included reviewing regulatory records, inspecting the site for underground storage tanks (USTs), hazardous substance storage, and potential sources of PCBs.

(3) Assisted in design and implementation of a lead abatement program. Activities included: regulatory review, design of training program, assist with implementation of training program at facility.

(4) Assisted with a compliance program for community college volatile storage area. Activities included: inventory of storage area, disposal approval and preparation for

various hazardous and non-hazardous substances, implementation of proper storage and signage procedures for remaining materials.

(5) Completed Michigan air pollution reporting forms for small manufacturing facilities. Activities included: review of site activities, estimation of air emissions, completing facility-reporting forms.

(6) Operation and maintenance of remediation systems.

## CERTIFICATIONS

Occupational Safety And Health Administration (OSHA) 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER)

Certified Storm Water Management-Construction Site Supervisor (A-1j)

Professional Engineer, Michigan Engineers (License No. 48096)

Engineering Society of Detroit

# JOSHUA J. BENNETT

**Geologist**
**Environmental Engineering Services**

***PROFESSIONAL PROFILE***

## EDUCATION

University of Michigan, Ann Arbor, Michigan
B.S., Professional Geology, 2000

## PROFESSIONAL EXPERIENCE

Geologist, AKT Peerless Environmental Services

## AREA OF EXPERTISE

Expertise includes: (1) conducting field operations such as soil, surface water, and groundwater sampling, (2) oversight of field operations such as monitoring well installation, and contaminant delineation, (3) preparing Phase II Subsurface Investigation Reports, (4) preparing Baseline Environmental Assessment Reports, (5) creating maps, diagrams, and drawings.

Mr. Bennett has three months of experience in investigative activities regarding hazardous materials, substances or contaminants; including environmental site assessment and long term monitoring and removal activities. Mr. Bennett has conducted subsurface investigations to evaluate the presence and/or extent of soil and groundwater contamination.

## SUMMARY OF SELECTED PROJECTS

(1) Supervised drilling and mobile lab operations. Activities included: selecting boring locations, collecting soil samples, field screening soil samples, installing monitoring wells, and selecting samples for laboratory analysis.

(2) Conducted vertical profiling and discrete sampling of groundwater at specific depths to determine the vertical extent of contamination. Conducted delineation procedures to determine the exact location and extent of soil contamination.

(3) Conducted long term monitoring including well development and well sampling procedures.

## CERTIFICATIONS

Occupational Safety And Health Administration (OSHA) 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER)