CRA

DESCRIPTION OF CURRENT CONDITIONS REPORT

FORMER PEREGRINE (US), INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

U.S. EPA ID# MIR000020743 (Peregrine ID)
U.S. EPA ID# MID005356860 (GM ID)

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LIST OF ACRONYMS

20xGCC	Michigan 20xGeneric Groundwater Contact Criteria
AOC	Area of Concern
AOI	Area of Interest
AST	Aboveground Storage Tank
Bgs	Below Ground Surface
CRA	Conestoga-Rovers & Associates
Delphi	Delphi Interior and Lighting Systems
DOCC	Description of Current Conditions Report
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
GIHBDW	Generic Industrial Health Based Drinking Water Values
GM	General Motors Corporation
ID	Identification
IDC	Michigan Generic Industrial Direct Contact Standards
IDWC	Industrial Drinking Water Criteria
IDWP	Industrial Drinking Water Protection Criteria
IERY	Inactive Equipment Reserve Yard
LUST	Leaking Underground Storage Tank
MCL	Maximum Contaminant Level
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
mgd	Million Gallons per Day
mph	Miles Per Hour
NPDES	National Pollutant Discharge Elimination System
PA	Preliminary Assessment
PA/VSI	Preliminary Assessment/Visual Site Inspection
PAOC	Potential Area of Concern
PCB	Polychlorinated Biphenyls
PNA	Polynuclear Aromatic Organic Compounds
POTW	Publicly Owned Treatment Works
ppb	Parts Per Billion

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LIST OF ACRONYMS (cont'd)

RCRA	Resource Conservation and Recovery Act
REALM	Remediation and Liability Management Co., Inc.
SSL	Soil Screening Level
STD	Storage Tank Division
SWMU	Solid Waste Management Unit
TCE	Trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
TPH	Total Petroleum Hydrocarbons
U.S. EPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
VSI	Visual Site Inspection
WWTP	On-site Wastewater Treatment Plant

1.0 INTRODUCTION

This document presents the Description of Current Conditions Report (DOCC Report) for the former Peregrine (US), Inc. (Peregrine) Coldwater Road Facility (Facility) located at G1245 East Coldwater Road in Genesee Township, Michigan (U.S. EPA ID#MIR000020743). Prior to sale of the Facility to Peregrine in December 1996, the Facility was operated as the Delphi Interior and Lighting Systems (Delphi) Coldwater Road Plant, a division of the General Motors Corporation (GM) (U.S. EPA ID#MID005356860). The Facility sold to Peregrine was only a portion of the former property previously owned and operated by GM (which included a closed landfill located to the north of the main factory building). GM resumed ownership of the Facility in July 1999 when Peregrine ceased operations and assigned title to the Remediation and Liability Management Company, Inc. (REALM), a wholly owned subsidiary of GM. REALM also retains ownership of the former closed landfill under separate title.

1.1 GENERAL

Conestoga-Rovers & Associates (CRA) was retained by REALM to prepare this document entitled "Description of Current Conditions Report – Former Peregrine (US), Inc. Coldwater Road Facility".

The Facility is located in Genesee Township, Genesee County, Michigan, approximately two miles north of the City of Flint, Michigan, at 43° 45' north latitude and 83° 05' west longitude. The Facility is located on approximately 118.7 acres of land at G1245 East Coldwater Road. The general geographic location of the Facility is presented on Figure 1.1. Manufacturing of automotive interior components has historically taken place in the approximately two million square foot Building 44 and associated buildings located at the Facility. A Facility Plan is presented on Figure 1.2/Plan 1.

1.2 AREAS OF INTEREST

This section presents an overview of the Areas of Interest (AOIs) evaluated in this DOCC Report. The AOIs are identified in the following manner:

- Ten Solid Waste Management Units (SWMUs) and two Areas of Concern (AOCs) which were identified by the United States Environmental Protection Agency (U.S. EPA) in the September 1998 Preliminary Assessment/Visual Site Inspection (PA/VSI) (for this DOCC Report, SWMUs 1 through 10 and AOCs 1 and 2 have been designated as AOI 1 through AOI 12, respectively); and
- Nine other AOIs identified by REALM during a review of historical information for the Facility (for this DOCC Report, these additional AOIs have been designated as AOI 13 through AOI 21).

The AOIs identified at the Facility are summarized in Table 1.1. The AOI locations are presented on Figure 1.2/Plan 1.

1.3 SCOPE OF DOCC REPORT

The scope of this DOCC Report is to describe the present conditions at all locations evaluated during previous investigations and any other past or present locations at the Facility for which REALM has knowledge of past treatment, storage, or disposal of hazardous waste or hazardous constituents with the potential for impact to environmental media.

To meet these requirements, the following activities have been completed:

- Conducted a review of available information concerning historical treatment, storage, or disposal of hazardous waste;
- Conducted interviews with former Delphi employees on February 29, 2000;
- Conducted a review of available information regarding local land use, climate, geology, hydrogeology, hydrology, and ecology;
- Prepared a summary of remedial activities completed at the Facility;
- Prepared a summary of previous environmental investigations at the Facility; and
- Completed an evaluation of existing data.

Information contained in Peregrine files, GM files, REALM files, and Facility files was reviewed. In addition, four previous site assessment reports prepared prior to, during, and subsequent to the December 1996 property transfer from GM to Peregrine (referred to as Study 1, 2, 3, and 4, respectively), and other resources, were used to obtain

information regarding local land use, climate, geology, hydrogeology, hydrology, and ecology.

1.4 REPORT ORGANIZATION

This DOCC Report is organized as follows:

Section 1.0 Introduction

This section presents an introduction to, and organization of, the DOCC Report.

Section 2.0 Description of Facility

This section summarizes general conditions at the Facility, including the Facility location, historical property ownership, current and historical operations at the Facility, and current and historical waste management practices at the Facility.

Section 3.0 Regional Setting

This section summarizes local land use, demographics, climate, regional geology, regional hydrogeology, regional hydrology, and regional ecology.

Section 4.0 Facility Setting

This section summarizes the geology, hydrogeology, hydrology, and ecology at the Facility. In addition, this section presents the local topography of the Facility.

Section 5.0 Summary of Previous Remedial Actions

This section summarizes previous remedial actions conducted at the Facility. Remedial actions are discussed in further detail in Sections 7.0 and 8.0, with other information related to the individual AOIs.

Section 6.0 Summary of Previous Environmental Investigations

This section summarizes previous environmental investigations conducted at the Facility. Environmental investigations are discussed in further detail in Sections 7.0 and 8.0, with other information related to the individual AOIs.

Section 7.0 Areas of Interest (AOIs) Identified in U.S. EPA's Preliminary Assessment/Visual Site Inspection Report

This section presents information on the 10 SWMUs and 2 AOCs identified in U.S. EPA's 1998 PA/VSI; including their specific location within the Facility, historical operations, previous investigations, remedial actions, and current status.

Section 8.0 Other Potential Areas of Interest (AOIs)

This section presents information on the 9 additional AOIs identified from the review of historical information; including their specific location within the Facility, historical operations, previous investigations, remedial actions, if any, and current status.

Section 9.0 References

This section provides references for the documents cited in this DOCC Report.

This document also includes the following appendices:

Appendix A:	Borehole and Monitoring Well Logs
Appendix B:	Summary of Analytical Results – Study 1 (08/96)
Appendix C:	Summary of Analytical Results – Study 2 (11/96)
Appendix D:	Summary of Analytical Results – Study 3 (11/96)
Appendix E:	Summary of Analytical Results – Study 4 (03,04/97)

2.0 DESCRIPTION OF FACILITY

2.1 FACILITY LOCATION

The Facility is located north of the City of Flint, in Genesee Township, Genesee County, Michigan at 43° 45' north latitude and 83° 05' west longitude. The Facility is located on approximately 118.7 acres of land at G1245 East Coldwater Road. The general geographic location of the Facility is shown on Figure 1.1. Manufacturing has historically taken place in the approximately two million square foot Building 44 and associated buildings at the Facility. The Facility is bordered to the north by an approved RCRA Part B permitted wastewater treatment sludge mono-fill landfill and a restored wetlands area owned and maintained by REALM (which is part of the original plant property owned by GM); to the east by CSX Transportation property and railroad tracks; to the south by East Coldwater Road; and to the west by Horton Street. The Facility boundaries, buildings, and support facilities are presented on Figure 1.2/Plan 1.

2.2 PROPERTY OWNERSHIP HISTORY

GM acquired the property that the Former Peregrine Facility is located on as vacant land in 1951 from several private parties. The Buick Motor Division started construction of the plant buildings that same year. However, prior to completion, the Facility was transferred to the Ternstedt Division. The Fisher Body Division subsequently acquired the Facility in 1968. In 1985, the Fisher Body hardware plants were merged with Guide Lamp and became the Fisher Guide Division, and then in early 1989, Fisher Guide Division was merged with Inland Division to become the Inland Fisher Guide Division. The Inland Fisher Guide Division became part of Delphi Automotive Systems in early 1995 and the Facility was operated as the Delphi Interior and Lighting Systems Division Coldwater Road Plant until GM sold the Facility to Peregrine in December 1996. Peregrine ceased operations in 1998 and GM's subsidiary REALM acquired the property in July 1999. REALM is currently undertaking environmental decommissioning of the above grade structures and preparing for demolition of the industrial buildings.

2.3 CURRENT AND HISTORICAL OPERATIONS

2.3.1 CURRENT OPERATIONS

There are no industrial operations currently being conducted at the Facility. The Facility is undergoing a complete and systematic environmental decommissioning and demolition program that began during the summer of 1999 (after REALM acquired title to the Facility) and is expected to be completed in 2001. The following provides a summary of associated activities and the general time frames during which they were/will be implemented:

Building Decommissioning Assessment (BDA) – Summer 1999
Collection /Removal of Chemical Containers – August/September 1999
Collection/Removal of Transformers and Capacitors – September-November 1999
Collection/Removal of Non-Structural ACM Containing Materials - December 1999 – March 2000
Above ground Environmental Decommissioning – January-September 2000
Building Demolition - 2000-2001

Mobilization to the Site of a construction trailer and personnel by REALM began in August 1999. REALM is managing the Site and maintaining security through 24-hour surveillance by a contracted security firm. The Administration Building (Building 44A) has been leased to GM as a "jobs bank" personnel transition center, which is anticipated to remain after industrial portions of the buildings have been decommissioned and demolished. REALM contracted the removal of transformers and capacitors to SunOhio, Inc. during the fall of 1999. This activity has been completed. National Abatement Corporation was retained to perform abatement of non-structural asbestos (not including roofing materials and galbestos siding). Asbestos abatement began on December 8, 1999 and is expected to be substantially complete by March 31, 2000. Removal of the light fixtures, chillers, and miscellaneous fixtures was contracted to the MPS Group in March 2000 and is expected to be completed in April 2000. Removal of the floor block was contracted to Inland Water Pollution Control, Inc. in March 2000 and is also expected to be completed in April 2000. Final cleaning of the Facility structures is currently scheduled to begin in April 2000. Building demolition could begin as early as May or June 2000.

2.3.2 HISTORICAL INDUSTRIAL OPERATIONS (1995-1999)

The Facility was most recently used by Delphi and Peregrine (past four to five years) for the manufacture of the following automobile components: 1) window regulators, 2) door hinges, 3) door modules, and 4) seat adjusters. (The latter two processes were discontinued upon transfer of the Facility to Peregrine in December 1996). Manufacturing operations occurred in the main manufacturing building (Building 44) at the locations summarized on Figures 2.1 and 2.2 (Peregrine and Delphi, respectively). Descriptions of the manufacturing processes associated with each of the above components are summarized below:

1) **Window Regulators:** Window regulators are the mechanical devices which raise and lower the vehicle's windows. The Facility produced conventional and tape-drive regulators for W-Body and J-Body vehicles. Window regulators are comprised of both fabricated metal and motorized mechanical components. The fabricated metal components were manufactured in-house, while the motorized mechanical components were supplied by outside vendors. The in-house manufacturing processes included unrolling/straightening rolls of steel, cutting and shaping, stamping, riveting, assembly, and washing. Depending on customer specifications, certain regulator assemblies were shipped off-site to be zinc plated.

2) **Door Hinges:** The Facility produced both front and rear door hinge assemblies for W-Body and J-Body vehicles, as well as N-Body deck lift hinges. Door hinge assemblies are essentially comprised of three major components: two steel hinge joint components and a spring assembly. The two hinge joint components were manufactured in-house, while the springs were supplied by outside vendors. The in-house manufacturing processes included unrolling/straightening sheets of steel, cutting and shaping to size, stamping, assembly (both automated and hand), washing, and welding.

3) **Door Modules:** The Facility produced door modules for G-Body, K-Body, and K_{sp}-Body vehicles. Door modules are the formed steel backing plates that line the interior of automobile doors. The door module essentially consists of a single steel plate. The entire component was manufactured in-house. The in-house manufacturing process included unrolling/straightening sheets of steel, cutting and shaping to size, stamping, and washing. This process was discontinued upon transfer of manufacturing operations to Peregrine in December 1996.

4) **Seat Adjusters:** Seat adjusters are the mechanical devices which allow adjustment of the passenger and driver seats. Seat adjuster operations at this Facility consisted of assembly operations only. All adjuster components were manufactured and supplied by outside sources. This process was moved to another Facility prior to transfer of operations to Peregrine or discontinued upon transfer of manufacturing operations to Peregrine in December 1996.

5) **Other Operations:** Some component parts were heat treated in the presence of barium salts to harden the steel. No machining, painting, heat treating, or plating was reported to take place in the Facility after Peregrine commenced operations on January 2, 1997.

Other operations at the Facility (Delphi and/or Peregrine) utilized a variety of chemicals, including oils, greases, solvents, water treatment chemicals, minor amounts of paint, and barium salts for heat treating. Wastewaters generated by Delphi during washing activities were treated on-Site prior to discharge to the local publicly owned treatment works (POTW). On-site Wastewater Treatment Plant (WWTP) operations were discontinued at the time of the property transfer to Peregrine in December 1996 and the WWTP was subsequently demolished by GM in 1999. Wastewaters generated by Peregrine during its parts stamping and manufacturing operations were subsequently managed through Wastewater Storage Tanks formerly located in the northwest corner of the main manufacturing building (Building 44). These tanks were periodically emptied by a contracted waste hauler for off-Site treatment and disposal.

2.3.3 HISTORICAL OPERATIONS (PRIOR TO 1995)

Prior to the manufacture of automobile components by Delphi and Peregrine, historical activities at the Facility consisted of a variety of other automotive parts related operations. The most significant of these historical operations was the former plating operations, for which there were reported to be at least 13 chrome plating lines and 2 zinc barrel plating lines. The generalized location of the former platers are presented on Figure 2.3/Plan 2 (based upon historical drawings that are available for the Facility). Other known historical processes included die casting, solvent-based adhesive/gluing and painting operations. Descriptions of the pre-1995 historical operations at the Facility are summarized below:

1) **Plating Operations:** There are reported to have been 15 plating lines (see Figure 2.3/Plan 2)in operation at some point in time during the almost 30 years of manufacturing by the Fisher Body Division and two subsequent merged divisions. The following list identifies some of the chrome platers, and their approximate removal dates:

- The #9 Chrome Plater was located between Columns D & G and Columns 23 & 24 and was removed in 1983.
- Two chrome platers located between Columns H & M and Columns 31 & 33 were removed in 1983.
- The #10 Chrome Plater was located between Columns D & G and Columns 22 & 23 and was removed in 1973.
- The #5 Chrome Plater was located at Column K-25 and was removed in 1971.
- Two other chrome platers, located between Columns E & G and Columns 33 & 35, were removed in 1971.
- Two other chrome platers, located at Columns K-34 & K-35, were removed in 1969 and 1973.
- A half-size automated chrome plater located at Column L-30 was removed in 1969
- A manual still plater (with hoist) located at Column J-22, as well as a small still plater known as the North Still, were removed in 1967.

The above plating lines had associated sumps and an associated series of aboveground storage tanks (ASTs) in the basement of the main manufacturing building which made up the Plating Solution Filtration/Treatment Area. The filtration and treatment area allowed the plating solutions to be processed for re-use.

There were also two zinc plating lines in operation concurrently with many of the chrome platers. One zinc plating unit was located near Column K-8 and was removed in 1979. An inactive zinc barrel plating unit which was located between Columns K-1 and K-2 was removed by GM in 1997. The locations of the platers are presented on Figure 2.3/Plan 2.

In addition, die casting operations were historically conducted at the Facility within the northeast quadrant of Building 44 (see Figure 2.3/Plan 2).

2) **Headliner Operations:** The headliner adhesive and chemical aboveground storage tanks are located east of the main manufacturing building and remain on-Site. There were eight stainless steel storage tanks (Tank #6 has been

removed), approximately 8,000 gallons each, associated with the former headliner activities. These tanks historically contained solvent-based adhesives. More recently, the tanks contained water based adhesives.

3) **Plastisol Related Activities:** A former underground storage (UST), located east of the main manufacturing building (near Column S-31), was reportedly used for plastisol related activities between approximately 1953 and 1984. Plastisol was a rubber-type coating placed on the plating racks in order to separate the racks themselves from the plating operation. The Plastisol UST was simply used as temporary storage whenever the interior dip tank required cleaning. The tank was removed by GM in 1997.

4) **Former Wastewater Treatment Plant and Former Lagoons/Landfill:** The former on-Site WWTP located northwest of Building 44 was demolished by GM in 1999. The WWTP plant historically treated wastewaters from the plating operations, as well as general process wastewaters. There is also an existing closed landfill site to the north of the Facility. The WWTP and landfill site were not part of the transaction when the property was sold to Peregrine in December 1996. It should be noted that no further action is currently required for either the former WWTP or closed landfill.

5) **Underground Storage Tanks:** There are no known USTs currently present at the Facility. Based on available information, all former USTs have been removed. Two 2,000-gallon gasoline and two 2,000-gallon waste oil tanks were removed in November 1990 and a letter of closure was received from the Michigan Department of Natural Resources (MDNR). The plastisol tank was removed by and closed by GM in 1997. A 1952 design drawing of the Facility identified a tank farm located near the current electrical substation area. However, based upon interviews with former Delphi personnel, no tanks were ever installed at this location (due to a change in projected use of the Facility).

6) **Other Operations:** It is believed that some metal parts were historically degreased with chlorinated solvents within the western portion of the former tool room.

2.4 CURRENT AND HISTORICAL WASTE MANAGEMENT PRACTICES

Wastes were generated at the Facility since the start of production in 1952. These wastes were primarily generated in plating operations, press room operations, and maintenance operations within Building 44. The Facility's non-production support areas

(e.g., powerhouse) also generated some wastes. The waste management activities associated with the operation of the Facility are summarized in this section, including the Facility's waste generation, treatment, storage, and disposal practices.

Building 66 contained the most recently used Hazardous Materials Storage Area. However, hazardous waste is no longer stored at this location as operations at the Facility ceased in late 1998 at which time the Hazardous Materials Storage Area was decommissioned. No stored hazardous waste related to manufacturing activities exists at the Facility. The Building 66 Hazardous Materials Storage Area (AOI 5) is discussed further in Section 7.5. The Former Drum Storage Area (AOI 1) for hazardous waste was closed in September 1994 and is discussed further in Section 7.1.

2.4.1 WASTE GENERATION

1) Former Plating Operations:

Plating operations historically took place in Building 44 from approximately 1953 through 1987. There were at least 13 chrome plating lines and 2 zinc plating lines. A number of these plating lines had collection sumps associated with them. Spent plating solutions were generated which variously contained chrome, zinc, copper, acid, alkali, and cyanide. Plating solutions were recycled through the plating system which included a variety of solution regeneration activities which occurred at the filtration and treatment area located in the basement. Spent plating solutions were pumped to the WWTP for treatment. The resultant wastewater treatment plant sludges were stored in associated sludge drying beds. The sludge drying beds were active until June 1987 when cessation of plating operations took place, and discharge from the WWTP was re-routed to the sanitary sewer system. The Former Plating Areas (AOI 9) are discussed in Section 7.9. It should be noted that the lagoons, drying beds, and landfill have been closed under a separate State of Michigan lead regulatory program and that no further corrective action is required for the landfill (other than ongoing operation and maintenance activities).

2) Former Press Room Operations:

The metal stamping operations generated wastewater containing oil, grease, suspended solids, and scrap metal. The metal drawing lubricants used in more recent years were made from saturated animal fats rather than petroleum based lubricating oils.

3) Former Maintenance Operations:

Maintenance cleaning operations historically generated spent solvents from parts washers. The Maintenance Paint Booth and small part marking operations generated waste paint and paint related materials. The Maintenance Paint Booth had not been used in recent years (Peregrine/Delphi time frame). Other solid wastes from maintenance operations included batteries, fluorescent lights, and light ballasts.

4) Support Areas:

Other wastes were generated by the Facility powerhouse, including boiler blowdown and fly ash. The PA/VSI identified the Former Coal Storage Area as an AOC (AOI 11). According to file material and Facility personnel, the Former Coal Storage Area was unlined.

5) Other:

The Former Coal Storage Area (AOI 11) is discussed further in Section 7.11. Another AOC identified by U.S. EPA in the PA/VSI was the 11 former empty caustic tanks (AOI 12) staged immediately west of the Former Drum Storage Area (AOI 1) adjacent to the north side of Building 44. The caustic was used to clean sheet metal prior to coating. The related coating operations took place on the second floor of Building 44. The Former Caustic Tanks (AOI 12) are discussed further in Section 7.12.

Peregrine submitted a Notification of Regulated Waste Activity to MDEQ, dated December 23, 1996, prior to acquiring the former Delphi Facility. Peregrine identified their waste streams as being D001, D002, D006, D007, D008, D009, D018, D039, D040, F005, F006, U070, 003D, and 039L in a letter to MDEQ dated January 23, 1997. An additional notification was submitted on April 11, 1997 to supply the additional waste streams D011, D019, F001, P098, P104, 006L, and 021L.

2.4.2 WASTE STORAGE

Historically, metal scrap and waste metal drawing lubricant generated during the parts stamping operations in the press room were collected in a below grade system consisting of a series of conveyor trench systems and sumps. These materials were then

recycled through hydromation filters. Wastes from the hydromation filters were conveyed to the WWTP through the Overhead Waste Pipes (AOI 10). This system was located adjacent to the parts stamping machines. The conveyor systems were used to transport the scrap metal and waste lubricant to one of the 11 collection locations in Building 44. These conveyor systems and sumps in Building 44 are collectively referred to as the Former Scrap Metal Management System (AOI 7) and are discussed further in Section 7.7. During Peregrine operations, waste metal drawing lubricant from the collection pits, together with wastewater and runoff from the floor drains, was pumped through Overhead Waste Pipes (AOI 10) to temporary storage in the Former Wastewater Storage Tanks (AOI 6) located in the northwest corner of Building 44 (see Section 7.6 and 7.10). Scrap metal collected in the sumps was transported by carts to the Former Scrap Metal Storage Area (AOI 8) located in Building 63. The Former Scrap Metal Storage Area is discussed further in Section 7.8. During historical operations at the Facility, some of the waste lubricating oils generated from operations were stored in two 2,000-gallon USTs which were located outside the east wall of Building 44 (see Figure 1.2). The former USTs (AOI 3) are discussed further in Section 7.3.

Former Satellite Accumulation Areas (AOI 4) were located at several points in Building 44 for temporary storage of wastes. The wastes included the following:

- used aerosol paint cans and used batteries in the General Stores area, located in the basement of Building 44,
- waste paint and related materials in the Maintenance Paint Booth,
- spent heat furnace salt generated in the Former Tool Room,
- accumulation of emergency light batteries and polychlorinated biphenyls (PCB)/non-PCB lighting ballasts in the Electric Repair Shop, and
- accumulated spent solvent in the Machine Repair Shop.

The Former Satellite Accumulation Areas are discussed further in Section 7.4. All of the hazardous wastes from the Former Satellite Accumulation Areas were transported to the Hazardous Materials Storage Area (AOI 5) prior to off-Site treatment or disposal. The Hazardous Materials Storage Area, which is discussed further in Section 7.5, was operated as a less than 90-day generator storage area.

The Former Waste Pile Pad (AOI 2) is located north of Building 63 and was used for sorting non-hazardous solid wastes, such as trash from bins from various locations on the Facility and from trash cans in the parking lot. A trench drain collected spills and

rainwater from the Former Waste Pile Pad which drained to the Former Wastewater Storage Tanks. The Former Waste Pile Pad is discussed further in Section 7.2.

2.4.3 WASTE DISPOSAL

The following is a summary of the Facility's waste disposal practices based on a review of available file information and information provided by past Facility employees.

Spent plating solutions generated in Building 44 were treated in the former WWTP located immediately to the north of the Facility. The subsequent sludges were deposited in adjacent drying beds and subsequently landfilled. The landfilled areas located to the north of the Facility are regulated under an approved and completed RCRA Closure Plan and Consent Order. Other than the sludges from the treatment of spent plating solutions, all other wastes were sent off Site to licensed facilities for treatment or disposal.

2.4.4 PAST WASTE SPILLS

The Emergency Response Notification System (ERNS) database identified spill notifications during the years 1987-1999. The following summary is believed to be a comprehensive listing for the Facility for the period from 1987 to 1999:

Spill Date	*Company Name (As listed in Database)*	*Chemical/Compound of Concern*	*Estimated Quantity Released*
04/28/94	GM - 1245 East Coldwater Road	F006 Waste (Wastewater)	Unknown
06/27/94	GM - 1245 East Coldwater Road	F006 Leachate	500 gallons
10/31/90	GM - Inland Fisher Guide Division	Metal Working oil	100 gallons
06/13/90	GM - Inland Fisher Guide Division	Water soluble oil discharged into Hughes Drain	400 gallons
06/27/89	GM - Inland Fisher Guide Division	Water soluble oil discharged into Hughes Drain	Estimated at 1,200 gallons

No further information is available regarding these spills.

2.4.5 REGULATORY HISTORY

GM filed a Notification of Hazardous Waste Activity Form for the Inland Fisher Guide Coldwater Road Facility with the U.S. EPA on August 12, 1980, pursuant to Section 3010 of RCRA, wherein GM identified itself as a generator of hazardous waste, and an owner/operator of a treatment, storage, and disposal facility. The U.S. EPA Identification (ID) Number which had been used for the entire property including the adjoining landfill was MID005356860. Currently, this identification number only applies to the landfill portion. GM filed a Part A Hazardous Waste Permit Application for the Facility on November 19, 1980, and amended it on August 10, 1984. The treatment, storage, and disposal operations were subject to the interim status requirements of R299.9601 and 40 CFR Part 265. A Closure Plan addressing these areas was subsequently submitted to the Michigan Department of Natural Resources (MDNR) in September 1988. A report entitled "Closure Plan and Post-Closure Plan (Volumes I and II), August 1989, O'Brien and Gere Engineers, Inc." was submitted to the MDNR, (now MDEQ) and approved in accordance with 40 CFR Part 265.112(d)(4) on September 7, 1989. The only areas of the Facility included in this DOCC Report that was part of the referenced Closure Plan are the Former Drum Storage Area (AOI 1) and Former Waste Pile Pad (AOI 2). REALM has submitted a Work Plan to complete the additional closure sampling of the Former Drum Storage Area as requested by MDEQ. The current identification number for the Former Peregrine Facility is MIR000020743.

The Facility currently has an active Storm Water General Permit Certificate of Coverage No. MIR11L010, as issued to Peregrine, which has been requested for transfer to REALM. This storm water permit replaced GM's National Pollutant Discharge Elimination System (NPDES) Permit No. M10025194 that was terminated on November 15, 1995.

The Facility also has a Sewer Use Permit for sanitary discharge to the WWTP owned by the City of Flint. Under this permit, the Facility has two municipal water sanitary service accounts: 60-52-3791-007 and 60-52-3840-040.

3.0 REGIONAL SETTING

3.1 LAND USE

The Facility is bordered on the north by REALM property (i.e., the closed landfill) on the south by East Coldwater Road, on the west by Horton Street, and on the east by CSX Transportation property and railroad tracks. The Facility is currently zoned and was historically utilized for industrial activities since 1952.

The property to the north contains the permitted wastewater treatment sludge mono-fill landfill, former WWTP (demolished by GM in 1999), and a restored wetlands area owned and maintained by REALM. Stanley Road runs east-west immediately north of this adjacent REALM property.

The property immediately south of East Coldwater Road is a mixture of light industrial, commercial, and residential property.

The property to the west across Horton Street is primarily residential. In addition, Interstate Highway I-475 curves through the area west of Horton Street from an east-west path to the north-south direction.

The property to the east of the Facility contains a railroad right-of-way that is the property of CSX Transportation. The railway tracks within this right-of-way run in a north northwest/south southeast direction.

3.2 WATER SUPPLY

The water supply at the Facility has been provided by the City of Flint and the Beecher Metropolitan District System. The City of Flint provides water service to the former manufacturing area and Beecher Metropolitan District provides water services to the Administration Buildings.

3.3 DEMOGRAPHICS

The Facility is located in the Genesee Township, Genesee County, Michigan. The closest and largest municipality is the City of Flint located directly south and west of the Facility. The City of Flint has a population of approximately 134,800 with a median age

of 31.2 years for men and 33.3 years for women (Flint Chamber of Commerce - www.accessflint.com). The population racial mix is 49.6 percent white, 47.9 percent black, 0.5 percent native American, 0.5 percent Asian, and 1.4 percent other races. The City of Flint has 2.7 percent of the population of Hispanic origin (U.S. Bureau of Census). The Urbanized Area of Flint has a population of 326,452 and the Genesee County population is 430,459 (U.S. Bureau of Census). Genesee County has several businesses directly and indirectly tied to the automotive industry. According to the U.S. Bureau of Census, GM is the largest employer in the area. Other major areas of employment include education, health care, banking, and retail.

3.4 CLIMATE

Lake Michigan and Lake Huron have a somewhat moderating effect on the climate of Genesee County. Meteorological data from the National Climatic Data Center are summarized as follows:

Temperature (°F)	*January*	*July*
Normal Daily Maximum	28.7	81.5
Normal Daily Mean	21.5	70.6
Normal Daily Minimum	14.2	59.7

The record high and low temperatures are 101°F and -25°F, respectively.

Precipitation (Inches)	*January*	*July*
Normal	1.39	2.71

Total annual precipitation is 30.28 inches. Average snowfall is 45.0 inches per year.

Wind Speed (MPH)	*January*	*July*
Average	11.8	8.3
Maximum	45.0	41.0

Annual average wind speed is 10.2 miles per hour (mph) and the highest measured wind was 81 mph. The prevailing wind direction is from the west.

3.5 REGIONAL GEOLOGY

3.5.1 OVERBURDEN

The bedrock of Genesee County is covered with glacial deposits. These glacial materials generally thicken from the northwest corner to the southeast corner of the County. Glacial deposits in the northwest corner range between 100 and 150 feet, and increase to 150 to 200 feet in thickness toward the middle of the County. In some small areas in the southeast corner of the County, the glacial cover ranges between 200 and 400 feet in thickness.

Geologic evidence south of Genesee County indicates four major advances of glacial ice in the past two million years (during the Pleistocene period). These glacial advances and the interglacial periods between them left complex deposits of till and stratified drift. Because each subsequent advance reworked deposits from previous advances, and because the deposits were derived from the same source, it is difficult to distinguish deposits from each separate advance.

The Huron-Erie and Saginaw lobes of the most recent Wisconsinan glaciation carried clay, silt, sand, gravel, and boulders into what is now Genesee County. These materials are deposited in many forms such as till plains, lake plains, moraines, outwash, beaches, bars, and deltas.

The surficial deposits in the vicinity of the Facility consist of urban land and soils from the Conover-Brookston and Celina-Conover-Miami, based on information contained in the Soil Survey of Genesee County, Michigan prepared by the United States Department of Agriculture and the Soil Conservation Service. In general, these soil associations are characterized as level to gently sloping, somewhat poorly drained to well drained loams, that have a clay loam subsoil. In combination, the Conover-Brookston and Celina-Conover-Miami soil associations occupy 56 percent of the surficial soils throughout Genesee County.

Figure 3.1 presents the Regional Glacial Drift Surface Deposition information for the area around Flint. Figure 3.2 presents the Regional Glacial Drift Thickness information for the same area.

3.5.2 BEDROCK

The bedrock of Genesee County is composed of evaporites, carbonates, and clastics that are Paleozoic in age, more specifically, Mississippian and Pennsylvanian. These carbonates, clastics, and evaporates were formed in the Michigan Basin which had developed by late Silurian time.

Three specific bedrock formations can be found beneath the glacial overburden of Genesee County. The lowest unit is the Marshall Formation, which underlies the whole of Genesee County. This formation is Mississippian in age and ranges in thickness from 100 to 150 feet. The Marshall Formation is fine to coarsely grained, gray and white sandstone with some conglomerate, shale, and dolomite beds.

The Michigan Formation (Mississippian) lies on top of the Marshall Formation, and is between 50 and 210 feet thick. The Michigan Formation is predominantly composed of gray shale with some blue or green shale, and intermittent thick beds of gypsum and dolomite.

The uppermost bedrock formation in Genesee County is the Saginaw Formation (Pennsylvanian). The Saginaw Formation is composed of very fine to coarse, sub-rounded to rounded sandstone and is light gray or brownish gray to grayish brown in color. Crossbedding can often be seen in the Saginaw Formation sandstone. If crossbedding is observed, it is common to see alternating bands of lighter coarse-grained quartz and darker fine-grained quartz. Sandy shale, shale, coal, and limestone are also found in the Saginaw Formation. The shale is frequently thinly bedded, fissile, micaceous, firm to very hard, and gray to dark gray in color.

Figure 3.3 presents the Regional Bedrock Geology information for the area around Flint. Figure 3.4 presents the Regional Bedrock Topography information for the same area.

3.6 REGIONAL HYDROGEOLOGY

Both the glacial overburden and the bedrock in Genesee County have water bearing geologic units. The glacial overburden consists of mainly low permeability tills that are poor sources of groundwater, but some lenses of sand and gravel may provide adequate volumes of water for domestic use. The sandstone beds of the Saginaw and Marshall

Formations are the best and most commonly used water bearing hydrogeologic units in Genesee County. This is because of the high yields that can be obtained and because bedrock wells in these formations are well protected by overlying clays and are easily maintained.

Rainfall and subsequent infiltration is the primary source of recharge for the water bearing units in the glacial overburden. These water bearing units are generally hydraulically connected to the surface waters in Genesee County. As a result, dry weather flow for most streams and rivers is supported by groundwater discharge. Further, water levels and groundwater flow directions in the shallow glacial water bearing units are influenced by local drainage areas such as lakes, creeks, and rivers, which act as points of discharge.

The glacial drift water bearing units may also be locally connected hydraulically to the bedrock water bearing zones. Rainfall is the main source of recharge and the upland areas in the southern part of the County act as a regional recharge source. The flow direction in the bedrock conforms to a regional pattern and generally moves from recharge areas toward the Flint River, which acts as a general point of groundwater discharge.

The types of material in Genesee County, and their formation are relevant to the potential for aquifer contamination. According to the Hydrogeologic Atlas of Michigan map "Aquifer Vulnerability to Surface Soil Contamination in Michigan", dated 1982, the majority of Genesee County contains moderately or slowly permeable soils over low sensitivity drift material. The Hydrogeologic Atlas of Michigan map "Quaternary Geology of Southern Michigan (upper 1-10 meters)", dated 1982, shows that these low permeability soils are predominantly comprised of medium textured tills from end moraines or till plains, lacustrine clays, and lacustrine silts. As a result, groundwater in glacial overburden is generally of limited extent and usability. In many locations, groundwater may be considered to be present as "groundwater not in an aquifer".

Some unconsolidated water bearing units along the Flint River and in the northwest corner of Genesee County are more vulnerable to contamination according to the Hydrogeologic Atlas of Michigan aquifer vulnerability map. The Hydrogeologic Atlas of Michigan quaternary geology map indicates that these areas are primarily glacial outwash sands and gravels, postglacial alluvium, or lacustrine sands and gravels. These units would generally be more capable of producing significant yields of groundwater.

Figure 3.5 presents the Regional Glacial Drift Aquifer Characterization information for the area around Flint. Figure 3.6 presents the Regional Groundwater Flow directions for lower peninsula of Michigan.

3.7 REGIONAL HYDROLOGY

The Flint River runs approximately forty miles across Genesee County and drains the majority of the County. The southern halves of Argentine Township and Fenton Township drain to the Shiawassee River. The average stream flows recorded at the Flint River gaging station near Flint was 362 million gallons per day (mgd) and 231 mgd at the Flint River gaging station near Genesee.

The Flint River has seven main tributaries: Swartz Creek, Thread River, Kearsley Creek, Butternut Creek, Brent Run, Pine Run, and Armstrong Creek. The Misteguay drainage system and Swartz Creek drain the southwest portion of Genesee County. The Thread River and Kearsley Creek drain the southeast portion of the County. The northeast portion of the County is drained by Butternut Creek. Armstrong Creek, Pine Run, and Brent Run drain the western areas of the County.

Figure 3.7 presents the Regional River Drainage Basins for the area around Flint.

4.0 FACILITY SETTING

4.1 LOCAL TOPOGRAPHY

The local topography of the Facility is presented on Figure 1.1. The Facility is located on a terminal moraine which is a local topographic high in an area that is generally flat. There are no rivers, streams, surface water bodies, or creeks located within the Facility's property boundaries. Surface water drainage at the Facility is toward a low area, which occupies the northwest corner of the adjacent REALM property, to the north of the Facility.

4.2 GEOLOGY

The subsurface geology in the vicinity of the Facility consists of unconsolidated Pleistocene glacial sediments overlying sandstone bedrock. These sediments consist primarily of a series of tills (clay/silt/sand/gravel mixture), with occasional intervening outwash layers. The outwash deposits are more permeable silt and sand layers of limited thickness and lateral extent within the clay till unit. Boring logs from investigations on the adjacent landfill property to the north of the Facility indicate that the near surface material is generally comprised of silty sand and silty clay underlain by a relatively impervious clay layer which is up to 50 feet thick. This clay is underlain by a sand/silty sand outwash layer. Below this unit is another impervious clay till layer, approximately 30 to 75 feet in thickness, which directly overlies bedrock. The bedrock is part of the Saginaw Formation of Pennsylvania age, which consists primarily of sandstone, shale, coal, and limestone.

4.3 HYDROGEOLOGY

The overburden glacial deposits contain one potential water bearing zone (overburden water bearing zone), as well as a discontinuous perched water table zone found near the ground surface (upper 10 to 15 feet). These two zones are separated from each other and from the upper bedrock water bearing zone by thick glacial clay till aquitards. The overburden water bearing zone consists of a sand/silty sand unit that is located below a clay aquitard at a depth of approximately 50 feet below ground surface (bgs). This unit rests on a continuous unit of silty clay glacial till which extends to bedrock. Figure 4.1 presents a typical geologic cross-section for the area beneath the Facility.

Vertical water movement from the perched water table zone and overburden water bearing zone is severely restricted by the underlying glacial clay till aquitards. Differences in the static water levels between the perched water table zone and the overburden water bearing zone confirm that the intervening clay till unit serves as an effective aquitard.

Figure 4.2 presents the locations of the boreholes and monitoring wells which have been installed at the Facility. A summary of completion details for the boreholes and monitoring wells is presented in Table 4.1. Figure 4.2 also presents the locations of cross-sections A-A' and B-B'. Cross-sections A-A' and B-B' are presented on Figures 4.3 and 4.4, respectively. Figures 4.3 and 4.4 indicate that a discontinuous perched water layer was found at only some borehole and monitoring well locations near surface. In general, clay was found at a very shallow depth.

The perched water table flow direction (if present) is controlled by topography. Available water levels collected within this zone are presented on Figure 4.5. The overburden water bearing zone is protected from any potential impacts within the discontinuous perched water table zone by the glacial clay till aquitard which exists beneath the surface soils. Groundwater flow in the overburden water bearing zone is expected to be westerly or northerly (TechLaw, 1998). The regional groundwater flow direction within the bedrock is discussed in Section 3.6.

Available borehole and monitoring well logs (see Appendix A) indicate domestic wells in the area are completed in the overburden water bearing zone (between the two clay till aquitards) and in the upper bedrock water bearing zone.

4.3.1 GROUNDWATER USE

With the exception of some private wells, the Beecher Metropolitan District provides the water supply for the City of Flint from five well fields. Four of the well fields are completed within the overburden water bearing zone at depths of approximately 100 to 140 feet bgs and are located approximately one mile north of the Facility. The fifth well field is completed within the bedrock aquifer at a depth of 275 to 300 feet bgs.

The nearest active residential or domestic wells are located on Stanley Road approximately two-thirds of a mile north of the Facility. Perched water table flow beneath the Facility (see Figure 4.5) is discontinuous. The domestic wells are completed

in the overburden water bearing zone (between the two clay till aquitards) and in the upper bedrock water bearing zone. Sampling by the Genesee County Health Department found the Stanley Road wells to be uncontaminated in 1990/1991.

4.4 HYDROLOGY

The nearest surface water body is Mott Lake, approximately two miles east of the Facility. Mott Lake was created in 1971 with the construction of a 30-foot high dam across the Flint River. The 500-acre lake is used solely for recreational activities, such as fishing, boating, and swimming.

5.0 SUMMARY OF PREVIOUS REMEDIAL ACTIONS

Table 5.1 presents a chronological summary of previous and ongoing remedial actions conducted at the Facility. A more detailed summary of previous remedial actions is included with the discussion of each AOI, in the sections indicated in Table 5.1. Previously submitted documents, including closure plans and closure verification reports, are also listed. These documents are not included with this DOCC Report, since they have previously been submitted to U.S. EPA and/or MDEQ, and are available upon request.

6.0 SUMMARY OF PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Several environmental investigations have been conducted at the Facility as part of the property transfer from Delphi to Peregrine in December 1996. These investigations have provided information regarding the SWMUs and AOCs identified by TechLaw during the subsequent PA/VSI as well as other AOIs identified in this DOCC Report by REALM. Additional details from these previous environmental investigations are included with the discussion of each AOI presented in Section 7.0 and 8.0 (applicable section are indicated in Table 6.1). The locations of the investigative boreholes and monitoring wells completed during these historical studies are presented on Figure 4.2 and Plan 1.

Copies of the analytical results from the previous environmental investigations including Study 1 (08/96), Study 2 (11/96), Study 3 (11/96), and Study 4 (03,04/97)[1] are presented in Appendices B, C, D, and E, respectively.

6.1 REVIEW OF SCREENING LEVELS

The Act 451, Part 201 standards and the guidelines for their application have been fully developed by MDEQ within the past four years. The pertinent constraints which guide the appropriate application of the Act 451, Part 201 industrial standards are as follows:

1. the Facility is zoned and utilized for industrial purposes;
2. appropriate security measures are currently in place to restrict Facility access;
3. future land use plans contemplate the continued industrial use of the Facility;
4. the Facility is serviced by a municipal water supply;
5. the overburden and bedrock water bearing zones, which are locally used as water supplies off Site, are protected by significant overlying confining clay till aquitards; and

[1] For the purpose of preparing this DOCC, all data from previous investigative reports were reviewed and have been used to prepare this DOCC Report. Several of these historical reports (referred to as Study 1, 2, 3, and 4, respectively) were prepared at the request of counsel and are subject to the Attorney-Client and Environmental Audit privileges. None of the findings, analysis, or conclusions from these reports are included in the DOCC. Use of the data only from those privileged reports does not constitute a waiver of any privilege.

6. the perched water table zone is shallow (<25 feet bgs) and discontinuous and would be prohibited from use as a potable water (regardless of potential yield) supply by Michigan Department of Public Health (MDPH) rules.

Based upon the factors summarized above, the Act 451, Part 201 generic industrial direct contact criteria for both soil (IDC) and the perched water table zone groundwater (GCC) are applicable for use as screening levels for the Facility. A more Facility-specific risk based (i.e., limited industrial) approach may be utilized in the future to more accurately identify potential risks which may exist at the Facility (as required).

The data collected during four studies conducted during 1996 and 1997 are summarized in Tables B.1-B.2, C.1-C.2, D.1-D.2, and E.1-E.5 (for Study 1, 2, 3, and 4, respectively) and compared to current Act 451, Part 201 generic industrial standards. The data tables from each of the referenced studies are also presented in Appendices B, C, D, and E. The locations of all samples are presented on Figure 4.2 and Plan 1. The data presented in Tables B.1-B.2, C.1-C.2, D.1-D.2, and E.1-E.5 are also compared to the Act 451, Part 201 criteria presented below. These additional generic criteria are provided for comparison purposes only. The generic industrial criteria used for comparison of the data in Tables B.1-B.2, C.1-C.2, D.1-D.2, and E.1-E.5 are summarized as follows:

Soil

1. Statewide Default Background Levels
2. Industrial Drinking Water Protection Criteria (IDWP)
3. Industrial Direct Contact Criteria (IDC)
4. Soil Volatilization to Indoor Air Inhalation Criteria
5. Infinite Source Soil Inhalation Criteria
6. Particulate Soil Inhalation Criteria

Water

1. Groundwater Contact Criteria (GCC)
2. Industrial Drinking Water Criteria (IDWC)
3. Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria

Exceedances of the above identified screening levels are presented respectively in Tables 6.2, 6.3, 6.4, 6.5, and 6.6 and are schematically summarized on Figure 6.1. As

indicated, the inhalation standards were included on the tables as a point of comparison. However, there were no exceedances of these standards and therefore, there will be no further discussions regarding inhalation criteria. The analytical data for each of the AOIs is discussed in Sections 7.0 and 8.0.

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Alex Rothchild
LFR
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7.0 AREAS OF INTEREST IDENTIFIED IN U.S. EPA PRELIMINARY ASSESSMENT/VISUAL SITE INSPECTION REPORT

TechLaw, on behalf of the U.S. EPA, conducted a PA/VSI at the Facility in 1998. The PA/VSI consisted of a review of U.S. EPA and State of Michigan file materials and included a review of past compliance history, evidence of past releases, potential migration pathways, potential for exposure to any released hazardous constituents, closure methods and dates, citizen complaints, manufacturing processes, and waste management practices at the Peregrine Facility. The Visual Site Inspection (VSI) was conducted on July 7, 1998 by TechLaw to identify and characterize potential SWMUs and AOCs. Information and file material was provided to the TechLaw Team during the VSI by representatives of Peregrine, GM, and MDEQ.

A total of 10 SWMUs and two AOCs were identified by U.S. EPA during the PA/VSI (see Table 1.1). It should be noted that many of the units identified in the PA were no longer operational at the time of the VSI and the Facility has since been shut down and is undergoing environmental decommissioning which will lead to building demolition commencing in the spring/summer of 2000. In addition, the USTs (SWMU 3) which previously existed at the Facility were identified as closed subsequent to the VSI, following several phone conversations with MDEQ Storage Tank Division (STD). The SWMUs and AOCs listed in the TechLaw report have been identified as AOIs 1 through 12 in this DOCC Report and are further discussed in the following subsections.

7.1 AOI 1 - FORMER DRUM STORAGE AREA

The Former Drum Storage Area (AOI 1) is located north of, and immediately adjacent to, the main manufacturing facility (Building 44). The Former Drum Storage Area consisted of a fenced concrete pad with dimensions of 42 feet by 72 feet, with a capacity to store 648 standard 55-gallon drums.

A 4-inch high perimeter concrete curb surrounding the Former Drum Storage Area provided secondary containment. A sump associated with the Former Drum Storage Area is located in the southwest corner of the pad under a small enclosure and consists of two concrete vaults, each 8 feet in depth. The location of the Former Drum Storage Area is presented on Figure 1.2/Plan 1.

7.1.1 HISTORICAL OPERATIONS

The start-up date of the Former Drum Storage Area is unknown, but the area was in active use in 1987 when the U.S. EPA conducted a preliminary VSI. Parts finishing and washing, maintenance cleaning, and paint dip operations generated wastes at the Facility. These wastes were stored in drums, which were then placed on wooden pallets in the Former Drum Storage Area.

Hazardous wastes stored in the Former Drum Storage Area included spent 1,1,1-trichloroethane (F001), spent xylene (F003), and spent paint thinner sludge (D001). Other hazardous wastes stored included corrosive materials (D002), reactive materials (D003), and chromium wastes (F007).

Drainage and any potential spills were collected in the east vault of the sump within the Former Drum Storage Area. Here the sediments were allowed to settle, with the liquid overflowing to the west vault. A pump within the west vault then discharged the accumulated liquid directly to the former WWTP.

7.1.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

GM had identified the Former Drum Storage Area as a RCRA unit. U.S. EPA had conducted its preliminary VSI in 1987. According to the U.S. EPA VSI Report, dated April 7, 1987, the Former Drum Storage Area (TechLaw, SWMU 1) was less than 1/3 full of drums placed on wooden pallets and drainage of the area was directed to an underground sump located just outside the fence line. The sump was visually inspected during one of the previous studies performed at the Facility in 1996/1997 and no visual leakage was noted. This sump was historically used to collect discharge from a former paint line, and may have pre-dated the Former Drum Storage Area.

The area was closed in September 1994 under an approved RCRA Closure Plan and Consent Order. During RCRA closure activities at the Former Drum Storage Area, the concrete pad was triple-rinsed with high pressure water and scrubbed with a detergent. All wash water was pumped directly from the sump to the WWTP via an existing pipeline. Verification sampling and analysis of the final rinse of the concrete pad indicated decontamination of the pad to the background cleanup requirements specified in the Closure Plan.

During closure activities, the east vault was found to contain approximately 10 cubic yards of gritty, oily sludge, while the west vault was found to contain two feet of standing water with a trace of sludge. The water in the west vault was pumped directly to the WWTP using the existing pump and the remaining sludge was sampled and analyzed. Analytical results indicated that the sludge was classified as a characteristic hazardous waste for barium, chromium, lead, and mercury (D005, D007, D008, and D009). The sludge was solidified, drummed, and transported to the RCRA Subtitle C licensed Chemical Waste Management, Inc. hazardous waste facility in Emelle, Alabama. The sump was triple washed and scrubbed with a detergent. The existing pump and associated piping was decontaminated and flushed with tap water (TechLaw, 1998).

Previous investigations were performed at the Facility in 1996/1997 in the vicinity of the Former Drum Storage Area. Seven soil samples [SB-14, SB-15, MW-14, PFB-25, PFB-26 (two depths), and PFW-6], and three groundwater samples [MW-14 (plus a split sample) and PFW-6] have been collected from the area (Table 6.3). Sampling activities identified trichloroethene (TCE) in the soil above the IDWP at MW-14 (Table 6.2) and at PFW-6 (Table 6.2), as well as TCE in the groundwater above the IDWC at MW-14 (split sample also) (Tables 6.2 and 6.3). No exceedance of the IDC or GCC were reported for soil or groundwater in any of the collected samples.

TechLaw identified the area as SWMU 1 in the 1998 PA/VSI.

7.1.3 CURRENT STATUS

GM submitted a "Draft Final Closure Certification Package" for the Former Drum Storage Area to MDEQ in October 1998. In response to a letter received from MDEQ regarding inadequate clean closure of the Former Drum Storage Area, REALM has recently submitted a Work Plan to MDEQ that proposes additional sampling to satisfy the questions identified by MDEQ.

7.2 AOI 2 – FORMER WASTE PILE PAD

The Former Waste Pile Pad (AOI 2) was located east of Building 44 and approximately 100 feet north-northeast of Building 63. The area consisted of a concrete pad measuring 60 feet by 40 feet, with an underground drainage trench connected to an adjacent

collection sump which discharged to the former WWTP (reconnected to former Wastewater Storage Tanks (AOI 6) during Peregrine operations). This drainage trench is oriented north/south along the center of the long axis of the pad. The unit has a 1.5-foot high curb on the east side and the concrete floor was sloped to direct runoff to the underground drainage system. The location of the Former Waste Pile Pad is presented on Figure 1.2/Plan 1.

7.2.1 HISTORICAL OPERATIONS

The Former Waste Pile Pad was used for the temporary storage of non-hazardous waste and plant trash. The unit was apparently active prior to 1987, inactive between 1987 and 1997 and clean closed, and was then re-used by Peregrine during their operations in 1997-1998. Peregrine apparently used the Former Waste Pile Pad to sort through trash from waste bins and trash cans from around the Facility.

7.2.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

The Former Waste Pile Pad was identified as an additional area of potential concern and was included in the Facility's RCRA closure program. During closure activities at the Former Waste Pile Pad, a small amount of miscellaneous non-hazardous debris was removed from the area prior to the pad cleaning. This debris was transported for disposal at the Richfield Landfill in Genesee County, Michigan. The surface of the Former Waste Pile Pad was decontaminated by triple rinsing with high pressure water, scrubbing with a detergent, and a final rinse. All wash and rinse waters were treated at the former WWTP. The wash waters for the final rinse were sampled and analyzed in accordance with the Closure Plan. GM reported that the analyses confirmed decontamination of this unit to the background cleanup requirements specified in the Closure Plan (TechLaw, 1998).

Previous studies were performed at the Facility in 1996/1997 in the area of the Former Waste Pile Pad. One soil sample (MW-13) and one groundwater sample (MW-13) have been collected from the area (Tables 6.2 and 6.3, respectively). Sampling activities identified no exceedances of the IDWP in the soil. TCE was identified at MW-13 (Table 6.3) in the groundwater. However, no exceedances of the IDC or GCC were reported for soil or perched groundwater in any of the samples collected.

TechLaw identified the Former Waste Pile Pad as SWMU 2 in the 1998 PA/VSI. However, TechLaw noted no evidence of historical releases, and rated the area as a Low Potential for Past/Present Release (TechLaw, 1998).

7.2.3 CURRENT STATUS

The Former Waste Pile Pad was determined by GM to be clean (Weston, 1998), as verified by a program of rinse water sampling and analyses performed following removal of contaminated soils and sludge as specified in the approved Closure Plan. Subsequent use of this area by Peregrine did not involve hazardous materials. There were no specified future monitoring requirements in the "Draft Final Closure Certification Package" for the Former Waste Pile Pad, dated October 1998.

7.3 AOI 3 - FORMER USTs

Two former USTs were located outside along the eastern wall of Building 44 near building grid S-10. Each tank had a capacity of 2,000 gallons. The location of the Former USTs is presented on Figure 1.2/Plan 1.

7.3.1 HISTORICAL OPERATIONS

These two 2,000-gallon USTs were used for the storage of used oil and lubricants during Delphi's historical operations at the Facility. Use of these tanks began in 1972. The tanks were still active as of the preliminary April 7, 1987 VSI Report. During the April 7, 1987 VSI, a sump was observed to be overfilled (presumably around the fill pipe) with waste oil almost to the level of the concrete floor. Oil stains were evident throughout the surrounding concrete area. According to the preliminary April 7, 1987 VSI, these tanks had not been leak tested (TechLaw, 1998).

7.3.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

The preliminary April 7, 1987 VSI indicated that plans were underway in 1987 to close both tanks. These two tanks were subsequently closed on November 9, 1990.

One soil (PFW-11) and one groundwater sample (PFW-11) were collected from the general area of the Former USTs (Tables 6.2 and 6.3, respectively). Sampling activities identified no exceedances of the IDWP/IDWC or the IDC or GCC for either soil or groundwater.

TechLaw rated the Former USTs as a Low Potential for Past/Present Release. However, TechLaw noted that if the MDEQ did not have a record of these USTs as being properly closed then sampling of the soil and groundwater should be conducted (TechLaw, 1998).

7.3.3 CURRENT STATUS

These two Former USTs are identified as being removed on the Michigan UST-DMS Facility and Tank Data Listing, dated April 27, 1999, and as being closed on November 9, 1990 on the Genesee County LUST Site List, dated October 11, 1999. No further action is required at this AOI.

7.4 AOI 4 – FORMER SATELLITE ACCUMULATION AREAS

Former Satellite Accumulation Areas existed throughout Building 44. Each area consisted predominantly of 55-gallon drum(s) used for the temporary storage of hazardous wastes.

7.4.1 HISTORICAL OPERATIONS

The practice of satellite accumulation of wastes took place throughout all periods of operation at the Facility. Most recently, during the Peregrine operations (1997-1998), an area within the General Stores was used for the temporary storage of used aerosol paint cans and used batteries. According to the Peregrine Environmental Incident Response Plan and Spill Prevention Control and Countermeasures Plan, dated March 10, 1997, and according to Peregrine personnel, other satellite accumulation points managed waste paint and paint related materials from the Maintenance Paint Booth and small part marking operations, spent heat furnace salt from the Tool Room, and emergency light batteries and PCB/non-PCB lighting ballasts related to building maintenance (TechLaw, 1998). According to former employees recently interviewed, during Delphi operations spent solvents generated from parts washers used during maintenance cleaning

operations in the Facility were used throughout the Facility, but usage was typically controlled in small quantities through a sign-out procedure. Materials in the Former Satellite Accumulation Areas were taken to the Former Hazardous Materials Storage Area (AOI 5, see Section 7.5) prior to transport off-Site.

7.4.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous studies performed at the Facility in 1996/1997 did not identify the Former Satellite Accumulation Areas as a potential area of concern. As such, no sampling was specifically performed to address this AOI.

TechLaw noted no evidence of releases and rated the Former Satellite Accumulation Areas as a Low Potential for Past/Present Release and identified that no further action appeared warranted (TechLaw, 1998).

7.4.3 CURRENT STATUS

The Former Satellite Accumulation Areas no longer exist at the Facility.

7.5 AOI 5 – FORMER HAZARDOUS MATERIALS STORAGE AREA

The Former Hazardous Materials Storage Area was located in the northwest corner of the Hazardous Materials Storage Shed (former Building 66). Access to the specific area within the building was through a gate in the fence that was kept locked when not in use. Building 66 no longer exists (shed has been removed). The Building 66 Hazardous Materials Storage Area is empty and no longer fenced, but is surrounded by a six-inch high concrete curb that provides approximately 2,500 gallons of containment volume. The location of the Former Hazardous Materials Storage Area is presented on Figure 1.2/Plan 1.

7.5.1 HISTORICAL OPERATIONS

Information on operations prior to Peregrine operations (1997-1998) was not available. According to the TechLaw PA/VSI, one area within the Building 66 Hazardous Materials Storage Area was used to store flammable waste, when generated, and a

separate area was used to store non-flammable waste. Peregrine notified MDEQ of generating waste streams D001, D002, D005, D006, D007, D008, D009, D011, D018, D019, D039, F001, F005, F006, U070, P098, P104, and Michigan codes 003D, 006L, 021L, and 039L. Peregrine generated approximately 500 pounds of hazardous waste per month through their housekeeping and other operations, and contracted with several hazardous waste disposal companies to manage wastes stored in the Former Hazardous Materials Storage Area, including ECDC/Laidlaw, Metro, and Superior Special Services.

7.5.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous investigations performed at the Facility in 1996/1997 concluded that the Former Hazardous Materials Storage Area was not a potential area of concern. As such, no sampling was specifically performed in the vicinity of this AOI.

TechLaw identified the area as SWMU 5, noted that there was no evidence of a release, rated the SWMU as a Low Potential for Past/Present Release, and identified that no further action appeared warranted (TechLaw 1998).

7.5.3 CURRENT STATUS

The Former Hazardous Materials Storage Area has been decommissioned with no evidence of releases from this area.

7.6 AOI 6 – FORMER WASTEWATER STORAGE TANKS

The Former Wastewater Storage Tanks (AOI 6) were located indoors in the northwest corner of Building 44 after December 1996. The Former Wastewater Storage Tanks included four aboveground 20,000-gallon steel frac tanks that were used to accumulate wastewater, metal drawing lubricants, and other non-hazardous liquid waste streams from the Facility. The tanks were underlain by the concrete floor of the building and could be readily inspected. The location of the Former Wastewater Storage Tanks is presented on Figure 1.2/Plan 1.

7.6.1 HISTORICAL OPERATIONS

Non-hazardous wastewater derived from Facility metal stamping operations including the Former Scrap Metal Management System (AOI 7), the Former Scrap Metal Storage Area (AOI 8), and the Former Waste Pile Pad (AOI 2) drainage system was managed in the Former Wastewater Storage Tanks (AOI 6) during Peregrine operations in 1997 and 1998 (which replaced Former WWTP). The material managed in the tanks was characterized by Peregrine as 70 percent water and 30 percent lubricating oils. Approximately 6,000 gallons per month of oily water were generated during Peregrine's operations and removed for off-site disposal from the Facility by either Neir Transport Company or Metal Working Lubricants, which transported the wastewater to the Metal Working Lubricants facility in Indianapolis, Indiana, to recover the lubricants.

When Peregrine began operations at the Facility in December 1996, Peregrine installed four 20,000-gallon frac tanks at this location. Peregrine had two of the tanks removed from the Facility shortly after operations were initiated because their storage volume was not required. At the time of the PA/VSI (due to the fact that their storage volume was not required), Peregrine had plans to remove one additional tank from the Facility, as the secondary tank was designed solely for managing the overflow from the primary wastewater tank (TechLaw, 1998).

7.6.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous studies performed at the Facility in 1996/1997 did not identify the Former Wastewater Storage Tanks as a potential area of concern since the tanks had only been installed by Peregrine after December 1996. As such, no sampling was specifically performed in the vicinity of this AOI.

TechLaw identified the area as SWMU 6, noted that there was no evidence of release, rated the SWMU as a Low Potential for Past/Present Release, and identified that no further action appeared warranted (TechLaw, 1998).

7.6.3 CURRENT STATUS

All remaining tanks were removed from the Facility during the auction held by Peregrine in 1999 prior to leaving the Facility. As a result, no further investigation is currently required.

7.7 AOI 7 – FORMER SCRAP METAL MANAGEMENT SYSTEM

The non-hazardous Former Scrap Metal Management System was located primarily within the eastern half of the first floor of Building 44, associated with the die cast operations, plating machines, and the press room pits. It consisted of a series of conveyors within trenches and associated collection sumps located adjacent to the various machinery.

7.7.1 HISTORICAL OPERATIONS

Historically, the Former Scrap Metal Management System was used to collect scrap metal generated from the die cast and press operations. The waste oil collecting in the press room pits was periodically discharged to two outside USTs (AOI #3) for ultimate disposal. During Peregrine operations (1997-1998), the wastes managed consisted mainly of scrap metal and metal drawing lubricants made of saturated animal fats (TechLaw, 1998). The scrap steel would be removed from the pits/sumps and transported to the Former Scrap Metal Storage Area (AOI #8) located in Building 63.

7.7.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous studies performed at the Facility in 1996/1997 observed oil staining on the floor in the vicinity of the Former Scrap Metal Management System. Ten soil samples [P-28, Q-32, Q-33, Q-34, M-1 (two depths plus a split sample), PFB-13, PFB-14, and PFW-10] and one groundwater sample (PFW-10) have been collected from the area (Tables 6.2 and 6.3). Sampling activities identified no exceedances of the IDWP in the soil, but barium was identified in the groundwater above the IDWC at PFW-10 (Table 6.3). No exceedances of the IDC or GCC were reported for soil or groundwater in any of the collected samples.

TechLaw identified the area as SWMU 7, noted that much of the concrete was stained, and rated the SWMU at a Moderate Potential for Past/Present Release (TechLaw, 1998).

7.7.3 CURRENT STATUS

All conveyor systems have been removed and many of the sumps were filled with gravel and covered with concrete by Peregrine prior to leaving the Facility (most of the trenches remain in place). No documentation is available to demonstrate that integrity testing was performed prior to filling these sumps. The remaining sumps that are not filled in currently contain residual liquids, which have been sampled and are being addressed as part of the environmental decommissioning efforts being performed by REALM.

7.8 AOI 8 – FORMER SCRAP METAL STORAGE AREA

The Former Scrap Metal Storage Area was located indoors in the northwest-central portion of Building 63. It was comprised of a series of five in-ground concrete storage bins measuring approximately 8 feet by 10 feet by 10 feet deep. The Former Scrap Metal Storage Area location is presented on Figure 1.2/Plan 1.

7.8.1 HISTORICAL OPERATIONS

The scrap metal was brought over from the Scrap Metal Management System in Building 44 to Building 63 in carts and sorted according to metal type and size. Lubricant that drained from the metal during storage was periodically pumped out of the storage bins and transported during Peregrine operations to the Former Wastewater Storage Tanks (AOI 6) (and historically the Former WWTP). The scrap metal was then transported off Site for recycling. During Peregrine's operations (1997-1998), the unit managed scrap metal and metal drawing lubricants made of saturated animal fats (TechLaw, 1998).

7.8.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Five soil samples (#63-24, #63-25, PFB-7, PFB-15, and PFW-3) have been collected from the area (Table 6.3). A groundwater sample was to be collected from PFW-3 but the well

was dry. Sampling activities identified no exceedances of the IDWP/IDWC or IDC or GCC for either soil or groundwater.

TechLaw noted that each of the storage bins was constructed of concrete and lined with steel shielding to prevent wear. Some wear was observed on visible portions of the bins. However, other portions of the storage bins (such as the bottoms) could not be seen because they were covered with scrap metal at the time of the VSI. (TechLaw, 1998).

Though much of the concrete floor in the Former Scrap Metal Storage Area in Building 63 appeared to have been stained with oils, TechLaw reported that no systematic release of lubricants to the building floor, or other areas outside of AOI 8, was evident.

TechLaw identified the system as SWMU 8, noted that much of the concrete was stained, and rated the SWMU at a Moderate Potential for Past/Present (TechLaw, 1998).

7.8.3 CURRENT STATUS

The five concrete storage bins have been filled with gravel and covered with concrete. No documentation is available to demonstrate that integrity testing was performed prior to filling by Peregrine.

7.9 AOI 9 - FORMER PLATING AREAS

The Former Plating Areas comprised three separate areas in Building 44 (see Figure 1.2/2.3, Plan 1/2). The zinc barrel plating area was located toward the southeast end of the first floor, the chrome plating area was located toward the north end of the first floor, and the plating solution recycling area was located in the basement.

7.9.1 HISTORICAL OPERATIONS

As indicated in Section 2.3.3, the Facility historically operated at least 15 plating lines during its history. Most of the plating operations were discontinued by Delphi in 1987. At the time of the September 1998 PA/VSI by TechLaw, available file information could not provide a record of activities that were taken by Delphi to decommission and close

the areas. However, subsequent discussions with former plant employees indicated that the platers were systematically emptied of contents, rinsed, and decommissioned. The excavations for the plater foundations were backfilled with sand and a concrete cover was placed over the sand to match the grade of the floor.

A plating solution recycling area was housed in the basement and, according to former employees, was comprised of a series of aboveground tanks. When required, a plater would be emptied of solution and the contents transported to the basement via the Overhead Waste Pipes (AOI #10) for recycling. The solution would then be returned to the appropriate plater via these same pipes. TechLaw had reported that the spent plating solutions were collected in a sunken concrete tank in the basement, however, the recently interviewed former employees identified this former tank as a waste paint sump and not associated with the spent plating solution collection areas. All spent plating solutions (leftovers from recycling operations) and rinse waters were discharged via other overhead waste pipes for treatment at the Former WWTP.

7.9.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous investigations performed at the Facility in 1996/1997 found no visible evidence of releases or impacts associated with the Former Plating Areas. Fourteen soil samples [K-2, K-32, K-33, K-35, F-30, F-34 (plus a split sample), PFW-12 (two depths), PFB-16, PFB-17, PFB-18, PFB-19, and PFB-20] and one groundwater sample (PFW-12) were collected in the vicinity of the three individual areas comprising the Former Plating Areas (Tables 6.2 and 6.3). Sampling activities identified cyanide in the soil above the IDWP at F-30 (Table 6.2) and cadmium and chromium in the soil above the IDWP at K-35 (Table 6.2). The soil sample at K-35 also contained lead above both the IDWP and the IDC (Table 6.2) in soils below the building foundation. This is the only exceedance of an industrial direct contact standard in either soil or groundwater for the samples collected at the Facility. Sampling activities identified no exceedances of the IDWC or the GCC for groundwater in PFW-12.

Four samples were also collected from former equipment associated with the operation of the zinc barrel plater (the last plater removed) during previous studies and analyzed by TCLP (Table 6.4). No exceedances of current regulatory limits were reported (it should be noted that zinc is no longer a regulated metal).

Three wipe samples were also collected during previous investigations from the area near column C-7 and analyzed for PCBs (Table 6.6). No PCBs were identified above the 5 μg/100 cm² detection limit (compared to the regulatory limit of 10 μg/100 cm²).

TechLaw identified the Former Plating Areas as part of SWMU 7 and rated this SWMU at a Moderate Potential for Past/Present Release. TechLaw recommended that borings be advanced through the concrete beneath the basement sump and into the soil to determine whether there had been any releases to the soil (TechLaw, 1998).

7.9.3 CURRENT STATUS

The Former Plating Areas are currently vacant and inactive. The platers were all decommissioned through cleaning/high pressure rinsing and removed from the Facility. The excavations associated with the plater removals were backfilled with sand and covered with concrete.

7.10 AOI - 10 - OVERHEAD WASTE PIPES

The Overhead Waste Pipes were located in Building 44. The overhead waste pipes included separate lines for spent plating solutions and other process waste streams. Plan 1 presents the location of the Overhead Waste Pipes.

7.10.1 HISTORICAL OPERATIONS

The Overhead Waste Pipes were used to transport process wastes such as lubricants from the Former Scrap Metal Management System (AOI 7) and spent plating solutions from the Former Plating Areas (AOI 9). Process wastes and spent plating solutions passing through the Overhead Waste Pipes included constituents such as zinc, chromium, cyanide, and metal drawing lubricants.

7.10.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous studies performed at the Facility in 1996/1997 concluded that the Overhead Waste Pipes were not a specific area of concern. Nevertheless, five samples of residues were collected from the open ends of pipes in the area and analyzed by TCLP

(Table 6.4). No exceedances of regulatory limits were reported (zinc is no longer a regulated metal).

TechLaw identified the area as SWMU 10 and rated the SWMU at a Moderate Potential for Past/Present Release. TechLaw recommended that the piping be properly decommissioned (TechLaw, 1998).

7.10.3 CURRENT STATUS

All remaining process pipes are being properly decommissioned as part of ongoing decommissioning and demolition activities.

7.11 AOI 11 – FORMER COAL STORAGE AREA

The Former Coal Storage Area was comprised of a relatively large area located to the north of the powerhouse (Building 45). The location of the Former Coal Storage Area is presented on Figure 1.2/Plan 1.

7.11.1 HISTORICAL OPERATIONS

The Former Coal Storage Area is believed to have been in use from the early 1950s and continued to be used until Peregrine ceased operations in 1998. The coal was unloaded from railcars. The powerhouse provided heating and process steam for the Facility year round. Interviews with former Delphi employees indicated that some waste oils may have been applied to the coal in the pre-1981 time frame.

7.11.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

The preliminary April 7, 1987 VSI suggested that the coal may be a potential release source for PNAs to the surface soil in the area.

Two surface soil samples (PFB-23 and PFB-24) were collected during the previous studies performed at the Facility in 1996/1997 (Table 6.2). No exceedances of the IDWP or the IDC for soil (including PNAs) were identified in either sample.

Following the September 1998 PA/VSI, TechLaw identified a moderate potential for a release of hazardous constituents to the environment (TechLaw, 1998). As a result, TechLaw identified the Former Coal Storage Area as an AOC.

7.11.3 CURRENT STATUS

The Former Coal Storage Area is currently inactive, and residual coal will be removed from the area as part of the environmental decommissioning staging efforts being performed by REALM.

7.12 AOI 12 –FORMER CAUSTIC TANKS

Eleven aboveground steel caustic tanks, each approximately 4 feet by 6 feet by 6 feet, are located immediately west of the Former Drum Storage Area (AOI 1) along the north side of Building 44. All of the tanks are located on asphalt and are covered. The locations of the Former Caustic Tanks are presented on Figure 1.2/Plan 1.

7.12.1 HISTORICAL OPERATIONS

The Former Caustic Tanks were not used during the recent Peregrine operations (1997-1998). According to former Delphi personnel, the caustic tanks were used for spent cleaning solutions. The solutions were utilized to clean metal prior to sheet metal painting and coating operations that were completed at the north end of the second floor of Building 44. The caustic spray solution (i.e., detergent) was discharged from the second floor to the outside tanks, where collected liquids were periodically hauled away for appropriate recycling or disposal. The tanks were located in this outdoor area because of space restrictions in the cleaning area on the second floor. Use of these tanks was discontinued when painting operations on the second floor were discontinued.

7.12.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

During the July 7, 1998 VSI inspection, two of the Former Caustic Tanks were visually inspected by TechLaw and were observed to be empty. The Former Caustic Tanks are underlain by asphalt in the asphalt driving/parking area north of Building 44 and are raised several inches off the ground on supports. The asphalt surrounding AOI 12 was

observed by TechLaw to contain cracks. Based on TechLaw's assumed use of liquids in a production process in this area and the apparent lack of secondary containment (other than asphalt that currently contains cracks), TechLaw identified that a moderate potential existed for this unit to have released hazardous constituents to soil or groundwater. As a result, TechLaw identified the Former Caustic Tanks as an AOC.

7.12.3 CURRENT STATUS

The Former Caustic Tanks are currently inactive. These tanks will be properly decommissioned as part of ongoing decommissioning and demolition activities at the Facility.

8.0 OTHER POTENTIAL AREAS OF INTEREST

8.1 AOI 13 – FORMER HEADLINER ADHESIVE TANKS

The Former Headliner Adhesive Tanks (AOI 13) are located in a tank farm east of Building 44. There were eight stainless steel tanks, each about 30 feet high by 8 feet in diameter (approximately 8,000-gallon capacity), with secondary containment (provided by an approximate 2-foot concrete curb). The location of the Former Headliner Adhesive Tanks is presented on Figure 1.2.

8.1.1 HISTORICAL OPERATIONS

The Former Headliner Adhesive Tanks were primarily used to store solvent and water based adhesives for use during former headliner manufacturing activities.

8.1.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous studies performed at the Facility in 1996/1997 observed the tanks to be in good condition. However, the secondary containment was observed to be approximately 50 percent filled with rainwater (currently this area is full). One soil sample (GP-6) was collected adjacent to the area (Table 6.2). No exceedances of the IDWP or the IDC for soil were identified.

During the removal of Tank #6 and the piping associated with the tanks, Tank #6 (known as the green adhesive tank) was found to contain a small quantity of solidified material. The material in the piping was sampled (Table 6.4) and found to be characteristically hazardous based on toxicity (benzene) and flammability. GM completed the removal by the green adhesive tank and associated piping in 1997.

8.1.3 CURRENT STATUS

The Green Adhesive Tank (Tank #6) and associated piping has been removed. The other seven Former Headliner Adhesive Tanks were found to be clean and remain at this AOI. The remaining tanks will be properly decommissioned and removed as part of the ongoing decommissioning and demolition activities.

8.2 AOI 14 - FORMER INCINERATOR

The Former Incinerator was located east of the powerhouse (Building 45). It was demolished in the 1980s. The approximate location of the Former Incinerator is presented on Figure 1.2/Plan 1.

8.2.1 HISTORICAL OPERATIONS

No written information was made available to TechLaw regarding the operations of the Former Incinerator. However, interviews completed with former Delphi employees indicated that the former incinerator had been primarily utilized to incinerate plant trash including cardboard and broken floor blocks. Former employees indicated that the incinerator was often not operational and it was eventually demolished in the 1980s.

8.2.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous studies performed at the Facility in 1996/1997 identified the Former Incinerator to be a potential area of concern. Two soil samples (MW-1 and PFW-2) and three groundwater samples (MW-1 (plus a split sample) and PFW-2) were collected from the general area (Tables 6.2 and 6.3). Sampling activities identified no exceedances of the IDWP/IDWC or the IDC/GCC for either soil or groundwater.

8.2.3 CURRENT STATUS

The Former Incinerator area is currently vacant and inactive.

8.3 AOI 15 - OTHER FORMER USTs

In addition to the two Former USTs identified as AOI 3, three Other Former UST areas were located at the Facility. These comprised two gasoline tanks, each of 2,000 gallon capacity, and a tank associated with the former plastisol operations. One of the gasoline tanks was located north of Building 44 and the other to the west of the Facility, toward the south end of Building 44 near the shipping dock. The plastisol tank was located on

the east side of Building 44 in the vicinity of column S-31. The location of these three Other Former USTs is presented on Figure 1.2/Plan 1.

8.3.1 HISTORICAL OPERATIONS

The gasoline tanks were used for routine refueling of the Facility's vehicles. Plastisol is a solvent-based material which was used during Delphi operations at the Facility to produce a rubber-type coating over the plating racks used for transporting the components through the plating machines. Former Delphi employees stated that the underground plastisol tank was reportedly used from 1961 to 1984.

8.3.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous investigations identified the location of the two gasoline tanks which had received clean closure from the MDEQ in November 1990. Therefore, no sampling specifically occurred in the vicinity of these two closed tanks.

Three soil samples (MW-4, SB-9, and PFW-5) and three groundwater samples (MW-4 (plus a split sample) and PFW-5) have been collected from the area of the former plastisol tank (Tables 6.2 and 6.3). Sampling activities identified no exceedances of the IDWP for soil, but TCE was identified above the IDWC at MW-4 (Table 6.3b) in the groundwater. TCE was not detected in the split sample from MW-4. In addition, lead was identified above the IDWC in the split sample from MW-4 (Table 6.4b) but not in the original sample. No exceedances of the IDC/GCC were reported for soil or groundwater in any of the collected samples.

The plastisol tank was located in August 1997 and found to contain a very small amount of liquid. A sample of the liquid was analyzed and found to be ignitable and to be characteristically toxic based on methyl ethyl ketone. GM removed the plastisol tank and submitted a Closure Report to the MDEQ. The 1998 Closure Report response from the MDEQ stated that the area had been closed to unrestricted residential use based on a Tier 1 Act 451, Part 213 evaluation.

8.3.3 CURRENT STATUS

The two gasoline USTs are identified as being removed and closed on the Michigan UST-DMS Facility and Tank Data Listing, dated April 27, 1999. The plastisol tank is also identified as being removed on the Michigan UST-DMS Facility and Tank Data Listing, dated April 27, 1999.

8.4 AOI 16 - FORMER POTENTIAL TANK FARM

One of the earlier environmental investigations performed at the Facility identified a Former Potential Tank Farm located approximately 300 feet east of the north end of Building 63 (based upon a Facility design drawing). The tank farm was initially designed to contain USTs associated with a potential jet fuel operation but the tanks were never installed according to interviews with former employees (due to a change in the projected use of the Facility). The location of the Potential Former Tank Farm (AOI 16) is presented on Figure 1.2.

8.4.1 HISTORICAL OPERATIONS

A 1952 design drawing identifies a tank farm located near the current electrical substation area, however, no information other than the design drawing was available during the previous studies to provide information on the former operations that were associated with this tank farm.

8.4.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous studies performed at the Facility in 1996/1997 focussed on the Former Potential Tank Farm and the adjacent underground water reservoir. Two soil samples (MW-2 and PFW-9) and three groundwater samples [MW-2 (plus a split sample) and PFW-9] have been collected from these areas. Sampling activities identified no exceedances of the IDWP for soil, but lead was identified above the IDWC at PFW-9 (Table 6.3). No exceedances of the direct contact criteria were reported for soil or groundwater in any of the collected samples.

8.4.3 CURRENT STATUS

The area of the Former Potential Tank Farm is currently a vacant concrete vault.

8.5 AOI 17 - SUBSTATION DRAINAGE SUMP

The Substation Drainage Sump is located to the northeast of Building 63. The electrical substation area contained several large transformers. Stormwater runoff from the uncovered substation area collects in the sump located in the basement of the adjacent substation building and was historically pumped to the Former WWTP. The location of the Substation Drainage Sump is presented on Figure 1.2.

8.5.1 HISTORICAL OPERATIONS

No operating information is available.

8.5.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

This sump was examined during one of the previous studies performed at the Facility in 1996/1997, there was no visual evidence or knowledge of a release from the Substation Drainage Sump. Two soil samples (SB-2 plus a split sample) were collected from this area (Table 6.2). Sampling activities identified no exceedances of the IDC.

8.5.3 CURRENT STATUS

The area will become inactive and vacant as the decommissioning and demolition activities are completed.

8.6 AOI 18 – FORMER INACTIVE EQUIPMENT RESERVE YARD

The Former Inactive Equipment Reserve Yard (IERY) was located east of Building 63 and was used to store dyes and obsolete equipment. The location of the Former IERY is presented on Figure 1.2/Plan 1.

8.6.1 HISTORICAL OPERATIONS

The Former IERY was used for the storage of dies and obsolete equipment. Interviews with former Delphi employees indicated that the stormwater runoff from this area was historically directed to the former WWTP.

8.6.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

Previous investigations performed at the Facility in 1996/1997 identified the Former IERY to be a potential area of concern. Eight soil samples (GP-3, GP-4, SB-6, SB-7, SB-8, SB-17, MW-3, and PFW-4) and three groundwater samples [MW-3 (plus a split sample) and PFW-4] have been collected in this area (Tables 6.2 and 6.3). Sampling activities identified no exceedances of the IDWP for soil, but lead was identified slightly above the IDWC at MW-3 (split sample only) (Table 6.3) in the groundwater. No exceedances of the IDC/GCC were reported for soil or groundwater in any of the collected samples.

8.6.3 CURRENT CONDITIONS

The area is currently vacant and inactive.

8.7 AOI 19 - FORMER PRESS ROOM

The Building 44 Former Press Room pits have been indirectly discussed under AOIs 7 and 8. However, AOI 19 addresses these and other miscellaneous pits and sumps in the Former Press Room.

8.7.1 HISTORICAL OPERATIONS

Some of these pits and trenches were associated with former press room operations.

8.7.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

The press room was on the first floor of Building 44 in the southeast corner. Two soil samples (GP-1 and GP-2) have been collected from the outside of Building 44 next to the Former Press Room (Table 6.2). No exceedances of the IDWP or the IDC were identified.

8.7.3 CURRENT STATUS

Many of the sumps associated with the press room pits were filled with gravel/concrete by Peregrine prior to leaving the Facility.

8.8 AOI 20 – FORMER TOOL ROOM

The Former Tool Room on the first floor of Building 44 previously contained a small solvent-based degreaser, an air wash unit, and die wash station.

8.8.1 HISTORICAL OPERATIONS

The degreaser unit was historically located in the northwest corner of the Former Tool Room. The former tool room air wash unit was taken out of operation in November 1996 and removed from the Facility in 1997. The associated sump was cleaned and closed. The die wash station still exists along the west side of the Former Tool Room.

8.8.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

During the previous studies performed at the Facility in 1996/1997, a sample of the residue on the inner surface of the air wash unit was collected and analyzed by TCLP (Table 6.4).

8.8.3 CURRENT STATUS

The Former Tool Room air wash unit was cleaned by GM and has been removed from the Site. The remaining portions of the Former Tool Room area are generally vacant and will undergo decommissioning, including the existing die wash station.

8.9 AOI 21 – POWERHOUSE FUEL OIL STORAGE TANKS

Four aboveground fuel oil storage tanks with secondary containment were formerly located north of the Powerhouse. Three of the tanks (250-gallon each) have been previously removed. The location of the remaining tank is presented on Plan 1.

8.9.1 HISTORICAL OPERATIONS

The fuel oil was used as a backup to coal as fuel for the powerhouse. No information is available as to frequency of usage or period of use, and there are no records of any spills. There is some residual fuel oil in the remaining tank that will be removed as part of the Facility decommissioning.

8.9.2 PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

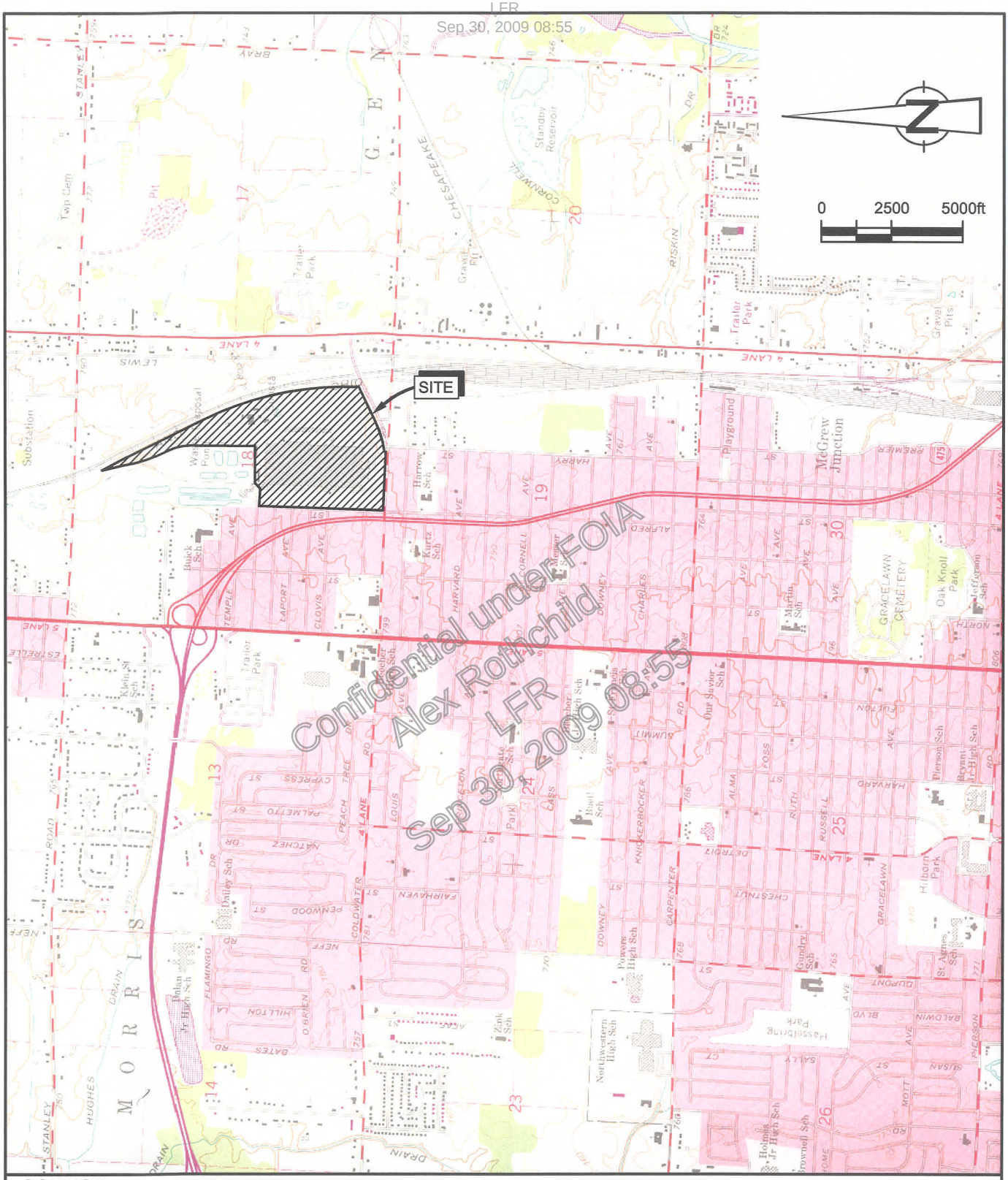
The Fuel Oil Storage Tanks were identified as a potential concern during one of the previous investigations on the basis that leakage or spills of petroleum hydrocarbons may have penetrated through the secondary containment and into the underlying soil. One soil sample (PFB-21) and one groundwater sample (PFB-21) have been collected from the area (Tables 6.2 and 6.3). Sampling activities identified no exceedances of the industrial drinking water or direct contact criteria for either soil or groundwater.

9.0 REFERENCES

MDEQ, 1998. "Letter of Warning, Financial Capability and Closure of Drum Storage Area, Peregrine U.S., Inc., Flint Plant; MIR 000 020 743," to David Rymph from Steven Sliver, Michigan Department of Environmental Quality, March 26, 1998.

TechLaw, 1998. "Preliminary Assessment/Visual Site Inspection Report for Peregrine, Inc. (former General Motors Corporation Inland Fisher Guide Coldwater Road Manufacturing Facility), G-1245 E. Coldwater Road, Flint, MI 48559-001, EPA ID No. MIR000020743," prepared for USEPA Region V by TechLaw Inc., September 1998

Weston, 1998. "Draft Final Closure Certification Documentation Package, Drum Storage Area And Waste Pile Pad, Surface Remediation Project, Coldwater Road, Flint, Michigan, EPA ID No. MID 005356860," Weston, October 1998



SOURCE:

USGS FLINT NORTH QUADRANGLE
MICHIGAN-GENESEE CO.
MAPS, PHOTOREVISED 1975.

figure 1.1

FACILITY LOCATION
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-NF006 MAR 30/2000

Confidential under FOIA
Alex Rothchild
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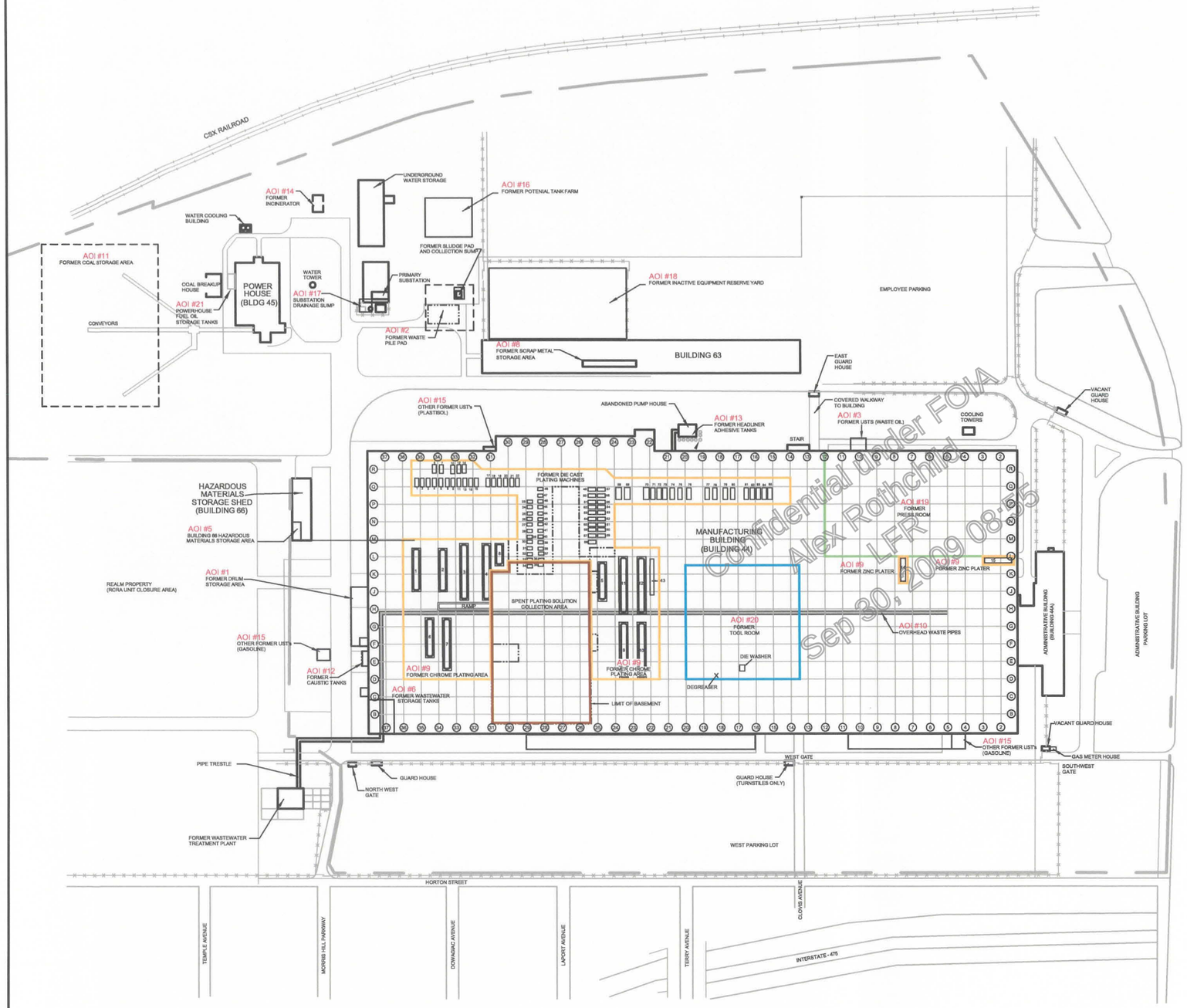
Sep 30, 2009 08:55



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LEGEND

PROPERTY BOUNDARY

FENCE LINE

AOI DESCRIPTION

AOI #1	FORMER DRUM STORAGE AREA
AOI #2	FORMER WASTE PILE PAD
AOI #3	FORMER USTs
AOI #4	FORMER SATELLITE ACCUMULATION AREAS
AOI #5	FORMER HAZARDOUS MATERIALS STORAGE AREA
AOI #6	FORMER WASTEWATER STORAGE TANKS
AOI #7	FORMER SCRAP METAL MANAGEMENT SYSTEM
AOI #8	FORMER SCRAP METAL STORAGE AREA
AOI #9	FORMER PLATING AREAS
AOI #10	OVERHEAD WASTE PIPES
AOI #11	FORMER COAL STORAGE AREA
AOI #12	FORMER CAUSTIC TANKS
AOI #13	FORMER HEADLINER ADHESIVE TANKS
AOI #14	FORMER INCINERATOR
AOI #15	OTHER FORMER USTs
AOI #16	FORMER POTENTIAL TANK FARM
AOI #17	SUBSTATION DRAINAGE SUMP
AOI #18	FORMER INACTIVE EQUIPMENT RESERVE YARD
AOI #19	FORMER PRESS ROOM
AOI #20	FORMER TOOL ROOM
AOI #21	POWERHOUSE FUEL OIL STORAGE TANKS

NOTE:
THERE IS NO SPECIFIC LOCATION
FOR AOI#4 AND AOI #7.

NOTES

1. THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE.
2. DRAWING No. 1795W BUICK MOTOR DIVISION SHEET No. 1M WAS USED AS A REFERENCE DRAWING.
3. LOCATIONS OF GENERAL MOTORS RCRA UNIT CLOSURE MONITORING WELLS (i.e. B-WELLS) ARE APPROXIMATE

figure 1.2

FACILITY PLAN AND AOI LOCATIONS
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA019 MAR 30/2000

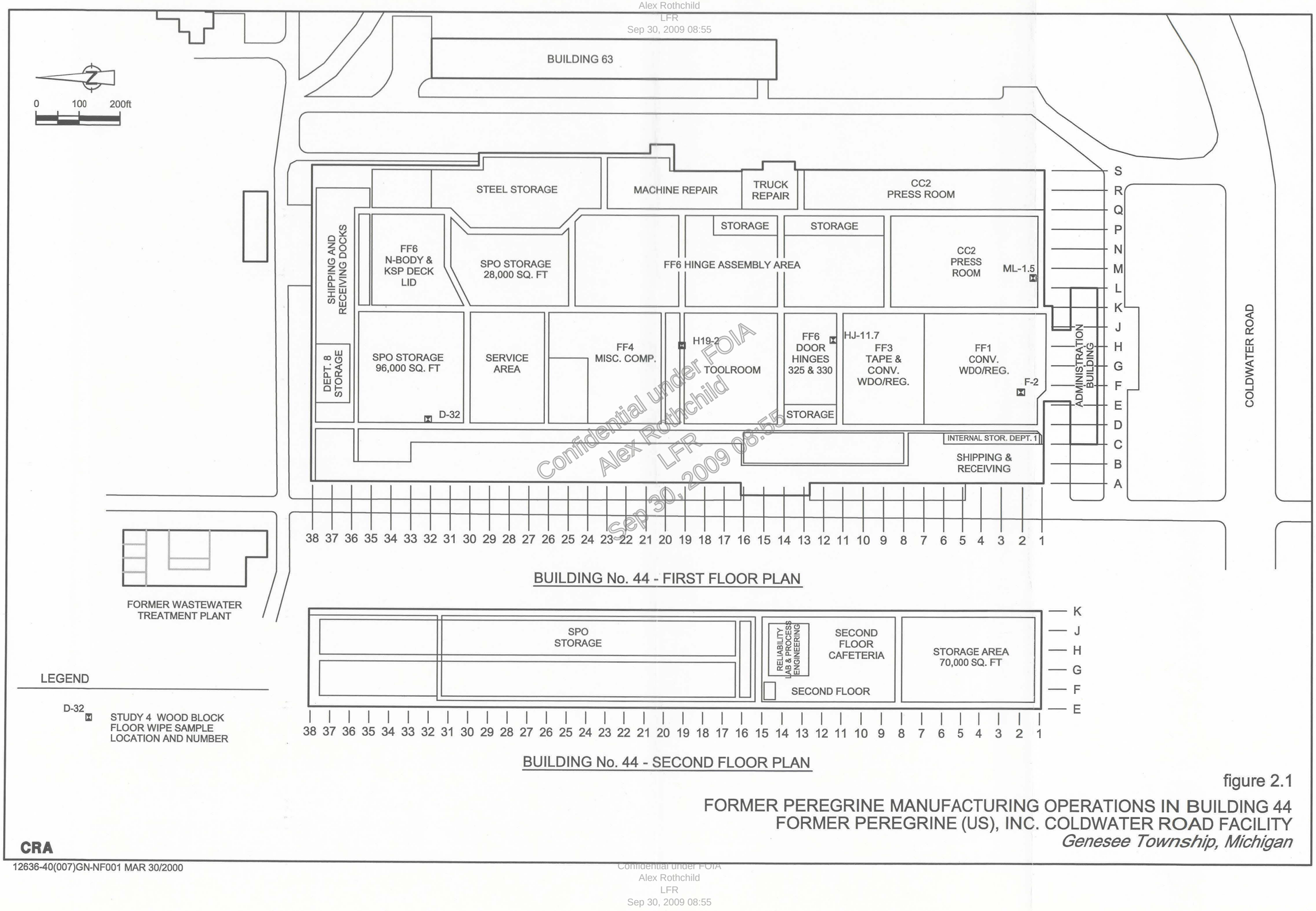


figure 2.1

FORMER PEREGRINE MANUFACTURING OPERATIONS IN BUILDING 44
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-NF001 MAR 30/2000

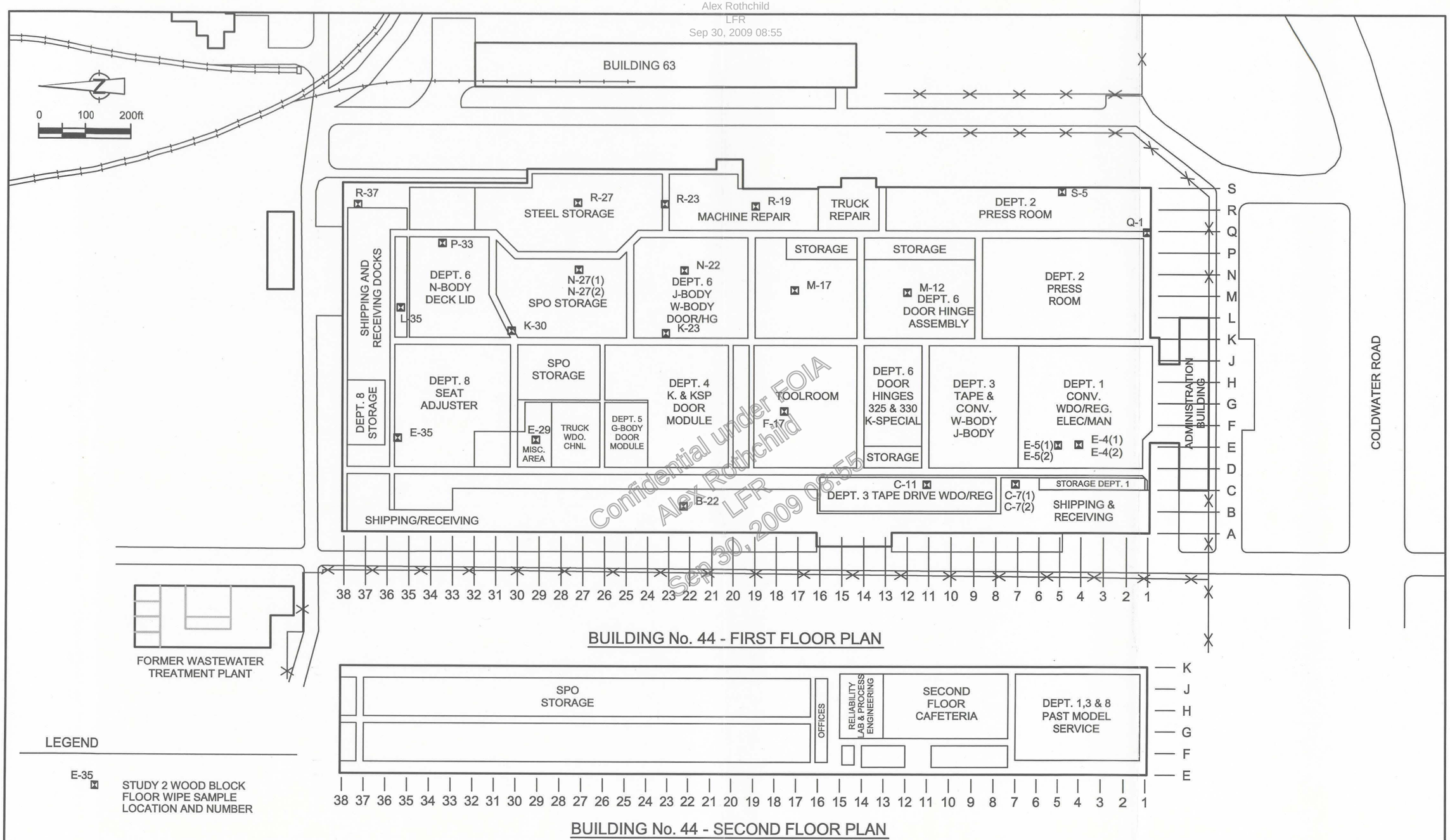
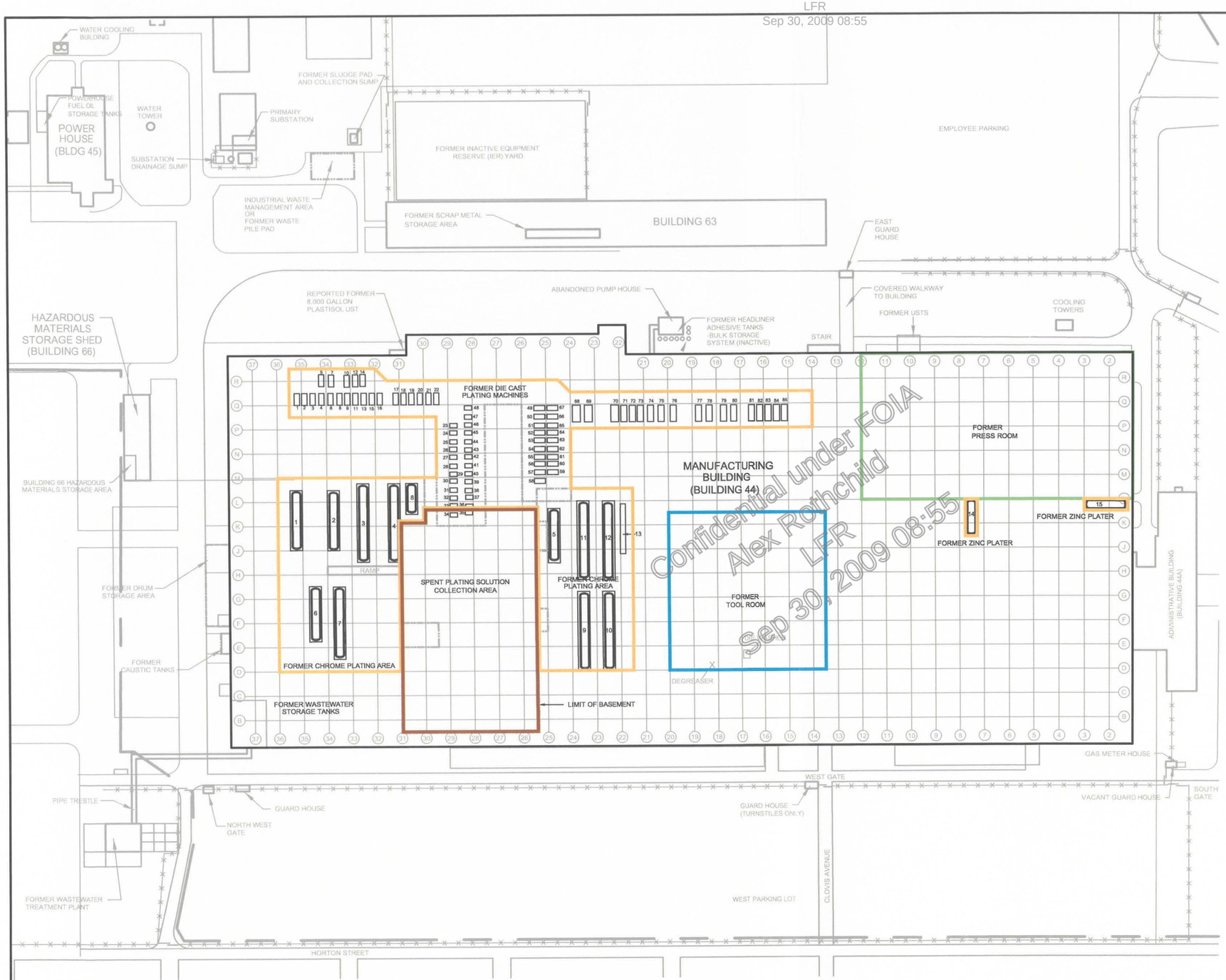


figure 2.2

FORMER DELPHI MANUFACTURING OPERATIONS IN BUILDING 44
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-NF002 MAR 30/2000



N

0 100 200ft

LEGEND

PROPERTY BOUNDARY

FENCE LINE

DESCRIPTION OF FORMER PLATING MACHINES

1. HANSON VAN WINKLE PLATING MACHINE #1
2. HANSON VAN WINKLE CHROME PLATER #2
3. STEVENS COPPER NICKEL CHROME PLATING MACHINE #3
4. STEVENS COPPER NICKEL CHROME PLATING MACHINE #4
5. HANSON VAN WINKLE PLATING MACHINE #5
6. #6 NICKEL PLATING MACHINE
7. #7 COPPER PLATING MACHINE
8. UDYLITE JUNIOR #8
9. UDYLITE #9 DUAL NICKEL DULA CHROME PLATER
10. UDYLITE #10 DUAL NICKEL DULA CHROME PLATER
11. HANSON VAN WINKLE PLATER #11
12. HANSON VAN WINKLE PLATER #12
13. CINCINNATI PARTS WASHER (STILL PLATER #13)
14. STEVENS BARREL ZINC PLATER
15. INACTIVE ZINC BARREL PLATING UNIT

NOTES

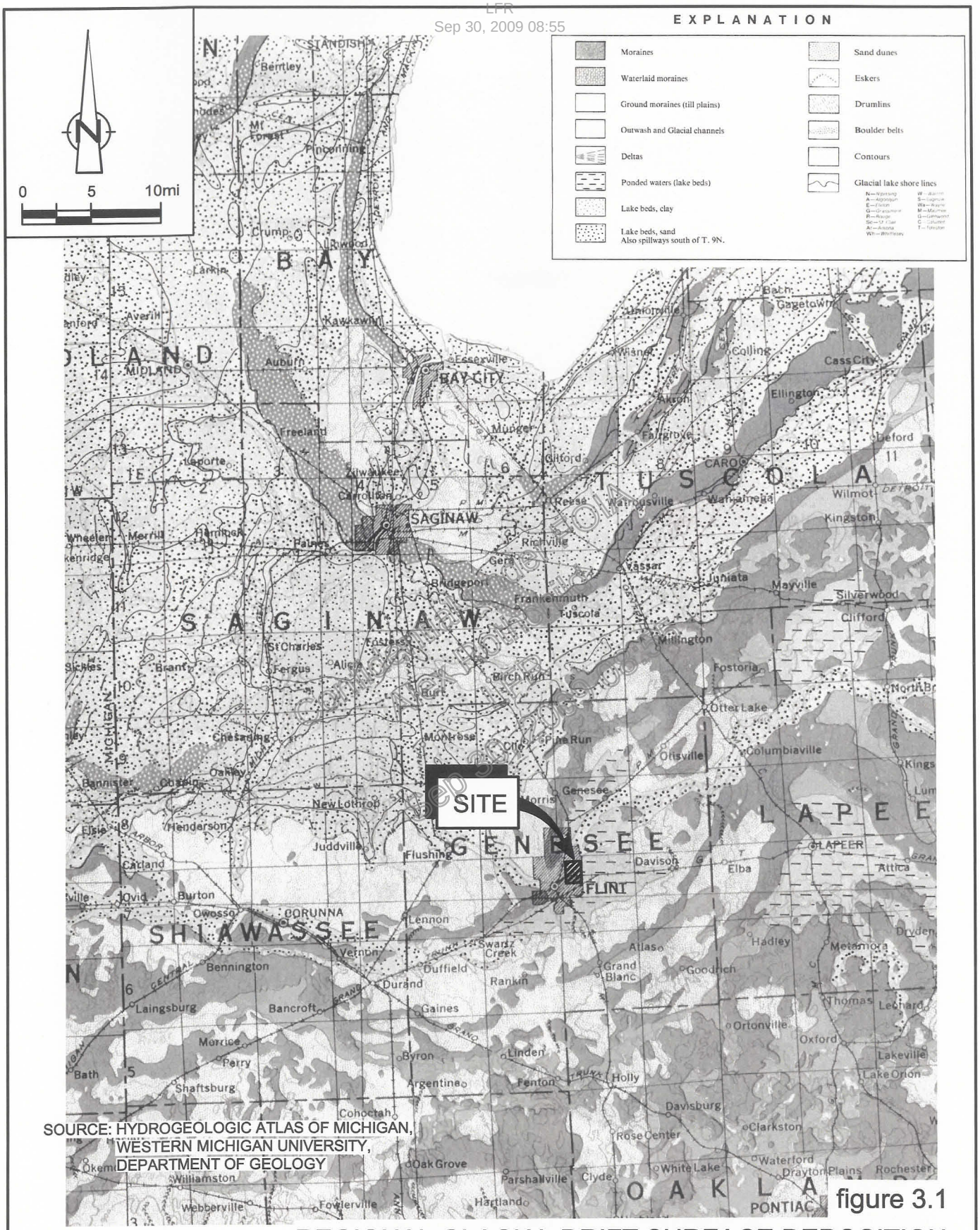
1. THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE.
2. DRAWING No. 1795W BUICK MOTOR DIVISION SHEET No. 1M WAS USED AS A REFERENCE DRAWING.
3. LOCATIONS OF GENERAL MOTORS RCRA UNIT CLOSURE MONITORING WELLS (i.e. B-WELLS) ARE APPROXIMATE

figure 2.3

FORMER PLATING AND DIE CAST OPERATION AREAS
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA018 MAR 30/2000



SOURCE: HYDROGEOLOGIC ATLAS OF MICHIGAN, WESTERN MICHIGAN UNIVERSITY, DEPARTMENT OF GEOLOGY

figure 3.1

REGIONAL GLACIAL DRIFT SURFACE DEPOSITION
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA002 MAR 30/2000

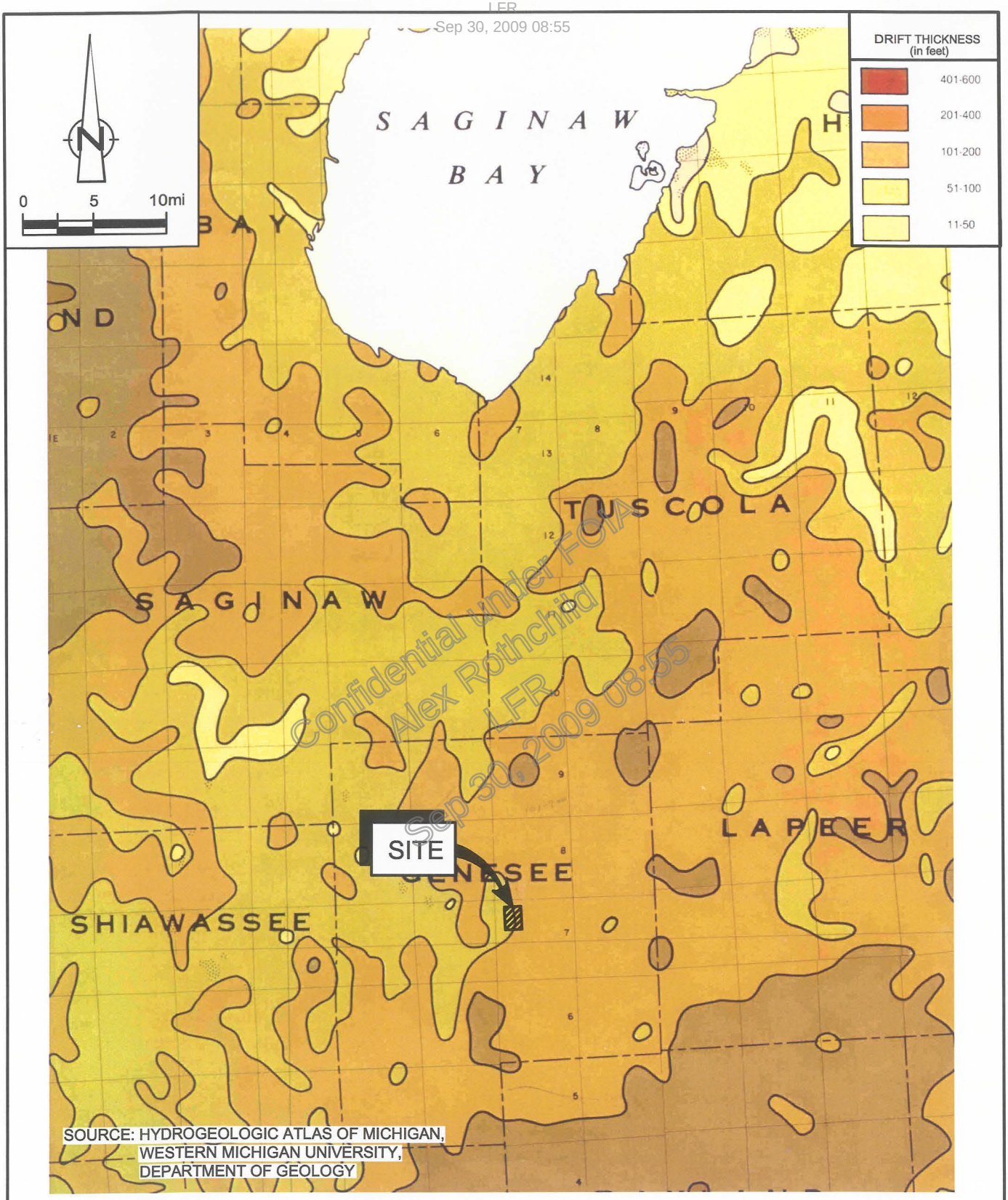
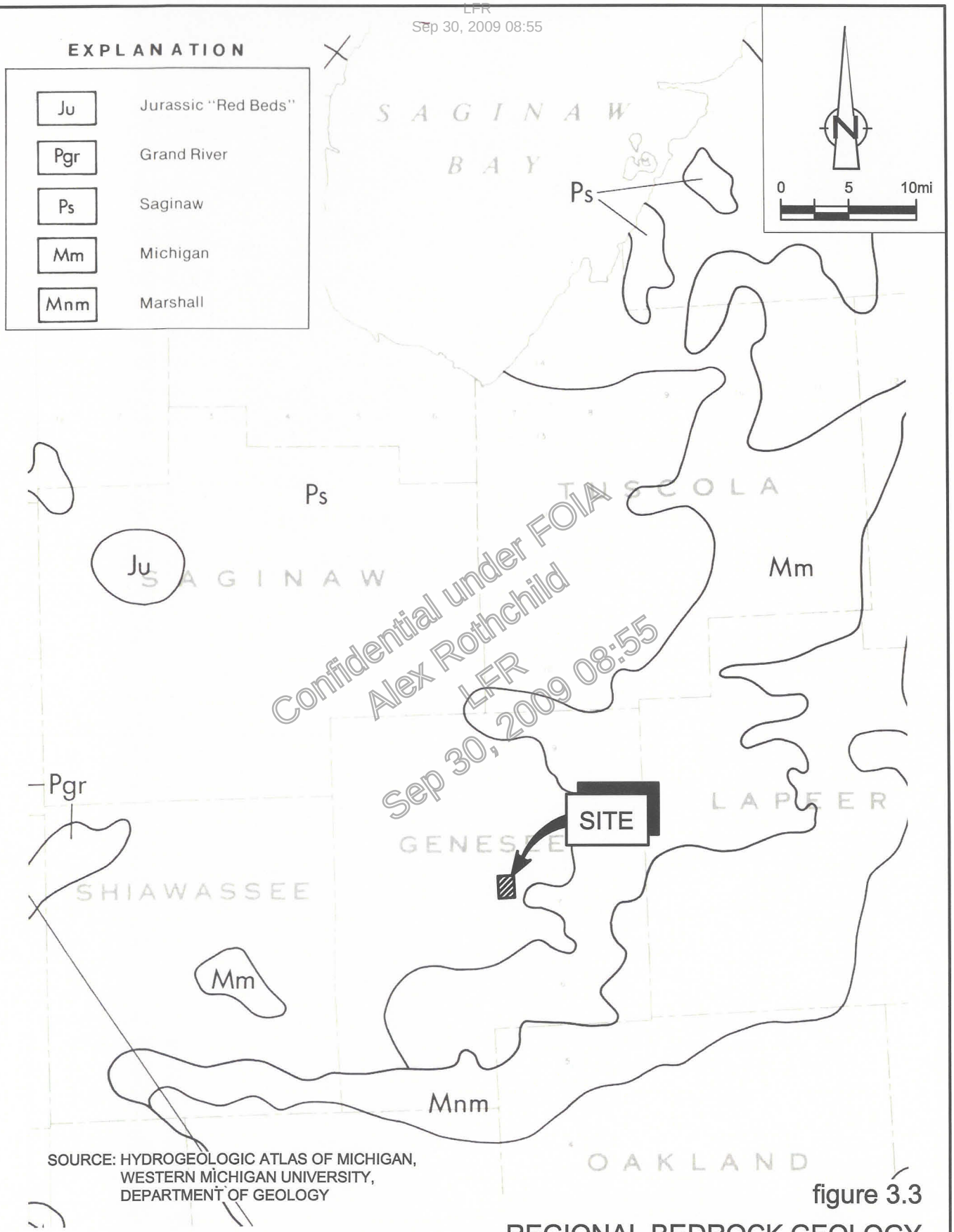


figure 3.2

REGIONAL GLACIAL DRIFT THICKNESS
FORMER PEREGRINE (U.S.) INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA009 JUN 22/2000



SOURCE: HYDROGEOLOGIC ATLAS OF MICHIGAN, WESTERN MICHIGAN UNIVERSITY, DEPARTMENT OF GEOLOGY

figure 3.3

REGIONAL BEDROCK GEOLOGY
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA003 JUN 22/2000

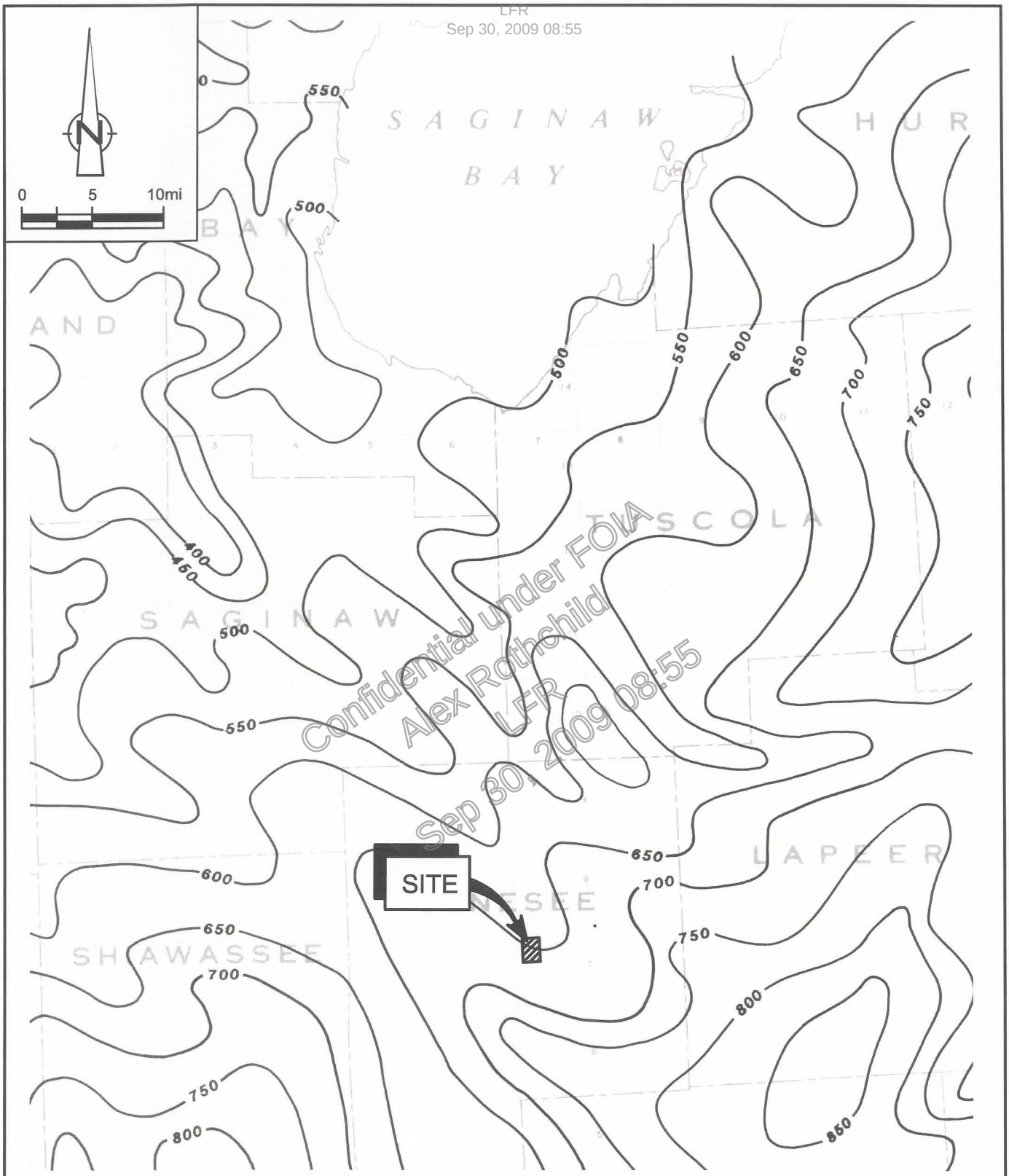
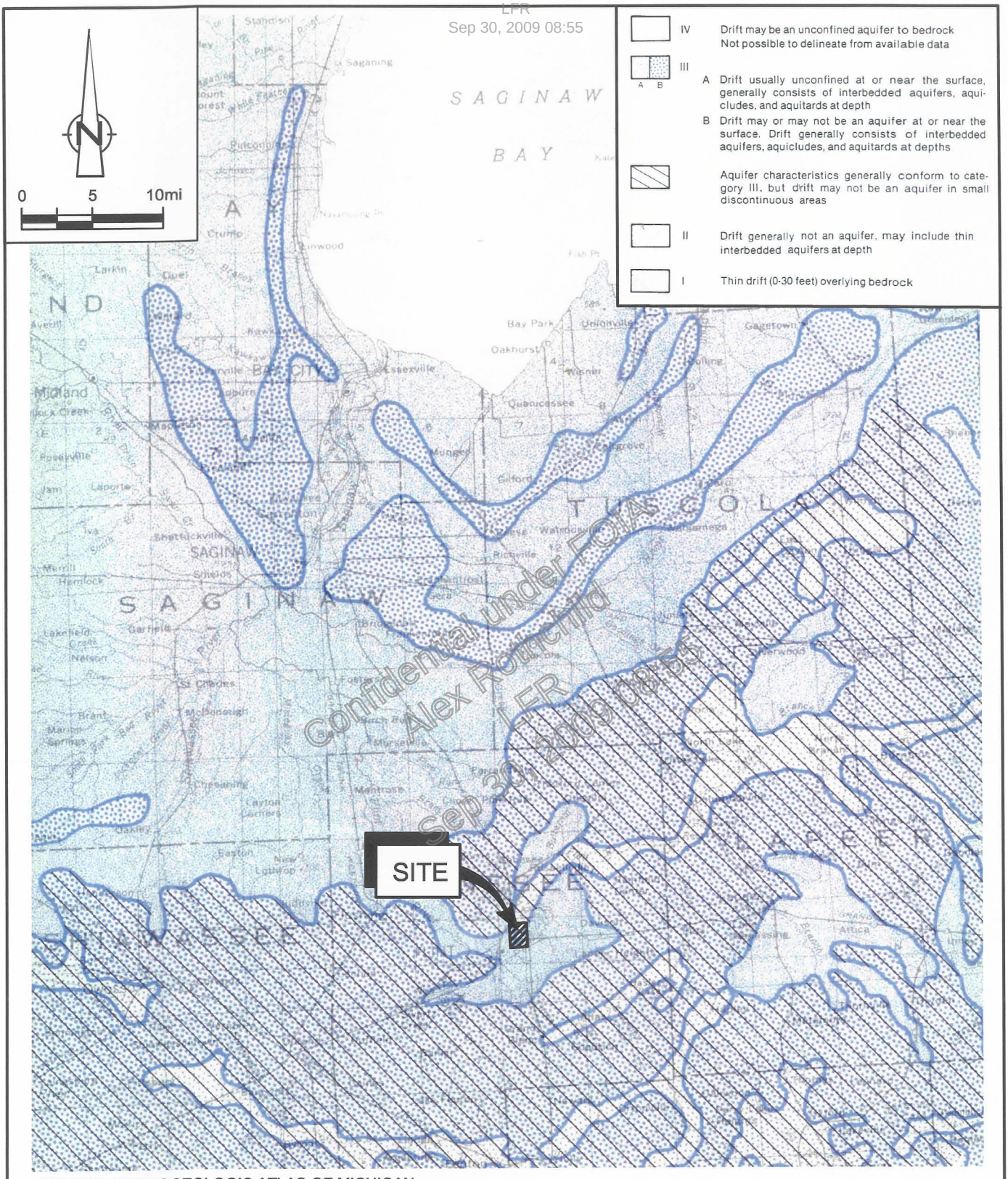


figure 3.4

REGIONAL BEDROCK TOPOGRAPHY
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA004 JUN 22/2000



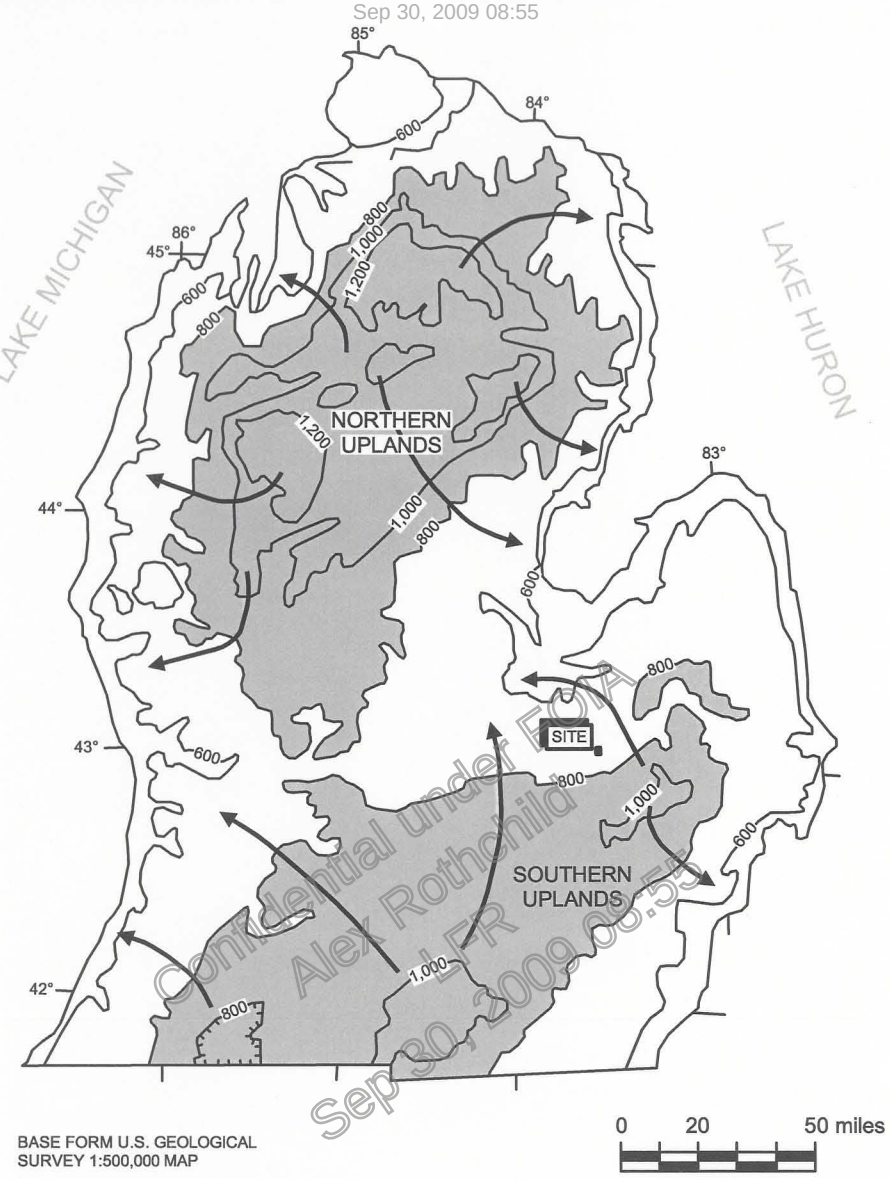
SOURCE: HYDROGEOLOGIC ATLAS OF MICHIGAN,
WESTERN MICHIGAN UNIVERSITY,
DEPARTMENT OF GEOLOGY

figure 3.5

REGIONAL GLACIAL DRIFT AQUIFER CHARACTERIZATION
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA005 JUN 22/2000



LEGEND

AREA WERE WATER-TABLE ALTITUDE IS GREATER THAN 800 FEET ABOVE SEA LEVEL

800 — WATER-TABLE CONTOUR - SHOWS EQUAL ALTITUDE OF WATER TABLE. HACHURE INDICATES DEPRESSION. CONTOUR INTERVAL 200 FEET. DATUM IS SEA LEVEL.

GROUNDWATER FLOW - ARROW INDICATES DIRECTION OF FLOW

NOTE:

GENERAL WATER-TABLE CONFIGURATION FOR THE GLACIOFLUVIAL AQUIFER IN THE LOWER PENINSULA OF MICHIGAN. (MODIFIED FROM MANDLE AND WESTJOHN, 1989, FIG. 10.)

figure 3.6

REGIONAL GROUNDWATER FLOW
FORMER PERERGINE (US) INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA008 JUN 22/2000

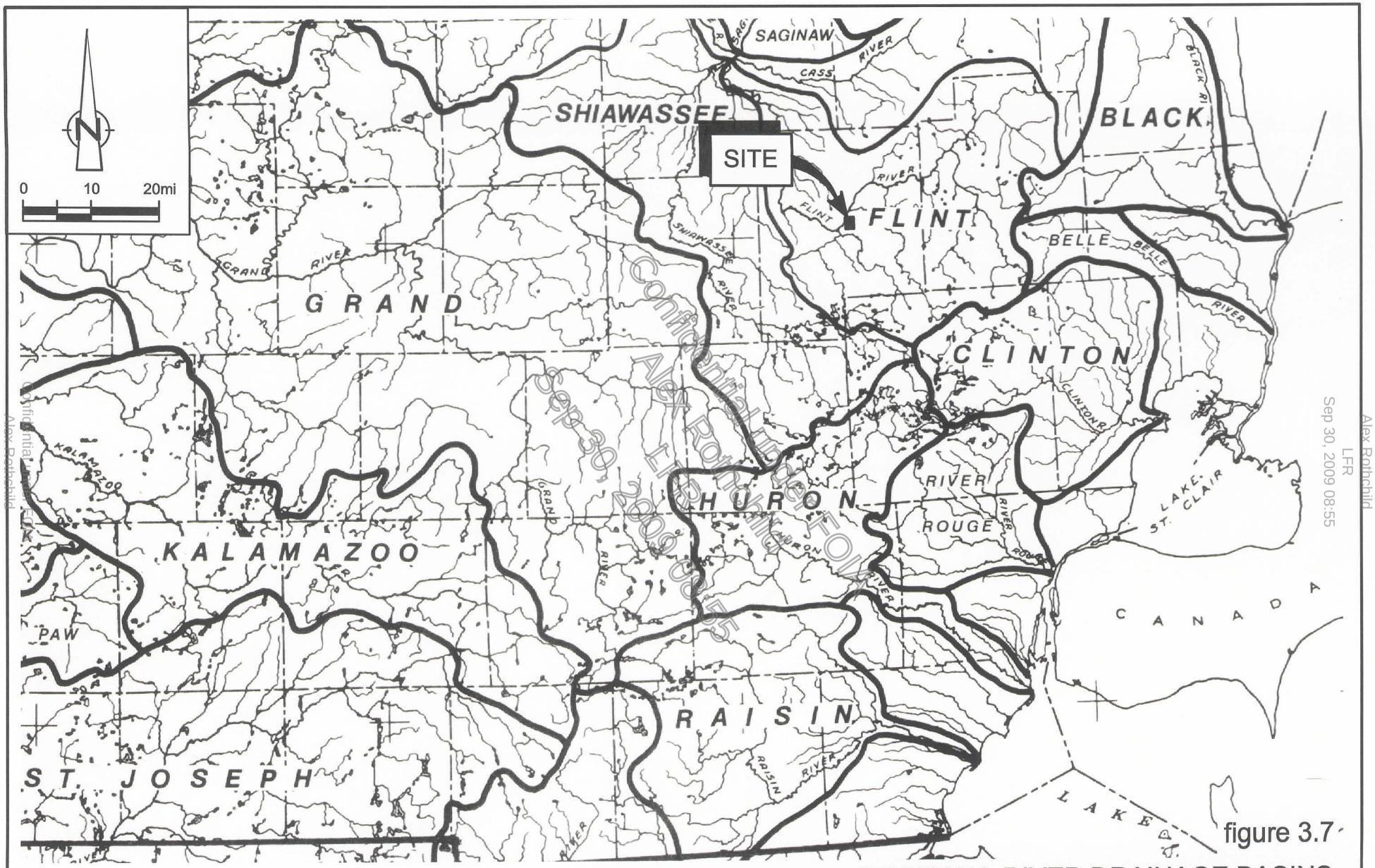


figure 3.7

REGIONAL RIVER DRAINAGE BASINS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

SOURCE: HYDROGEOLOGIC ATLAS OF MICHIGAN
WESTERN MICHIGAN UNIVERSITY,
DEPARTMENT OF GEOLOGY

CRA

12636-40(007)GN-WA006 JUN 22/2000

GEOLOGIC UNIT	HYDROGEOLOGIC UNIT	GROUNDWATER DESCRIPTION	THICKNESS (FEET)
SILTY CLAY/ SILTY SAND	PERCHED WATER TABLE ZONE	UNCONFINED PERCHED ZONE	10 - 15
SILT/CLAY	UPPER CONFINING UNIT	AQUITARD	30-50
SAND/ SILTY SAND	OVERBURDEN WATER BEARING ZONE	CONFINED	20-50
SILT/ CLAY TILL	LOWER CONFINING UNIT	AQUITARD	30-75
SANDSTONE/ LIMESTONE/ SHALE	BEDROCK WATER BEARING ZONE	CONFINED	100+

figure 4.1

TYPICAL GEOLOGIC CROSS-SECTION
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA017 JUN 22/2000

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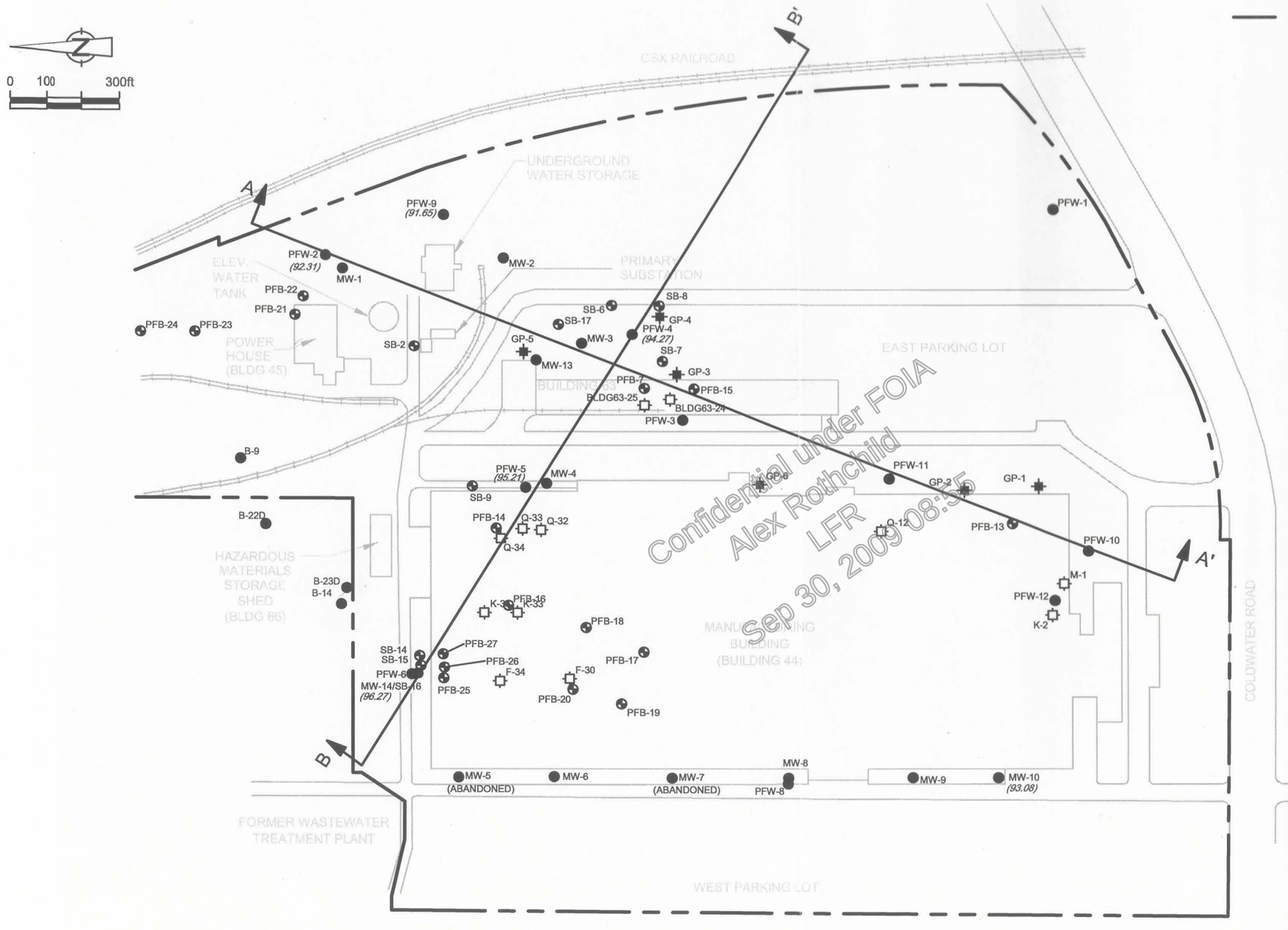
Alex Rothchild
LFR
Sep 30, 2009 08:55



LEGEND

- FACILITY BOUNDARY
- MW-7 — STUDY 2 MONITORING WELL LOCATION AND NUMBER
- PFW-12 — STUDY 4 MONITORING WELL LOCATION AND NUMBER
- B-9 — GENERAL MOTORS RCRA UNIT CLOSURE MONITORING WELL LOCATION AND NUMBER
- PFB-17 — STUDY 4 SOIL BORING LOCATION AND NUMBER
- SB-9 — STUDY 2 SOIL BORING LOCATION AND NUMBER
- GP-1 — STUDY 1 GEOPROBE LOCATION AND NUMBER
- Q-34 — STUDY 2 GEOPROBE LOCATION AND NUMBER
- (93.08) — WATER LEVEL

NOTES

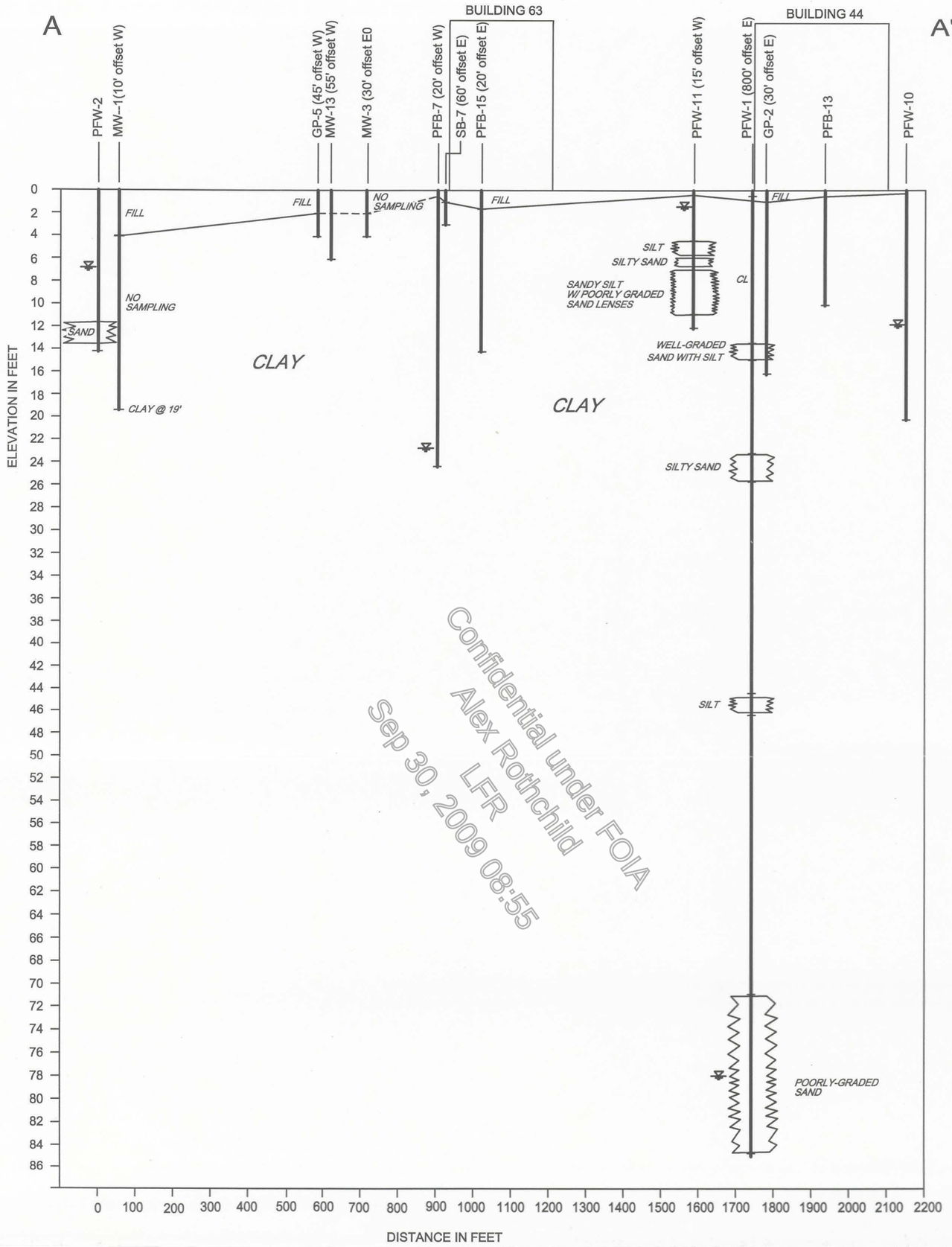
1. INFORMATION SHOWN ON THIS FIGURE TAKEN FROM STUDY 4 (JULY, 1997 REPORT)
2. THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE.
3. INFERRED WATER TABLE SURFACE IS BASED ON DATA FROM SELECT EXTERIOR WELLS THAT ARE SCREENED ENTIRELY WITHIN THE UPPER 18 FEET OF THE PERCHED AQUIFER. LOCAL VARIATIONS MAY OCCUR IN AREAS NOT SUBJECT TO METEORIC RECHARGE.
4. ELEVATIONS ARE REFERENCED TO AN ON-SITE ARBITRARY DATUM OF 100.00 FEET.

figure 4.2

CROSS SECTION LOCATIONS
FORMER PEREGRINE (US) , INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-NF004 JUN 22/2000



NOTE

▼ — WATER LEVELS MEASURED 3/31/97

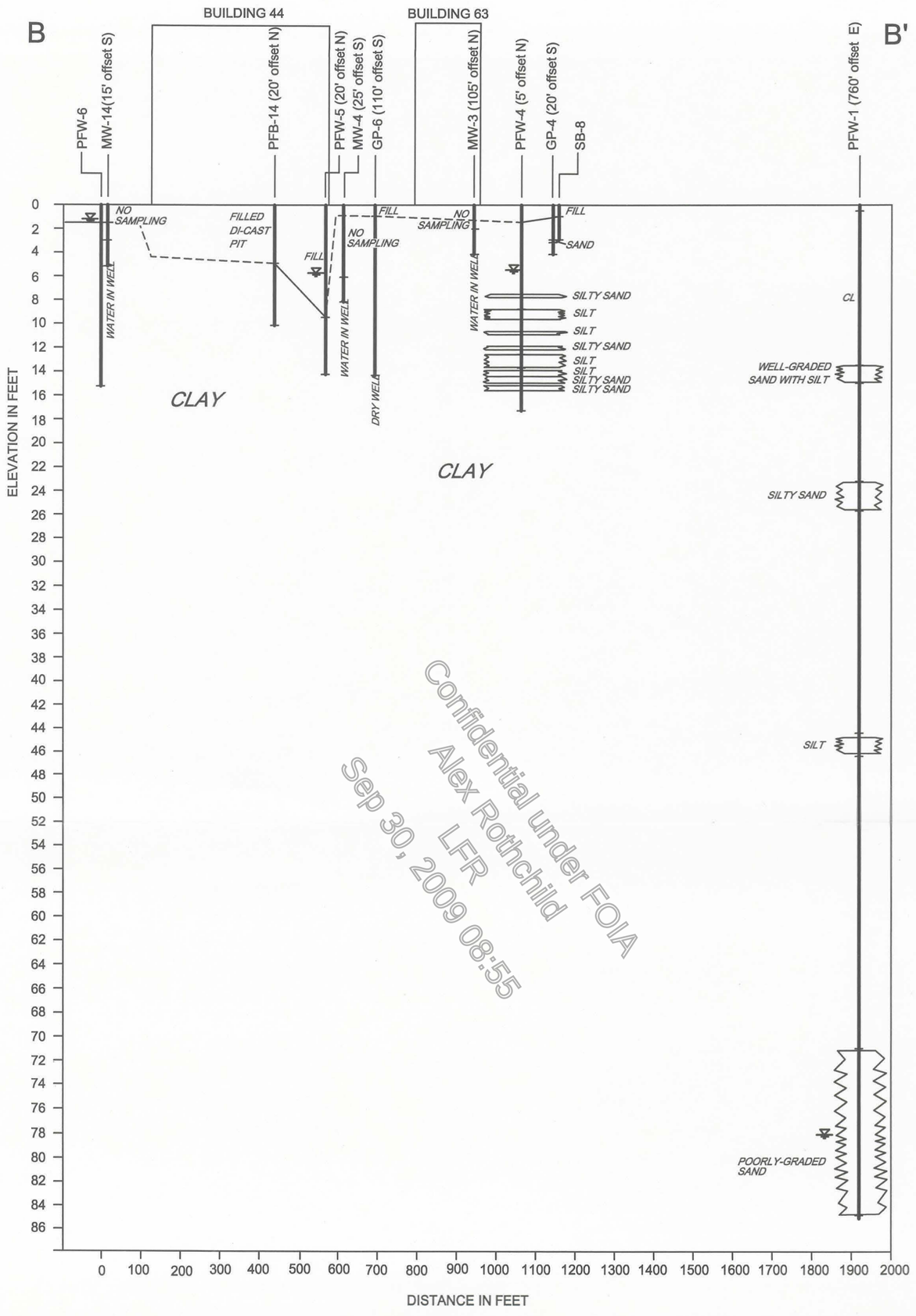
SCALES: HORIZ. 1"=300
VERT. 1"=10'

figure 4.3

GEOLOGIC CROSS-SECTION A-A'
FORMER PEREGRINE(US) INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA010 JUN 22/2000



NOTE

▼ — WATER LEVELS MEASURED 3/31/97

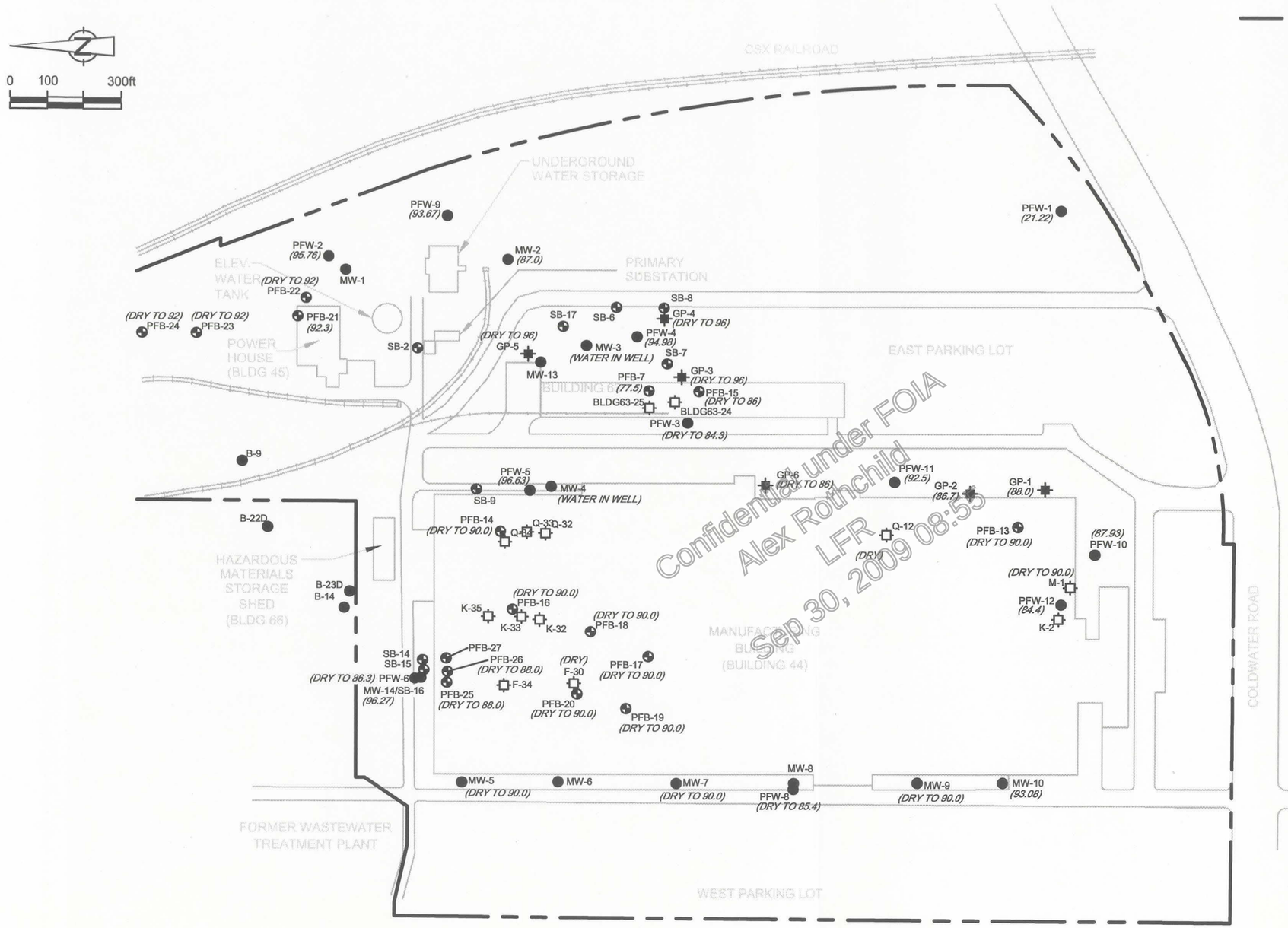
SCALES: HORIZ. 1"=300
VERT. 1"=10'

figure 4.4

GEOLOGIC CROSS-SECTION B-B'
FORMER PEREGRINE(US) INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-WA011 JUN 22/2000



LEGEND

- FACILITY BOUNDARY
- MW-7 — STUDY 2 MONITORING WELL LOCATION AND NUMBER
- PFW-12 — STUDY 4 MONITORING WELL LOCATION AND NUMBER
- B-9 — GENERAL MOTORS RCRA UNIT CLOSURE MONITORING WELL LOCATION AND NUMBER
- PFB-17 — STUDY 4 SOIL BORING LOCATION AND NUMBER
- SB-9 — STUDY 2 SOIL BORING LOCATION AND NUMBER
- GP-1 — STUDY 1 GEOPROBE LOCATION AND NUMBER
- Q-34 — STUDY 2 GEOPROBE LOCATION AND NUMBER
- (93.08) — WATER LEVEL

NOTES

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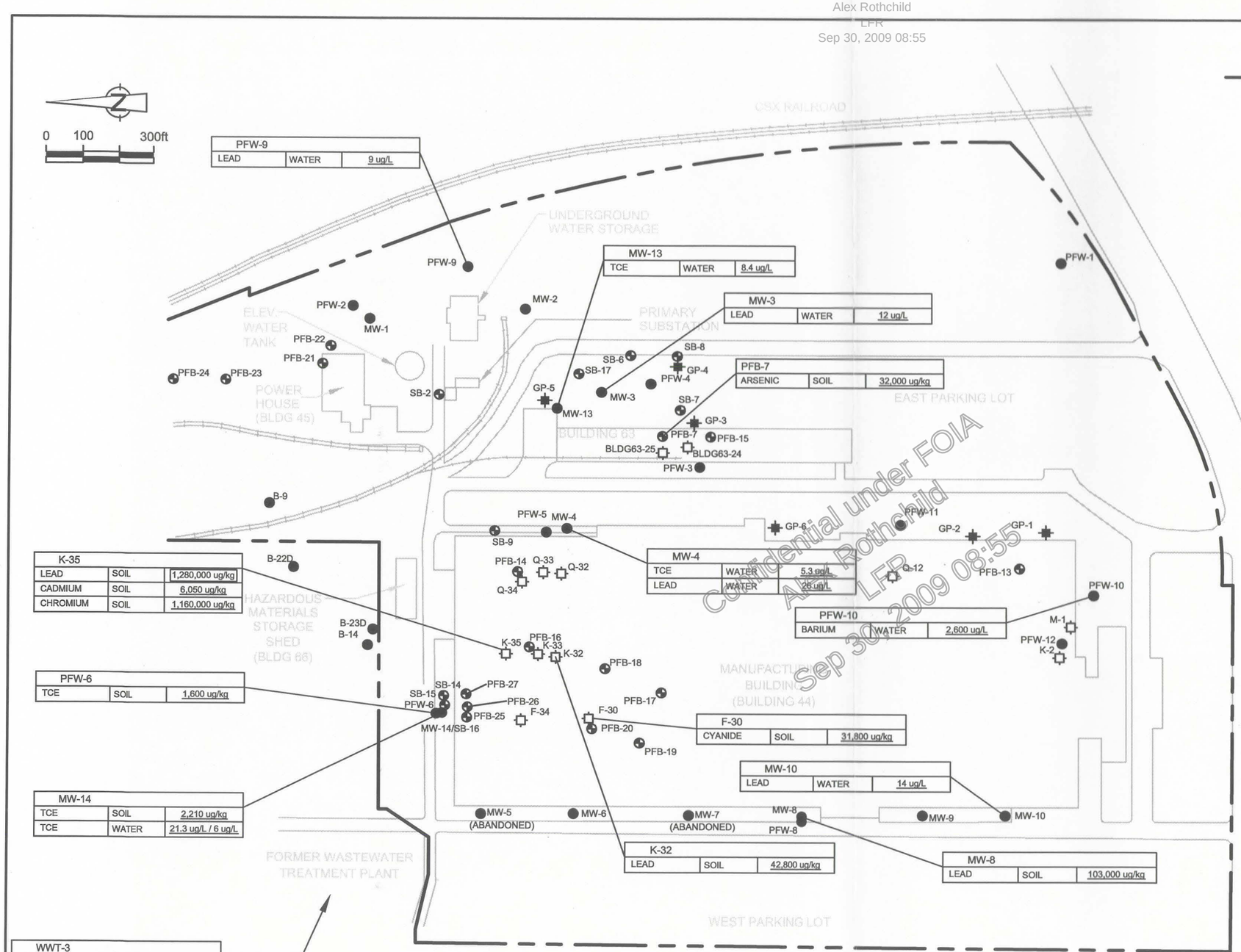
2. INFERRED WATER TABLE SURFACE IS BASED ON DATA FROM SELECT EXTERIOR WELLS THAT ARE SCREENED ENTIRELY WITHIN THE UPPER 18 FEET OF THE PERCHED AQUIFER. LOCAL VARIATIONS MAY OCCUR IN AREAS NOT SUBJECT TO METEORIC RECHARGE.
3. WATER ELEVATIONS ARE REFERENCED TO AN ON-SITE ARBITRARY DATUM OF 100.00 FEET FOR WELLS MONITORED BY STUDY 4 (JULY, 1997 REPORT)
   ALL OTHER WATER ELEVATIONS TAKEN FROM DRILLING/DEVELOPMENT INFORMATION WITH GROUND SURFACE ASSUMED AT 100.00 FEET.

figure 4.5

STATIC WATER ELEVATIONS
FORMER PEREGRINE (US) , INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

CRA

12636-40(007)GN-NF007 JUN 22/2000



LEGEND

- FACILITY BOUNDARY
- MW-7 — STUDY 2 MONITORING WELL LOCATION AND NUMBER
- PFW-12 — STUDY 4 MONITORING WELL LOCATION AND NUMBER
- B-9 — GENERAL MOTORS RCRA UNIT CLOSURE MONITORING WELL LOCATION AND NUMBER
- PFB-17 — STUDY 4 SOIL BORING LOCATION AND NUMBER
- SB-9 — STUDY 2 SOIL BORING LOCATION AND NUMBER
- GP-1 — STUDY 1 GEOPROBE LOCATION AND NUMBER
- Q-34 — STUDY 2 GEOPROBE LOCATION AND NUMBER

K-35			— SAMPLE LOCATION
LEAD	SOIL	1,280,000 ug/kg	— CONCENTRATION (ppm)
CADMIUM	SOIL	6,050 ug/kg	— MEDIA
CHROMIUM	SOIL	1,160,000 ug/kg	— COMPOUND

— VALUE EXCEEDS DIRECT CONTACT VALUE
— VALUE EXCEEDS DRINKING WATER CRITERIA

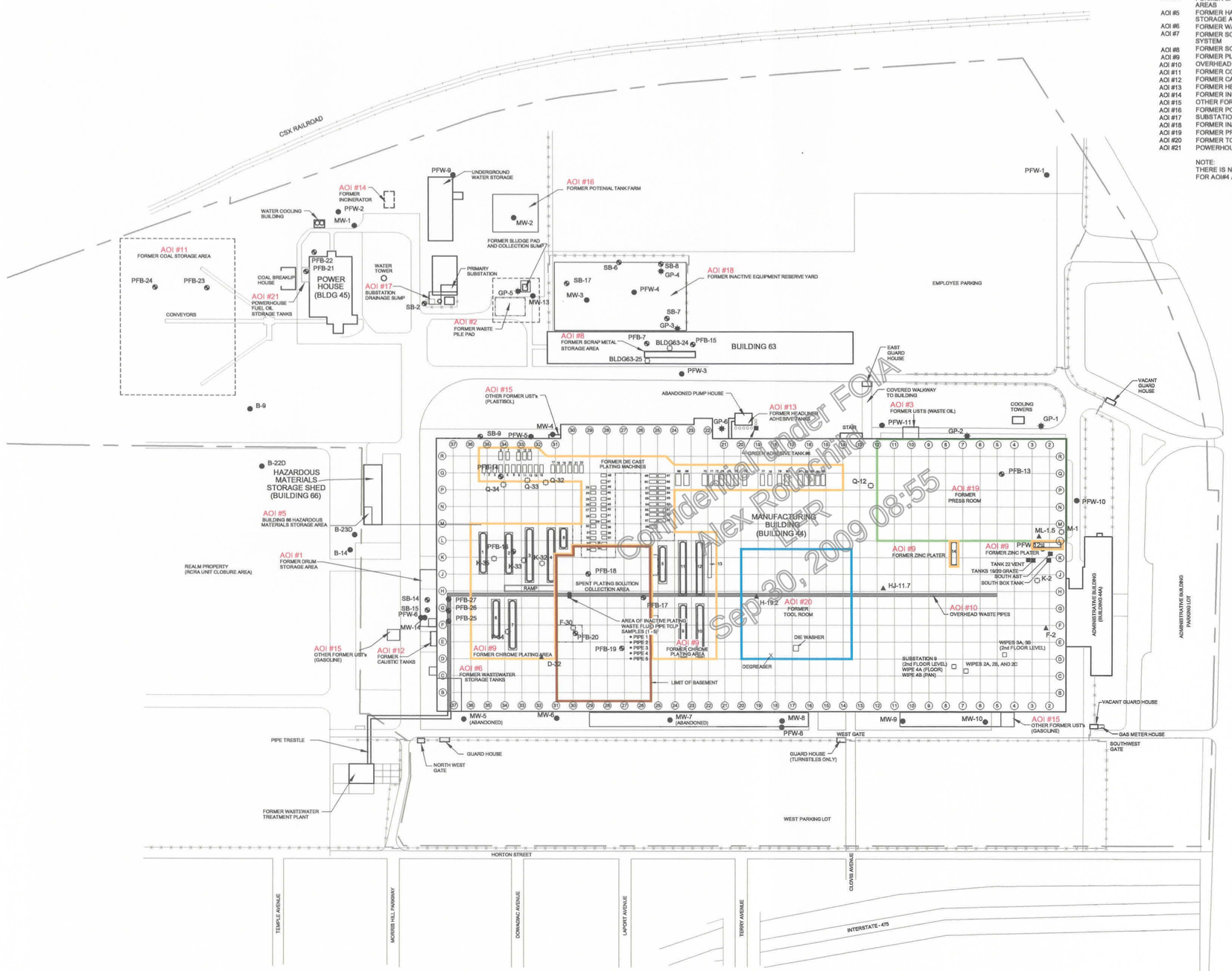
NOTES:

1. INFORMATION SHOWN ON THIS FIGURE TAKEN FROM STUDY 4, (JULY,1997 REPORT)
2. THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE.
3. INFERRED WATER TABLE SURFACE IS BASED ON DATA FROM SELECT EXTERIOR WELLS THAT ARE SCREENED ENTIRELY WITHIN THE UPPER 18 FEET OF THE PERCHED AQUIFER. LOCAL VARIATIONS MAY OCCUR IN AREAS NOT SUBJECT TO METEORIC RECHARGE.
4. ELEVATIONS ARE REFERENCED TO AN ON-SITE ARBITRARY DATUM OF 100.00 FEET.

figure 6.1

EXCEEDANCES OF ACT 451, PART 201 GENERIC INDUSTRIAL STANDARDS FORMER PEREGRINE (US) , INC. COLDWATER ROAD FACILITY

Genesee Township, Michigan



AOI DESCRIPTION

AOI #1	FORMER DRUM STORAGE AREA
AOI #2	FORMER WASTE PILE PAD
AOI #3	FORMER USTs
AOI #4	FORMER SATELLITE ACCUMULATION AREAS
AOI #5	FORMER HAZARDOUS MATERIALS STORAGE AREA
AOI #6	FORMER WASTEWATER STORAGE TANKS
AOI #7	FORMER SCRAP METAL MANAGEMENT SYSTEM
AOI #8	FORMER SCRAP METAL STORAGE AREA
AOI #9	FORMER PLATING AREAS
AOI #10	OVERHEAD WASTE PIPES
AOI #11	FORMER COAL STORAGE AREA
AOI #12	FORMER CAUSTIC TANKS
AOI #13	FORMER HEADLINER ADHESIVE TANKS
AOI #14	FORMER INCINERATOR
AOI #15	OTHER FORMER USTs
AOI #16	FORMER POTENIAL TANK FARM
AOI #17	SUBSTATION DRAINAGE SUMP
AOI #18	FORMER INACTIVE EQUIPMENT RESERVE YARD
AOI #19	FORMER PRESS ROOM
AOI #20	FORMER TOOL ROOM
AOI #21	POWERHOUSE FUEL OIL STORAGE TANKS

NOTE:
THERE IS NO SPECIFIC LOCATION FOR AOI#4 AND AOI #7.

No	Revision	Date	Initial

0 50 150ft

LEGEND

- PROPERTY BOUNDARY
- FENCE LINE
- MW-1 STUDY 2 MONITORING WELL LOCATION AND NUMBER
- PFW-1 STUDY 4 MONITORING WELL LOCATION AND NUMBER
- B-9 GENERAL MOTORS RCRA UNIT CLOSURE MONITORING WELL LOCATION AND NUMBER
- PFB-7 STUDY 4 SOIL BORING LOCATION AND NUMBER
- SB-2 STUDY 2 SOIL BORING LOCATION AND NUMBER
- GR-1 STUDY 1 GEOPROBE LOCATION AND NUMBER
- Q-34 STUDY 2 GEOPROBE LOCATION AND NUMBER
- H-192 WOOD BLOCK SAMPLE LOCATION
- WIPE 3A WIPE SAMPLE LOCATION
- TANK 22 VENT TCLP SAMPLE LOCATION

NOTES

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2. DRAWING No. 1795W BUICK MOTOR DIVISION SHEET No. 1M WAS USED AS A REFERENCE DRAWING.
3. LOCATIONS OF GENERAL MOTORS RCRA UNIT CLOSURE MONITORING WELLS (i.e. B-WELLS) ARE APPROXIMATE

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

FORMER PEREGRINE (US), INC.
COLDWATER ROAD FACILITY

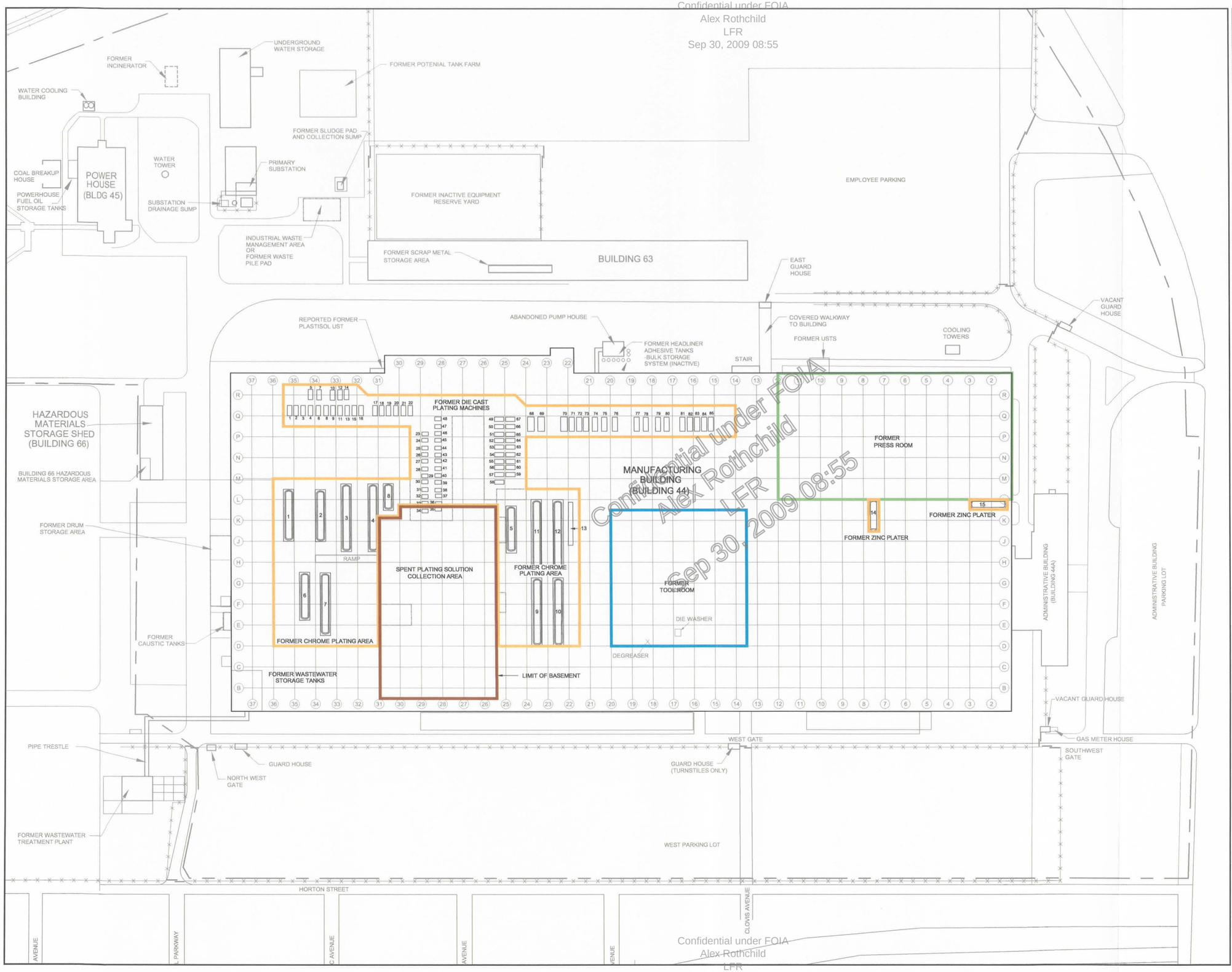
REALM

SITE PLAN

CONESTOGA-ROVERS & ASSOCIATES

Source Reference: RMT, INC.			
Project Manager: G.T.	Reviewed By: C.R.H.	Date: MARCH 2000	
Scale: 1"=150'	Project No.: 12636-40	Report No.: 007	Drawing No.: 1

12636-40(007)GN-WA016 JUN 22/2000



No	Revision	Date	Initial

0 50 150ft

LEGEND

PROPERTY BOUNDARY

FENCE LINE

DESCRIPTION OF FORMER PLATING MACHINES

1

1. HANSON VAN WINKLE PLATING MACHINE #1
2. HANSON VAN WINKLE CHROME PLATER #2
3. STEVENS COPPER NICKEL CHROME PLATING MACHINE #3
4. STEVENS COPPER NICKEL CHROME PLATING MACHINE #4
5. HANSON VAN WINKLE PLATING MACHINE #5
6. #6 NICKEL PLATING MACHINE
7. #7 COPPER PLATING MACHINE
8. UDYLITE JUNIOR #8
9. UDYLITE #9 DUAL NICKEL DULA CHROME PLATER
10. UDYLITE #10 DUAL NICKEL DULA CHROME PLATER
11. HANSON VAN WINKLE PLATER #11
12. HANSON VAN WINKLE PLATER #12
13. CINCINNATI PARTS WASHER (STILL PLATER #13)
14. STEVENS BARREL ZINC PLATER
15. INACTIVE ZINC BARREL PLATING UNIT

NOTES

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3. LOCATIONS OF GENERAL MOTORS RCRA UNIT CLOSURE MONITORING WELLS (i.e. B-WELLS) ARE APPROXIMATE

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY

REALM

HISTORICAL PLATER AND DIE CAST OPERATION AREAS

CRA CONESTOGA-ROVERS & ASSOCIATES

Source Reference: RMT, INC.			
Project Manager: G.T.	Reviewed By: C.R.H.	Date: MARCH 2000	
Scale: 1"=150'	Project No.: 12636-40	Report No.: 007	Drawing No.: 2

12636-40(007)GN-WA015 JUN 22/2000

TABLE 1.1

SUMMARY OF AOIs
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Identification #	Description [1]	Basis
AOI 1	Former Drum Storage Area	U.S.EPA SWMU
AOI 2	Former Waste Pile Pad	U.S.EPA SWMU
AOI 3	Former USTs	U.S.EPA SWMU
AOI 4	Former Satellite Accumulation Areas	U.S.EPA SWMU
AOI 5	Former Hazardous Materials Storage Area	U.S.EPA SWMU
AOI 6	Former Wastewater Storage Tanks	U.S.EPA SWMU
AOI 7	Former Scrap Metal Management System	U.S.EPA SWMU
AOI 8	Former Scrap Metal Storage Area	U.S.EPA SWMU
AOI 9	Former Plating Areas	U.S.EPA SWMU
AOI 10	Overhead Waste Pipes	U.S.EPA SWMU
AOI 11	Former Coal Storage Area	U.S.EPA AOC
AOI 12	Former Caustic Tanks	U.S.EPA AOC
AOI 13	Former Headliner Adhesive Tanks	REALM AOI
AOI 14	Former Incinerator	REALM AOI
AOI 15	Other Former USTs	REALM AOI
AOI 16	Former Tank Farm	REALM AOI
AOI 17	Substation Drainage Sump	REALM AOI
AOI 18	Former Industrial Equipment Reserve Yard	REALM AOI
AOI 19	Former Press Room	REALM AOI
AOI 20	Former Tool Room Air Wash Unit	REALM AOI
AOI 21	Powerhouse Fuel Oil Storage Tanks	REALM AOI

NOTES:

(1) Refer to Figure 1.2/Plan 1 for locations

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Alex Rothchild
LFR
Sep 30, 2009 08:55

TABLE 4.1

**SUMMARY OF WELLS AND BORINGS
FORMER PEREGRINE (US), INC. AND FORMER
DELPHI INTERIOR AND LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN**

Boring/ Well ID	*Date Completed*	*Depth (ft bgl)*	*Static Water Level (ft bgl)*	*Remarks*
GP-1	08/30/96	14	12	Did not produce enough water to sample.
GP-2	08/30/96	16	14	Saturated and very silty (12-14 ft) but did not produce enough water to sample. Back into clay (14-16 ft) and could not sample water either.
GP-3	08/30/96	4	dry	No water was observed during development.
GP-4	08/30/96	4	dry	No water was observed during development.
GP-5	08/30/96	4	dry	No water was observed during development.
GP-6	08/30/96	14	dry	No water was observed during development.
GP-7	08/30/96	12	7	Approximately 5 ft of standing water in hole.
F-30	NA	NA	NA	No water observed in borehole.
F-34	NA	NA	NA	
K-2	NA	NA	NA	
K-32	NA	NA	NA	
K-33	NA	NA	NA	
K-35	NA	NA	NA	
M-1	NA	NA	NA	No water to 10 ft. bgs.
MW-1	NA	NA	NA	
MW-2	NA	NA	13	Water found at 13 ft. bgs.
MW-3	NA	NA	NA	Water in well.
MW-4	NA	NA	NA	Water in well.
MW-5	NA	NA	NA	Well dry to 10 ft. bgs.
MW-6	NA	NA	NA	
MW-7	NA	NA	NA	Well dry to 10 ft. bgs.
MW-8	NA	NA	NA	
MW-9	NA	NA	NA	Well dry to 10 ft. bgs.
MW-10	NA	NA	NA	
MW-11	NA	NA	NA	
MW-12	NA	NA	NA	
MW-13	NA	NA	NA	
MW-14	NA	NA	NA	
SB-2	NA	NA	NA	
SB-6	NA	NA	NA	
SB-7	NA	NA	NA	
SB-8	NA	NA	NA	
SB-9	NA	NA	NA	
SB-14	NA	NA	NA	
SB-15	NA	NA	NA	
SB-17	NA	NA	NA	
Q-12	NA	NA	NA	No water observed in borehole.
Q-32	NA	NA	NA	
Q-33	NA	NA	NA	
Q-34	NA	NA	NA	
BLDG63-24	NA	NA	NA	
BLDG63-25	NA	NA	NA	
PFW-1	03/13/97	86.3	78.78	Water was found during drilling at 78 ft bgl. 300 gal was removed during well development. On 03-31-97 (13:58) water level was at (80.58-1.8=) 78.78 ft. bgl.
PFW-2	03/14/97	14.4	4.24	Water was found during drilling at 7.3 ft bgl. 27 gal removed during well development. On 03-31-97 (09:46) water level was at (6.74-2.5=) 4.24 ft bgl.
PFW-3	03/17/97	15.7	dry	No water was observed during drilling. No follow up observations were made.

TABLE 4.1

SUMMARY OF WELLS AND BORINGS
FORMER PEREGRINE (US), INC. AND FORMER
DELPHI INTERIOR AND LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Boring/ Well ID	*Date Completed*	*Depth (ft bgl)*	*Static Water Level (ft bgl)*	*Remarks*
PFW-4	03/17/97	13.4	5.02	No water was observed during drilling, however 7.1 gal was removed during well development. On 03-31-97 (12:40) water level was at (5.52-0.5=) 5.02 ft bgl.
PFB-5	03/18/97	3		Obstruction.
PFW-5	03/18/97	10.3	3.37	Water was found during drilling at 3.7 ft bgl. 25 gal removed during well development. On 03-31-97 (13:05) water level was at (5.77-2.4=) 3.37 ft bgl.
PFW-6	03/18/97	13.7	dry	No water was observed during drilling, however 3.7 gal was removed during well development. On 03-18-97 (15:00) the well was dry, but on 03-31-97 water level was at (1.05+0.3=) 1.35 ft bgl (?).
PFB-7	03/18/97	24	22.50	Water was found during drilling at 22.5 ft bgl.
PFW-8	03/19/97	14.6	dry	No water was observed during drilling.
PFW-9	03/19/97	9.2	6.33	Water was found during drilling at 5.0 ft bgl, and 1.5 gal removed during well development. On 03-21-97 (15:15) the well was dry, however on 03-31-97 (09:38) the water level was at (8.53-2.2=) 6.33 ft bgl.
PFW-10	03/20/97	16.7	12.07	Water was found during drilling at 13.8 ft bgl and 1.5 gal removed during development. On 03-20-97 (15:45) the well was dry, however on 03-31-97 (14:10) the water level was at (11.67+0.4=) 12.07 ft bgl.
PFW-11	03/20/97	10.6	7.50	Water was found during drilling at 6.9 ft bgl, and 1.6 gal removed during well development. On 03-20-97 (14:00) the water level was at (7.2+0.3=) 7.50 ft bgl, however on 03-31-97 (14:06) the water level was at (1.57+0.3=) 1.87 ft bgl (?).
PFW-12	03/21/97	20.2	15.60	Water was found during drilling at 17.8 ft bgl, and 5.9 gal removed during well development. On 03-24-97 (10:40) the water level was at (15.19+0.4=) 15.59 ft bgl, and on 03-31-97 (14:18) the water level was at (15.21+0.4=) 15.61 ft bgl.
PFB-13	03/24/97	10	dry	No water was observed during development.
PFB-14	03/24/97	10	dry	No water was observed during development.
PFB-15	03/24/97	14	dry	No water was observed during development.
PFB-16	03/25/97	10	dry	No water was observed during development.
PFB-17	03/26/97	10	dry	No water was observed during development.
PFB-18	03/26/97	10	dry	No water was observed during development.
PFB-19	03/26/97	10	dry	No water was observed during development.
PFB-20	03/26/97	10	dry	No water was observed during development.
PFB-21	04/24/97	9.5	7.70	Water was found during drilling at 6.6 ft bgl, and at 7.7 ft bgl at completion of development.
PFB-22	04/24/97	8	dry	No water was observed during development.
PFB-23	04/24/97	8	dry	No water was observed during development.
PFB-24	04/24/97	8	dry	No water was observed during development.
PFB-25	04/24/97	12	dry	No water was observed during development.
PFB-26	04/25/97	12	dry	No water was observed during development.
PFB-27	04/25/97	5		Obstruction

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TABLE 5.1

SUMMARY OF HISTORICAL REMEDIAL ACTIONS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

	Date	*Remedial Action*	*Documentation*	*Section*
1.	Nov. 1990	Two Oil and Lubricant USTs Removed	Michigan UST-DMS Facility and Tank Data Listing April 27, 1999 and Genesee County LUST Site List, October 11, 1999.	7.3.2
2.	Nov. 1990	Two Gasoline USTs Removed	Michigan UST-DMS Facility and Tank Data Listing April 27, 1999 and Genesee County LUST Site List, October 11, 1999.	8.3.2
3.	Sept. 1994	RCRA Closure of Drum Storage Area and Waste Pile Pad	"GM Draft Final Closure Certification Package. Peregrine Coldwater Plant, Former Drum Storage Area and Former Waste Pile Pad." To David Rymph from Robert Pearce, GM, October 26, 1998.	7.1.2 7.2.2
4.	Oct./Nov. 1997	Plastisol UST Removed	"MDEQ Part 213 Closure Letter Peregrine Coldwater Road Plant Former Plastisol Tank UST," to David Rymph from Robert Pearce, October 30, 1998.	8.3.2
5.	1999/2000	Building Decommissioning Assessment/Building Decommissioning	REALM	2.3.1
6.	2000/2001	Building Demoilition	REALM	2.3.1

TABLE 6.1

SUMMARY OF ENVIRONMENTAL INVESTIGATIONS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Date	*Environmental Investigation*	*Documentation*	*Section*
April 1987	U.S. EPA conducted a VSI	"Visual Site Inspection," U.S. EPA, April 7, 1987	7.1.2 7.3.2
Sept. 1996	Study 1	Phase I Environmental Site Assessment Report	7.5.2 7.7.2, 7.9.2 7.10.2 8.1.2, 8.2.2 8.3.2, 8.6.2 8.7.2, 8.10.2
Sept. 1996	Study 2	Phase II Environmental Site Assessment Report	8.1.2, 8.7.2 8.10.2
Oct. 1996	Study 2	Phase I Environmental Site Assessment Report	7.1.2, 7.2.2 7.12.2 8.2.2, 8.5.2 8.7.2
Nov. 1996	Study 2	Phase II Environmental Site Assessment Report	7.1.2, 7.2.2 7.7.2, 7.8.2 7.9.2 8.1.2, 8.2.2. 8.3.2, 8.4.2 8.6.2, 8.7.2 8.8.2, 8.9.2 8.10.2

TABLE 6.1

SUMMARY OF ENVIRONMENTAL INVESTIGATIONS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Date	*Environmental Investigation*	*Documentation*	*Section*
Nov. 1996	Study 3	Memo Report, December 20, 1996	7.1.2, 7.2.2 7.7.2, 7.8.2 7.9.2 8.1.2, 8.2.2 8.3.2, 8.4.2 8.6.2, 8.7.2 8.8.2, 8.9.2 8.10.2
July 1997	Study 4	Post Closing Environmental Assessment Report	7.1.2, 7.3.2 7.7.2, 7.8.2 7.9.2, 7.10.2 7.11.2 8.1.2, 8.2.2 8.3.2, 8.4.2 8.8.2, 8.9.2 8.11.2, 8.12.2
Sept. 1998	PA/VSI	Preliminary Assessment/Visual Site Inspection Report, TechLaw, September 30, 1998	7.1.2, 7.2.2 7.3.2, 7.4.2 7.5.2, 7.6.2 7.7.2, 7.8.2 7.9.2, 7.10.2 7.11.2, 7.12.2

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) Sample Date AOI # MW-14 (3-5) 11/6/96 AOI # 1	PFB-25 (6.3-7.8) 4/24/97 AOI # 1	PFB-25 (8-10) 4/24/97 AOI # 1	PFB-26 (10-12) 4/25/97 AOI # 1	PFB-26 (8-10) 4/25/97 AOI # 1	PFW-6 (3-5) 3/18/97 AOI # 1
General Chemistry												
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-		-	NA	88.87	88.47	91.05	97.77	87.17
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Metals (ug/Kg)												
Arsenic	5800	23000	100000	-	-	910000	NA	NA	NA	NA	NA	6000
Barium	75000	1300000	320000000	-	-	150000000	NA	NA	NA	NA	NA	49000
Cadmium	1200	6000	4500000	-	-	2200000	NA	NA	NA	NA	NA	700
Chromium	18000	30000	22000000	-	-	-	NA	NA	NA	NA	NA	15000
Copper	32000	160000000	170000000	-	-	59000000	NA	NA	NA	NA	NA	12000
Lead	21000	1000	900000	-	-	44000000	NA	NA	NA	NA	NA	16000
Mercury	130	1700	1400000	-	-	-	NA	NA	NA	NA	NA	ND (100)
Selenium	410	4000	23000000	-	-	59000000	NA	NA	NA	NA	NA	ND (500)
Silver	1000	13000	21000000	-	-	2900000	NA	NA	NA	NA	NA	ND (500)
Zinc	47000	5000000	1000000000	-	-	-	NA	NA	NA	NA	NA	40000
PCBs (ug/Kg)												
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	NA	ND (330)
Semi - Volatiles (ug/Kg)												
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							MW-14 (3-5) 11/6/96 AOI # 1	PFB-25 (6.3-7.8) 4/24/97 AOI # 1	PFB-25 (8-10) 4/24/97 AOI # 1	PFB-26 (10-12) 4/25/97 AOI # 1	PFB-26 (8-10) 4/25/97 AOI # 1	PFW-6 (3-5) 3/18/97 AOI # 1
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA	ND (330)
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA	ND (330)
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA	ND (330)
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	NA	ND (330)
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	NA	ND (330)
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	NA	ND (330)
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA	ND (330)
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA	ND (330)
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA	ND (330)
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA	ND (330)
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA	ND (330)
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND	ND (10)	ND (10)	ND (10)	ND (10)	ND (24)
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (29)
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (6.3)
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	1.7	ND (10)	ND (10)	ND (10)	ND (10)	ND (14)
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND	ND (10)	ND (10)	ND (10)	ND (10)	ND (13)

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							MW-14 (3-5) 11/6/96 AOI # 1	PFB-25 (6.3-7.8) 4/24/97 AOI # 1	PFB-25 (8-10) 4/24/97 AOI # 1	PFB-26 (10-12) 4/25/97 AOI # 1	PFB-26 (8-10) 4/25/97 AOI # 1	PFW-6 (3-5) 3/18/97 AOI # 1
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (12)
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (12)
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,3-Dichlorobenzene	-	18000	200000	-	-	-	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (21)
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (19)
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	ND (100)	ND (100)	ND (100)	ND (100)	ND (25)
2-Hexanone	-	58000	2500000	1800000	-	1200000000	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (17)
Bromoform	-	2000	870000	770000	3100000	3600000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (18)
Bromomethane	-	580	1000000	1600	13000	150000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (25)
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (12)
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (30)
Chloroethane	-	18000	970000	970000	36000000	290000000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (25)
Chloroform	-	2000	1500000	38000	150000	1600000000	ND	ND (10)	ND (10)	ND (10)	ND (10)	ND (7.8)
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (25)
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	110
cis-1,3-Dichloropropene	-	-	-	-	-	-	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (9.1)
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (25)
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (25)
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND	ND (10)	ND (10)	ND (10)	ND (10)	150
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	11.4	ND (10)	ND (10)	ND (10)	ND (10)	ND (19)
o-Xylene	-	-	-	-	-	-	NA	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Styrene	-	2700	520000	520000	3200000	6600000000	NA	NA	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	1.3	ND (10)	ND (10)	ND (10)	ND (10)	ND (17)
Toluene	-	16000	250000	250000	3300000	12000000000	1	ND (10)	ND (10)	ND (10)	ND (10)	ND (9)
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	4.7	ND (10)	ND (10)	ND (10)	ND (10)	5.2
trans-1,3-Dichloropropene	-	-	-	-	-	-	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (6.3)
Trichloroethene	-	100	500000	37000	260000	2300000000	2210	ND (10)	ND (10)	ND (10)	ND (10)	1600
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (13)
Vinyl chloride	-	40	11000	150	1500	47000000	NA	ND (10)	ND (10)	ND (10)	ND (10)	ND (25)
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND	NA	NA	NA	NA	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

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Confidential under FOIA
Alex Rothchild
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Sep 30, 2009 08:55

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #							
							SB-14 (1-3) 11/6/96 AOI # 1	SB-15 (1-3) 11/6/96 AOI # 1	MW-13 (4-6) 11/6/96 AOI # 2	PFW-11 (0.5-1.5) 3/20/97 AOI # 3	M-1 (6-8) 11/6/96 AOI # 7	M-1 (8-10) 11/6/96 AOI # 7	M-1 (8-10) 11/6/96 AOI # 7	P-28 11/6/96 AOI # 7
General Chemistry														
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	NA	NA	NA	86.44	NA	NA	NA	NA
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	505000
Metals (ug/Kg)														
Arsenic	5800	23000	100000	-		910000	NA	NA	NA	10000	6810	6800	4300	NA
Barium	75000	1300000	320000000		-	150000000	NA	NA	NA	74000	72600	100000	43400	NA
Cadmium	1200	6000	4500000		-	2200000	NA	NA	NA	810	ND	170	ND	NA
Chromium	18000	30000	22000000		-	-	NA	NA	NA	20000	13700	9300	12800	NA
Copper	32000	160000000	170000000		-	59000000	NA	NA	NA	16000	ND	21000	ND	NA
Lead	21000	1000	900000	-	-	44000000	NA	NA	NA	18000	8070	11000	8980	NA
Mercury	130	1700	1400000	-	-	-	NA	NA	NA	ND (100)	ND	ND (100)	ND	NA
Selenium	410	4000	23000000	-	-	59000000	NA	NA	NA	ND (500)	ND	540	ND	NA
Silver	1000	13000	21000000	-	-	2900000	NA	NA	NA	900	ND	ND (500)	ND	NA
Zinc	47000	5000000	1000000000	-			NA	NA	NA	52000	ND	41000	ND	NA
PCBs (ug/Kg)														
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	ND
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	ND
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	NA	NA	NA	ND
Semi - Volatiles (ug/Kg)														
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #							
							SB-14 (1-3) 11/6/96 AOI # 1	SB-15 (1-3) 11/6/96 AOI # 1	MW-13 (4-6) 11/6/96 AOI # 2	PFW-11 (0.5-1.5) 3/20/97 AOI # 3	M-1 (6-8) 11/6/96 AOI # 7	M-1 (8-10) 11/6/96 AOI # 7	M-1 (8-10) 11/6/96 AOI # 7	P-28 11/6/96 AOI # 7
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA	NA	NA	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA	NA	NA	NA
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA	ND
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	NA	NA	NA	ND
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA	ND
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	NA	NA	NA	ND
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA	NA	NA	NA
Volatiles (ug/Kg)														
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND	ND	10.4	ND (10)	ND	ND (10)	ND	NA
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND	ND	33.8	ND (10)	ND	ND (10)	ND	NA
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND	ND	ND	ND (10)	ND	ND (10)	ND	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #							
							SB-14 (1-3) 11/6/96 AOI # 1	SB-15 (1-3) 11/6/96 AOI # 1	MW-13 (4-6) 11/6/96 AOI # 2	PFW-11 (0.5-1.5) 3/20/97 AOI # 3	M-1 (6-8) 11/6/96 AOI # 7	M-1 (8-10) 11/6/96 AOI # 7	M-1 (8-10) 11/6/96 AOI # 7	P-28 11/6/96 AOI # 7
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
1,2-Dichloropropane	-	100.	360000	7400	30000	120000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	ND (100)	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	NA	NA	ND (100)	NA	NA	NA	NA
2-Hexanone	-	58000	2500000	1800000	-	1200000000	NA	NA	NA	NA	NA	ND (100)	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	ND (100)	NA	NA
Acetone	-	42000	74000000	11000000	160000000	170000000000	NA	NA	NA	NA	NA	ND (100)	NA	NA
Benzene	-	100	400000	8400	45000	470000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Bromomethane	-	580	1000000	1600	13000	150000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	ND (100)	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	ND	ND	ND	ND (10)	ND	ND (10)	ND	NA
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	NA	NA	ND (10)	NA	NA	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND	ND	ND	ND (10)	1.3	ND (10)	ND	NA
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	NA	NA	ND (30)	NA	NA	NA	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND	ND	66.7	ND (10)	19.3	ND (10)	ND	NA
o-Xylene	-	-	-	-	-	-	NA	NA	NA	ND (30)	NA	NA	NA	NA
Styrene	-	2700	520000	520000	3200000	6600000000	NA	NA	NA	NA	NA	ND (10)	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND	1.6	ND	ND (10)	ND	ND (10)	ND	NA
Toluene	-	16000	250000	250000	3300000	12000000000	2.7	1.1	ND	ND (10)	ND	ND (10)	ND	NA
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND	ND	ND	ND (10)	ND	ND (10)	ND	NA
trans-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	ND	86.3	ND	ND (10)	ND	ND (10)	ND	NA
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	NA	NA	ND (10)	NA	NA	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	NA	NA	NA	ND (10)	NA	ND (10)	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND	1	ND	NA	14	ND (30)	ND	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [1]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							PFB-13 (2.9-3.5) 3/24/97 AOI # 7	PFB-14 (4.7-5.4) 3/25/97 AOI # 7	PFW-10 (2.1-2.7) 3/20/97 AOI # 7	Q-32 11/6/96 AOI # 7	Q-33 11/6/96 AOI # 7	Q-34 11/6/96 AOI # 7	BLD 63-24 11/6/96 AOI # 8
General Chemistry													
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-		-	81.5	87.46	84.84	NA	NA	NA	NA
Diesel Fuel (mg/Kg)	-	-	-	-		-	NA	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	NA	NA	576000	480000	NA	471000
Metals (ug/Kg)													
Arsenic	5800	23000	100000	-	-	910000	10000	10000	4400	NA	NA	NA	5150
Barium	75000	1300000	320000000	-	-	150000000	110000	55000	37000	NA	NA	NA	47300
Cadmium	1200	6000	4500000	-	-	2200000	670	860	ND (50)	NA	NA	NA	ND
Chromium	18000	30000	22000000	-	-	-	24000	17000	11000	NA	NA	NA	10800
Copper	32000	160000000	170000000	-	-	59000000	14000	17000	6300	NA	NA	NA	ND
Lead	21000	1000	900000	-	-	44000000	17000	18000	11000	NA	NA	NA	5480
Mercury	130	1700	1400000	-	-	-	ND (100)	ND (100)	ND (100)	NA	NA	NA	ND
Selenium	410	4000	23000000	-		59000000	ND (500)	ND (500)	ND (500)	NA	NA	NA	ND
Silver	1000	13000	21000000	-	-	2900000	ND (500)	1000	ND (500)	NA	NA	NA	ND
Zinc	47000	5000000	1000000000	-	-	-	58000	52000	31000	NA	NA	NA	ND
PCBs (ug/Kg)													
Aroclor-1016	-	-	9900	-		-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	ND	ND	279	ND
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	ND	ND	ND	ND
Total PCBs	-	-	9900	16000000	820000	6500000	ND (330)	ND (330)	ND (330)	ND	ND	279	ND
Semi - Volatiles (ug/Kg)													
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							PFB-13 (2.9-3.5) 3/24/97 AOI # 7	PFB-14 (4.7-5.4) 3/25/97 AOI # 7	PFW-10 (2.1-2.7) 3/20/97 AOI # 7	Q-32 11/6/96 AOI # 7	Q-33 11/6/96 AOI # 7	Q-34 11/6/96 AOI # 7	BLD 63-24 11/6/96 AOI # 8
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	ND (330)	ND (330)	ND (330)	NA	NA	NA	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	ND (330)	ND (330)	ND (330)	NA	NA	NA	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	ND (330)	ND (330)	ND (330)	NA	NA	NA	NA
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	ND (330)	400	ND (330)	ND	ND	32.6	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	ND (330)	ND (330)	ND (330)	ND	ND	26.1	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	ND (330)	450	ND (330)	ND	ND	40.6	NA
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	ND (330)	ND (330)	ND (330)	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	ND (330)	ND (330)	ND (330)	ND	ND	13.1	NA
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	ND (330)	460	ND (330)	NA	NA	NA	NA
Dibenzo(a,h)anthracene	-		21000	-	-	-	ND (330)	ND (330)	ND (330)	NA	NA	NA	NA
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	ND (330)	1300	ND (330)	NA	NA	NA	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	ND (330)	ND (330)	ND (330)	NA	NA	NA	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	ND (330)	ND (330)	ND (330)	NA	NA	NA	NA
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	ND (330)	ND (330)	ND (330)	NA	NA	NA	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	ND (330)	1300	ND (330)	NA	NA	NA	NA
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	ND (330)	1400	ND (330)	NA	NA	NA	NA
Volatiles (ug/Kg)													
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	ND
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	ND
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	ND

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							PFB-13 (2.9-3.5) 3/24/97 AOI # 7	PFB-14 (4.7-5.4) 3/25/97 AOI # 7	PFW-10 (2.1-2.7) 3/20/97 AOI # 7	Q-32 11/6/96 AOI # 7	Q-33 11/6/96 AOI # 7	Q-34 11/6/96 AOI # 7	BLD 63-24 11/6/96 AOI # 8
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	ND (100)	ND (100)	ND (100)	NA	NA	NA	NA
2-Hexanone	-	58000	2500000	1800000	-	1200000000	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	NA	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Bromomethane	-	580	1000000	1600	13000	150000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	ND
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	ND
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	ND (30)	ND (30)	ND (30)	NA	NA	NA	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	ND
o-Xylene	-	-	-	-	-	-	ND (30)	ND (30)	ND (30)	NA	NA	NA	NA
Styrene	-	2700	520000	520000	3200000	6600000000	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	ND
Toluene	-	16000	250000	250000	3300000	12000000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	ND
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	ND
trans-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	ND
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	ND (10)	ND (10)	ND (10)	NA	NA	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	NA	NA	NA	NA	NA	ND

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

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Sep 30, 2009 08:55

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							BLD 63-25 11/6/96 AOI # 8	PFB-15 (11-11.5) 3/24/97 AOI # 8	PFB-7 (8-10) 3/18/97 AOI # 8	PFW-3 (0.8-1.5) 3/17/97 AOI # 8	F-30 (0-2) 11/6/96 AOI # 9	F-34 11/14/96 AOI # 9	F-34 11/14/96 AOI # 9
General Chemistry													
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	31800	NA	ND (200)
Total Solids (%)	-	-	-	-	-	-	NA	87.24	87.7	88.15	NA	88.8	NA
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	945000	NA	NA	NA	ND	NA	NA
Metals (ug/Kg)													
Arsenic	5800	23000	100000	-	-	910000	5280	9000	32000	10000	3250	4200	NA
Barium	75000	1300000	320000000	-	-	150000000	35600	75000	72000	61000	9420	36000	NA
Cadmium	1200	6000	4500000	-	-	2200000	ND	820	620	640	ND	110	NA
Chromium	18000	30000	22000000	-	-	-	9300	20000	14000	17000	5470	11000	NA
Copper	32000	160000000	170000000	-	-	59000000	ND	15000	11000	18000	ND	13000	NA
Lead	21000	1000	900000	-	-	44000000	4500	18000	15000	13000	ND	7200	NA
Mercury	130	1700	1400000	-	-	-	ND	ND (100)	ND (100)	ND (100)	ND	NA	ND (100)
Selenium	410	4000	23000000	-	-	59000000	ND	ND (500)	ND (500)	ND (500)	ND	NA	520
Silver	1000	13000	21000000	-	-	2900000	ND	2800	500	ND (500)	ND	NA	ND (500)
Zinc	47000	5000000	1000000000	-	-	-	ND	43000	37000	150000	ND	40000	NA
PCBs (ug/Kg)													
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	ND	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	ND	NA	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	ND	ND (330)	ND (330)	NA	NA	NA	NA
Semi - Volatiles (ug/Kg)													
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							BLD 63-25 11/6/96 AOI # 8	PFB-15 (11-11.5) 3/24/97 AOI # 8	PFB-7 (8-10) 3/18/97 AOI # 8	PFW-3 (0.8-1.5) 3/17/97 AOI # 8	F-30 (0-2) 11/6/96 AOI # 9	F-34 11/14/96 AOI # 9	F-34 11/14/96 AOI # 9
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	ND (330)	ND (330)	NA	NA	NA	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	ND (330)	ND (330)	NA	NA	NA	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	ND (330)	ND (330)	NA	NA	NA	NA
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	ND (330)	ND (330)	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	ND (330)	ND (330)	NA	NA	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	ND (330)	ND (330)	NA	NA	NA	NA
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	ND (330)	ND (330)	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	ND (330)	ND (330)	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	ND (330)	ND (330)	NA	NA	NA	NA
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	ND (330)	ND (330)	NA	NA	NA	NA
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	ND (330)	ND (330)	NA	NA	NA	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	ND (330)	ND (330)	NA	NA	NA	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	ND (330)	ND (330)	NA	NA	NA	NA
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	ND (330)	ND (330)	NA	NA	NA	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	ND (330)	ND (330)	NA	NA	NA	NA
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	ND (330)	ND (330)	NA	NA	NA	NA
Volatiles (ug/Kg)													
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND	ND (10)	ND (10)	ND (10)	NA	NA	NA
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND	ND (10)	ND (10)	ND (10)	NA	NA	NA
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND	ND (10)	ND (10)	ND (10)	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							BLD 63-25 11/6/96 AOI # 8	PFB-15 (11-11.5) 3/24/97 AOI # 8	PFB-7 (8-10) 3/18/97 AOI # 8	PFW-3 (0.8-1.5) 3/17/97 AOI # 8	F-30 (0-2) 11/6/96 AOI # 9	F-34 11/14/96 AOI # 9	F-34 11/14/96 AOI # 9
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	ND (100)	ND (100)	ND (100)	NA	NA	NA
2-Hexanone	-	58000	2500000	1800000		1200000000	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	NA	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Bromoform	-	2000	870000	770000	3100000	36000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Bromomethane	-	580	1000000	1600	13000	150000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	ND	ND (10)	ND (10)	ND (10)	NA	NA	NA
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND	ND (10)	ND (10)	ND (10)	NA	NA	NA
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	ND (30)	ND (30)	ND (30)	NA	NA	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND	ND (10)	ND (10)	ND (10)	NA	NA	NA
o-Xylene	-	-	-	-	-	-	NA	ND (30)	ND (30)	ND (30)	NA	NA	NA
Styrene	-	2700	520000	520000	3200000	66000000000	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND	ND (10)	ND (10)	ND (10)	NA	NA	NA
Toluene	-	16000	250000	250000	3300000	12000000000	ND	ND (10)	ND (10)	ND (10)	NA	NA	NA
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND	ND (10)	ND (10)	ND (10)	NA	NA	NA
trans-1,3-Dichloropropene	-	-	-	-	-	-	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	ND	ND (10)	ND (10)	ND (10)	NA	NA	NA
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	NA	ND (10)	ND (10)	ND (10)	NA	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND	NA	NA	NA	NA	NA	NA

Notes:

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							F-34 11/14/96 AOI # 9	K-2 11/6/96 AOI # 9	K-32 11/6/96 AOI # 9	K-33 11/6/96 AOI # 9	K-35 11/6/96 AOI # 9	PFB-16 (3.3-3.9) 3/25/97 AOI # 9	PFB-17 (5.2-6.0) 3/25/97 AOI # 9
General Chemistry													
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	ND	ND	ND	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	NA	NA	NA	NA	NA	90.11	95.06
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Metals (ug/Kg)													
Arsenic	5800	23000	100000	-	-	910000	3360	5190	2950	3060	10700	6000	6000
Barium	75000	1300000	320000000	-	-	150000000	33100	57700	10400	10300	325000	44000	36000
Cadmium	1200	6000	4500000	-	-	2200000	ND	ND	ND	ND	6050	810	860
Chromium	18000	30000	22000000	-	-	-	11200	12500	42800	9720	1160000	15000	10000
Copper	32000	160000000	170000000	-	-	59000000	ND	ND	ND	ND	ND	17000	11000
Lead	21000	1000	900000	-	-	44000000	4990	7000	5030	ND	1280000	16000	17000
Mercury	130	1700	1400000	-	-	-	ND	ND	ND	ND	90	ND (100)	ND (100)
Selenium	410	4000	23000000	-	-	59000000	ND	ND	ND	ND	649	ND (500)	ND (500)
Silver	1000	13000	21000000	-	-	2900000	ND	ND	ND	ND	2970	600	900
Zinc	47000	5000000	1000000000	-	-	-	ND	ND	ND	ND	ND	41000	49000
PCBs (ug/Kg)													
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Semi - Volatiles (ug/Kg)													
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # F-34 11/14/96 AOI # 9	K-2 11/6/96 AOI # 9	K-32 11/6/96 AOI # 9	K-33 11/6/96 AOI # 9	K-35 11/6/96 AOI # 9	PFB-16 (3.3-3.9) 3/25/97 AOI # 9	PFB-17 (5.2-6.0) 3/25/97 AOI # 9
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	ND (330)	ND (330)
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	ND (330)	ND (330)
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	NA	ND (330)	ND (330)
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	NA	ND (330)	ND (330)
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	NA	NA	NA	NA	ND (330)	ND (330)
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	ND (330)	ND (330)
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA	ND (330)	ND (330)
Volatiles (ug/Kg)													
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
1,1-Dichloroethene	-	140	580000	330	3700	78000000	NA	NA	NA	NA	NA	ND (10)	ND (10)

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI # F-34 11/14/96 AOI # 9	K-2 11/6/96 AOI # 9	K-32 11/6/96 AOI # 9	K-33 11/6/96 AOI # 9	K-35 11/6/96 AOI # 9	PFB-16 (3.3-3.9) 3/25/97 AOI # 9	PFB-17 (5.2-6.0) 3/25/97 AOI # 9
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
1,3-Dichlorobenzene	-	18000	200000	-	-	-	NA	NA	NA	NA	NA	ND (10)	ND (10)
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	ND (100)	ND (100)
2-Hexanone	-	58000	2500000	1800000	-	1200000000	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	NA	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Bromoform	-	2000	870000	770000	3100000	3600000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Bromomethane	-	580	1000000	1600	13000	150000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Chloroethane	-	18000	970000	970000	36000000	290000000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Chloroform	-	2000	1500000	38000	150000	1600000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
cis-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	NA	NA	NA	ND (10)	ND (10)
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA	ND (30)	ND (30)
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
o-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA	ND (30)	ND (30)
Styrene	-	2700	520000	520000	3200000	6600000000	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Toluene	-	16000	250000	250000	3300000	12000000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
trans-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	NA	NA	NA	ND (10)	ND (10)
Trichloroethene	-	100	500000	37000	260000	2300000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Vinyl chloride	-	40	11000	150	1500	47000000	NA	NA	NA	NA	NA	ND (10)	ND (10)
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	NA	NA	NA	NA	NA	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) Sample Date AOI # PFB-18 (1.4-2.0) 3/26/97 AOI # 9	PFB-19 (1.0-1.6) 3/26/97 AOI # 9	PFB-20 (1.6-2.3) 3/26/97 AOI # 9	PFW-12 (0.8-1.3) 3/21/97 AOI # 9	PFW-12 (6.2-6.7) 3/21/97 AOI # 9	PFB-23 (5.8-7) 4/24/97 AOI # 11
General Chemistry												
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	90.1	88.77	90.21	86.83	88.64	87.13
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Metals (ug/Kg)												
Arsenic	5800	23000	100000	-	-	910000	8000	7000	9000	9000	12000	12000
Barium	75000	1300000	320000000	-	-	150000000	54000	74000	88000	81000	100000	85000
Cadmium	1200	6000	4500000	-	-	2200000	830	860	900	670	820	1100
Chromium	18000	30000	22000000	-	-	-	18000	20000	18000	25000	20000	23000
Copper	32000	160000000	170000000	-	-	59000000	14000	15000	17000	16000	16000	16000
Lead	21000	1000	900000	-	-	44000000	17000	19000	17000	18000	19000	16000
Mercury	130	1700	1400000	-	-	-	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Selenium	410	4000	23000000	-	-	59000000	ND (500)	ND (500)	ND (500)	ND (500)	ND (500)	ND (500)
Silver	1000	13000	21000000	-	-	2900000	800	900	800	800	1000	ND (500)
Zinc	47000	5000000	1000000000	-	-	-	42000	43000	56000	45000	48000	58000
PCBs (ug/Kg)												
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	NA
Semi - Volatiles (ug/Kg)												
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # PFB-18 (1.4-2.0) 3/26/97 AOI # 9	PFB-19 (1.0-1.6) 3/26/97 AOI # 9	PFB-20 (1.6-2.3) 3/26/97 AOI # 9	PFW-12 (0.8-1.3) 3/21/97 AOI # 9	PFW-12 (6.2-6.7) 3/21/97 AOI # 9	PFB-23 (5.8-7) 4/24/97 AOI # 11
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Benzo(a)pyrene	-	-	21000	-	-	1900000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Benzo(b)fluoranthene	-	-	210000	-	-	-	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Benzo(k)fluoranthene	-	-	2100000	-	-	-	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Dibenzo(a,h)anthracene	-		21000	-	-	-	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND (10)	ND (10)	ND (10)	420	ND (10)	NA
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND (10)	ND (10)	ND (10)	97	ND (10)	NA
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND (10)	ND (10)	ND (10)	11	ND (10)	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							PFB-18 (1.4-2.0) 3/26/97 AOI # 9	PFB-19 (1.0-1.6) 3/26/97 AOI # 9	PFB-20 (1.6-2.3) 3/26/97 AOI # 9	PFW-12 (0.8-1.3) 3/21/97 AOI # 9	PFW-12 (6.2-6.7) 3/21/97 AOI # 9	PFB-23 (5.8-7) 4/24/97 AOI # 11
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	NA
2-Hexanone	-	58000	2500000	1800000	-	1200000000	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Bromomethane	-	580	1000000	1600	13000	150000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
o-Xylene	-	-	-	-	-	-	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	NA
Styrene	-	2700	520000	520000	3200000	6600000000	NA	NA	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Toluene	-	16000	250000	250000	3300000	12000000000	ND (10)	ND (10)	ND (10)	17	ND (10)	NA
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
trans-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Vinyl chloride	-	40	11000	150	1500	47000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	NA	NA	NA	NA	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							PFB-24 (1.2-2.5) 4/24/97 AOI # 11	GP-6 (0-4) 8/30/86 AOI # 13	GP-6 (0-4) 8/30/86 AOI # 13	MW-1 (2-4) 11/6/96 AOI # 14	PFW-2 (0-1.5) 3/14/97 AOI # 14	MW-4 (6-8) 11/6/96 AOI # 15
General Chemistry												
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	89.88	NA	NA	NA	89.88	NA
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	NA	NA	336000	NA	NA
Metals (ug/Kg)												
Arsenic	5800	23000	100000	-	-	910000	11000	NA	NA	NA	18000	NA
Barium	75000	1300000	320000000	-	-	150000000	64000	NA	NA	NA	54000	NA
Cadmium	1200	6000	4500000	-	-	2200000	1900	NA	NA	NA	570	NA
Chromium	18000	30000	22000000	-	-	-	19000	NA	NA	NA	15000	NA
Copper	32000	160000000	170000000	-	-	59000000	14000	NA	NA	NA	13000	NA
Lead	21000	1000	900000	-	-	44000000	19000	NA	NA	NA	14000	NA
Mercury	130	1700	1400000	-	-	-	ND (100)	NA	NA	NA	ND (100)	NA
Selenium	410	4000	23000000	-	-	59000000	ND (500)	NA	NA	NA	ND (500)	NA
Silver	1000	13000	21000000	-	-	2900000	1200	NA	NA	NA	ND (500)	NA
Zinc	47000	5000000	1000000000	-	-	-	45000	NA	NA	NA	42000	NA
PCBs (ug/Kg)												
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	ND (330)	NA
Semi - Volatiles (ug/Kg)												
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	ND (330)	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	ND (330)	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	ND (330)	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	ND (330)	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	ND (1700)	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	ND (330)	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	ND (330)	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	ND (330)	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	ND (330)	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	ND (1700)	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	ND (330)	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	ND (2000)	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	ND (1700)	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	ND (1700)	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	ND (330)	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	ND (330)	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	ND (1300)	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	ND (330)	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	ND (1700)	NA	NA	NA	NA

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [1]	Industrial Drinking Water Protection Criteria [1]	Industrial Direct Contact Criteria [1]	Soil Volatilization to Indoor Air Inhalation Criteria [1]	Volatile Soil Inhalation Criteria [1]	Particulate Soil Inhalation Criteria [1]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							PFB-24 (1.2-2.5) 4/24/97 AOI # 11	GP-6 (0-4) 8/30/86 AOI # 13	GP-6 (0-4) 8/30/86 AOI # 13	MW-1 (2-4) 11/6/96 AOI # 14	PFW-2 (0-1.5) 3/14/97 AOI # 14	MW-4 (6-8) 11/6/96 AOI # 15
4-Nitrophenol	-	-	-	-	-	-	NA	ND (1700)	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	ND (330)	ND (330)	NA	NA	ND (330)	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	ND (330)	ND (330)	NA	NA	ND (330)	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	ND (100)	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	ND (1700)	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	ND (330)	ND (330)	NA	NA	ND (330)	NA
Benzidine	-	1000	1000	-	-	59,000	NA	ND (5000)	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	2200	ND (330)	NA	NA	ND (330)	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	ND (330)	ND (330)	NA	NA	ND (330)	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	ND (330)	ND (330)	NA	NA	ND (330)	NA
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	ND (330)	ND (330)	NA	NA	ND (330)	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	ND (330)	ND (330)	NA	NA	ND (330)	NA
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	ND (330)	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	ND (330)	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	ND (330)	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	ND (330)	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	ND (330)	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	4800	ND (330)	NA	NA	ND (330)	NA
Dibenzo(a,h)anthracene	-		21000	-	-	-	ND (330)	ND (330)	NA	NA	ND (330)	NA
Dibenzofuran	-	-	-	-	-		NA	ND (330)	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	ND (330)	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	ND (330)	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	ND (330)	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	ND (330)	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	9600	ND (330)	NA	NA	ND (330)	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	2600	ND (330)	NA	NA	ND (330)	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	ND (330)	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	ND (330)	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	ND (330)	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	ND (330)	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	ND (330)	ND (330)	NA	NA	ND (330)	NA
Isophorone	-	74000	2400000	-	-	8200000000	NA	ND (330)	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	1900	ND (330)	NA	NA	ND (330)	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	ND (330)	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	ND (330)	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	ND (330)	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	ND (330)	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	ND (3400)	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	ND (330)	ND (330)	NA	NA	ND (330)	NA
Phenol	-	260000	12000000	-	-	18000000000	NA	ND (330)	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	27000	ND (330)	NA	NA	ND (330)	NA
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	NA	ND (10)	NA	ND	ND (10)	ND
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	ND (10)	NA	NA	ND (10)	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	ND (10)	NA	NA	ND (10)	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	NA	ND (10)	NA	ND	ND (10)	ND
1,1-Dichloroethene	-	140	580000	330	3700	78000000	NA	ND (10)	NA	ND	ND (10)	ND

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	PFB-24 (1.2-2.5) 4/24/97 AOI # 11	GP-6 (0-4) 8/30/86 AOI # 13	Sample Location (depth ft. bgs) / Sample Date / AOI # GP-6 (0-4) 8/30/86 AOI # 13	MW-1 (2-4) 11/6/96 AOI # 14	PFW-2 (0-1.5) 3/14/97 AOI # 14	MW-4 (6-8) 11/6/96 AOI # 15
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	ND (10)	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	ND (10)	NA	NA	ND (10)	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	ND (10)	NA	NA	ND (10)	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	NA	ND (10)	NA	NA	ND (10)	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	NA	ND (10)	NA	NA	ND (10)	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	ND (10)	NA	NA	ND (10)	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	ND (100)	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	NA	NA	NA	ND (100)	NA
2-Hexanone	-	58000	2500000	1800000	-	1200000000	NA	ND (100)	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	ND (100)	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	ND (100)	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	NA	ND (10)	NA	NA	ND (10)	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	ND (10)	NA	NA	ND (10)	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	NA	ND (10)	NA	NA	ND (10)	NA
Bromomethane	-	580	1000000	1600	13000	150000000	NA	ND (10)	NA	NA	ND (10)	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	ND (100)	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	ND (10)	NA	NA	ND (10)	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	ND (10)	NA	NA	ND (10)	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	NA	ND (10)	NA	NA	ND (10)	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	NA	ND (10)	NA	ND	ND (10)	ND
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	ND (10)	NA	NA	ND (10)	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	ND (10)	NA	NA	ND (10)	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	NA	ND (10)	NA	NA	ND (10)	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	ND (10)	NA	NA	ND (10)	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	NA	NA	NA	ND (10)	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	NA	ND (10)	NA	1.3	ND (10)	ND
Ethylene oxide	-	-	-	-	-	-	NA	ND (1000)	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	ND (30)	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	ND (100)	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	NA	37	NA	14.3	ND (10)	ND
o-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	ND (30)	NA
Styrene	-	2700	520000	520000	3200000	6600000000	NA	ND (10)	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	NA	ND (10)	NA	ND	ND (10)	1.6
Toluene	-	16000	250000	250000	3300000	12000000000	NA	ND (10)	NA	4.6	ND (10)	ND
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	NA	NA	ND (10)	ND	ND (10)	ND
trans-1,3-Dichloropropene	-	-	-	-	-	-	NA	ND (10)	NA	NA	ND (10)	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	NA	ND (10)	NA	ND	ND (10)	ND
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	NA	NA	NA	ND (10)	NA
Vinyl chloride	-	40	11000	150	1500	47000000	NA	ND (10)	NA	NA	ND (10)	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	ND (30)	NA	8.1	NA	ND

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							PFW-5 (0-1.7) 3/18/97 AOI # 15	SB-9 (3-5) 11/6/96 AOI # 15	MW-2 (8-10) 11/6/96 AOI # 16	PFW-9 (0-2) 3/19/97 AOI # 16	SB-2 (0-2) 11/7/96 AOI # 17	SB-2 (0-2) 11/7/96 AOI # 17	SB-2 (0-2) 11/7/96 AOI # 17
General Chemistry													
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	88.91	NA	NA	86.04	NA	NA	NA
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Metals (ug/Kg)													
Arsenic	5800	23000	100000	-	-	910000	5000	NA	NA	9000	NA	NA	NA
Barium	75000	1300000	320000000	-	-	150000000	22000	NA	NA	57000	NA	NA	NA
Cadmium	1200	6000	4500000	-	-	2200000	490	NA	NA	590	NA	NA	NA
Chromium	18000	30000	22000000	-	-	-	9100	NA	NA	16000	NA	NA	NA
Copper	32000	160000000	170000000	-	-	59000000	8100	NA	NA	13000	NA	NA	NA
Lead	21000	1000	900000	-	-	44000000	11000	NA	NA	16000	NA	NA	NA
Mercury	130	1700	1400000	-	-	-	ND (100)	NA	NA	ND (100)	NA	NA	NA
Selenium	410	4000	23000000	-	-	59000000	ND (500)	NA	NA	ND (500)	NA	NA	NA
Silver	1000	13000	21000000	-	-	2900000	ND (500)	NA	NA	ND (500)	NA	NA	NA
Zinc	47000	5000000	1000000000	-	-	-	30000	NA	NA	80000	NA	NA	NA
PCBs (ug/Kg)													
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	ND (330)	ND
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	ND (330)	150
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	NA	ND (330)	ND
Semi - Volatiles (ug/Kg)													
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	*Statewide Default Background Levels* [2]	*Industrial Drinking Water Protection Criteria* [2]	*Industrial Direct Contact Criteria* [2]	*Soil Volatilization to Indoor Air Inhalation Criteria* [2]	*Volatile Soil Inhalation Criteria* [2]	*Particulate Soil Inhalation Criteria* [2]	*Sample Location (depth ft. bgs)* / *Sample Date* / *AOI #* PFW-5 (0-1.7) 3/18/97 AOI # 15	SB-9 (3-5) 11/6/96 AOI # 15	MW-2 (8-10) 11/6/96 AOI # 16	PFW-9 (0-2) 3/19/97 AOI # 16	SB-2 (0-2) 11/7/96 AOI # 17	SB-2 (0-2) 11/7/96 AOI # 17	SB-2 (0-2) 11/7/96 AOI # 17
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA	NA	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA	NA	NA
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	11	NA	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	ND	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	14	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	ND	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA	NA	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA	NA	NA
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA	NA	NA
Volatiles (ug/Kg)													
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND (10)	ND	ND	ND (10)	NA	NA	NA
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND (10)	ND	ND	ND (10)	NA	NA	NA
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND (10)	ND	ND	ND (10)	NA	NA	NA

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							PFW-5 (0-1.7) 3/18/97 AOI # 15	SB-9 (3-5) 11/6/96 AOI # 15	MW-2 (8-10) 11/6/96 AOI # 16	PFW-9 (0-2) 3/19/97 AOI # 16	SB-2 (0-2) 11/7/96 AOI # 17	SB-2 (0-2) 11/7/96 AOI # 17	SB-2 (0-2) 11/7/96 AOI # 17
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	ND (10)	NA	NA	ND (10)	NA	NA	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	ND (100)	NA	NA	ND (100)	NA	NA	NA
2-Hexanone	-	58000	2500000	1800000		1200000000	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	NA	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Bromomethane	-	580	1000000	1600	13000	150000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	ND (10)	ND	ND	ND (10)	NA	NA	NA
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	NA	NA	ND (10)	NA	NA	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND (10)	ND	ND	ND (10)	NA	NA	NA
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	ND (30)	NA	NA	ND (30)	NA	NA	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND (10)	83.1	ND	ND (10)	NA	NA	NA
o-Xylene	-	-	-	-	-	-	ND (30)	NA	NA	ND (30)	NA	NA	NA
Styrene	-	2700	520000	520000	3200000	6600000000	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (10)	ND	ND	ND (10)	NA	NA	NA
Toluene	-	16000	250000	250000	3300000	12000000000	ND (10)	2.9	ND	ND (10)	NA	NA	NA
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND (10)	ND	ND	ND (10)	NA	NA	NA
trans-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	NA	NA	ND (10)	NA	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	ND (10)	ND	ND	ND (10)	NA	NA	NA
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	ND (10)	NA	NA	ND (10)	NA	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	ND	ND	NA	NA	NA	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # GP-3 (1-4) 8/30/96 AOI # 18	GP-3 (1-4) 8/30/96 AOI # 18	GP-4 (0-4) 8/30/96 AOI # 18	GP-4 (0-4) 8/30/96 AOI # 18	MW-3 (2-4) 11/6/96 AOI # 18	PFW-4 (1.5-3) 3/17/97 AOI # 18
General Chemistry												
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	NA	NA	NA	NA	NA	86.13
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	ND (6.6)	NA	11	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	396000	NA
Metals (ug/Kg)												
Arsenic	5800	23000	100000	-	-	910000	8500	NA	7000	NA	NA	8000
Barium	75000	1300000	320000000	-	-	150000000	10000	NA	73000	NA	NA	51000
Cadmium	1200	6000	4500000	-	-	2200000	82	NA	88	NA	NA	670
Chromium	18000	30000	22000000	-	-	-	4500	NA	13000	NA	NA	17000
Copper	32000	160000000	170000000	-	-	59000000	7600	NA	12000	NA	NA	13000
Lead	21000	1000	900000	-	-	44000000	4100	NA	10000	NA	NA	17000
Mercury	130	1700	1400000	-	-	-	ND (100)	NA	ND (100)	NA	NA	ND (100)
Selenium	410	4000	23000000	-	-	59000000	940	NA	800	NA	NA	ND (500)
Silver	1000	13000	21000000	-	-	2900000	ND (500)	NA	ND (500)	NA	NA	ND (500)
Zinc	47000	5000000	1000000000	-	-	-	25000	NA	42000	NA	NA	38000
PCBs (ug/Kg)												
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	ND	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	ND	NA
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	ND	ND (330)
Semi - Volatiles (ug/Kg)												
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [1]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							GP-3 (1-4) 8/30/96 AOI # 18	GP-3 (1-4) 8/30/96 AOI # 18	GP-4 (0-4) 8/30/96 AOI # 18	GP-4 (0-4) 8/30/96 AOI # 18	MW-3 (2-4) 11/6/96 AOI # 18	PFW-4 (1.5-3) 3/17/97 AOI # 18
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA	ND (330)
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA	ND (330)
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	ND (100)	NA	ND (100)	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA	ND (330)
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	ND	ND (330)
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	ND	ND (330)
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	ND	ND (330)
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	NA	ND (330)
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	ND	ND (330)
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA	ND (330)
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA	ND (330)
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA	ND (330)
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA	ND (330)
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA	ND (330)
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND (10)	NA	ND (10)	NA	NA	ND (10)

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							GP-3 (1-4) 8/30/96 AOI # 18	GP-3 (1-4) 8/30/96 AOI # 18	GP-4 (0-4) 8/30/96 AOI # 18	GP-4 (0-4) 8/30/96 AOI # 18	MW-3 (2-4) 11/6/96 AOI # 18	PFW-4 (1.5-3) 3/17/97 AOI # 18
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	ND (10)	NA	ND (10)	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
1,3-Dichlorobenzene	-	18000	200000	-	-	-	ND (10)	NA	ND (10)	NA	NA	ND (10)
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	ND (100)	NA	ND (100)	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	ND (100)
2-Hexanone	-	58000	2500000	1800000		1200000000	ND (100)	NA	ND (100)	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	ND (100)	NA	ND (100)	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	ND (100)	NA	ND (100)	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Bromomethane	-	580	1000000	1600	13000	150000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	ND (100)	NA	ND (100)	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Chloroethane	-	18000	970000	970000	36000000	290000000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Chloroform	-	2000	1500000	38000	150000	1600000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
cis-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	NA	ND (10)	NA	NA	ND (10)
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	NA	NA	NA	NA	ND (10)
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Ethylene oxide	-	-	-	-	-		ND (1000)	NA	ND (1000)	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA	ND (30)
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	ND (100)	NA	ND (100)	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	14	NA	17	NA	NA	ND (10)
o-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA	ND (30)
Styrene	-	2700	520000	520000	3200000	6600000000	ND (10)	NA	ND (10)	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Toluene	-	16000	250000	250000	3300000	12000000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	NA	ND (10)	NA	ND (10)	NA	ND (10)
trans-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	NA	ND (10)	NA	NA	ND (10)
Trichloroethene	-	100	500000	37000	260000	2300000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	NA	NA	NA	NA	ND (10)
Vinyl chloride	-	40	11000	150	1500	47000000	ND (10)	NA	ND (10)	NA	NA	ND (10)
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND (30)	NA	ND (30)	NA	NA	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [1]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # SB-17 (1-3) 11/6/96 AOI # 18	SB-6 (1-3) 11/6/96 AOI # 18	SB-7 (1-3) 11/6/96 AOI # 18	SB-8 (1-3) 11/6/96 AOI # 18	PFB-21 (0-0.9) 4/24/97 AOI # 21	MW-5 (3-5) 11/6/96 None	MW-5 (8-10) 11/6/96 None
General Chemistry													
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	NA	NA	NA	NA	87.04	NA	NA
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	308000	384000	556000	ND	NA	ND	ND
Metals (ug/Kg)													
Arsenic	5800	23000	100000	-	-	910000	NA	NA	NA	NA	NA	7120	5340
Barium	75000	1300000	320000000	-	-	150000000	NA	NA	NA	NA	NA	52200	38400
Cadmium	1200	6000	4500000	-	-	2200000	NA	NA	NA	NA	NA	ND	ND
Chromium	18000	30000	22000000	-	-	-	NA	NA	NA	NA	NA	11700	12900
Copper	32000	160000000	170000000	-	-	59000000	NA	NA	NA	NA	NA	ND	ND
Lead	21000	1000	900000	-	-	44000000	NA	NA	NA	NA	NA	3720	6920
Mercury	130	1700	1400000	-	-	-	NA	NA	NA	NA	NA	ND	ND
Selenium	410	4000	23000000	-	-	59000000	NA	NA	NA	NA	NA	260	ND
Silver	1000	13000	21000000	-	-	2900000	NA	NA	NA	NA	NA	ND	ND
Zinc	47000	5000000	1000000000	-	-	-	NA	NA	NA	NA	NA	ND	ND
PCBs (ug/Kg)													
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	ND	ND	ND	ND	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	ND	ND	ND	ND	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	ND	ND	ND	ND	NA	NA	NA
Semi - Volatiles (ug/Kg)													
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # SB-17 (1-3) 11/6/96 AOI # 18	SB-6 (1-3) 11/6/96 AOI # 18	SB-7 (1-3) 11/6/96 AOI # 18	SB-8 (1-3) 11/6/96 AOI # 18	PFB-21 (0-0.9) 4/24/97 AOI # 21	MW-5 (3-5) 11/6/96 None	MW-5 (8-10) 11/6/96 None
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	ND (540)	NA	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	ND (2200)	NA	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	ND (2000)	NA	NA
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	ND (850)	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	ND (3400)	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	ND (3600)	NA	NA
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	ND (1200)	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	ND (1600)	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	23000	NA	NA
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	NA	NA	NA	ND (2900)	NA	NA
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	ND (1400)	NA	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	ND (3300)	NA	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	ND (3000)	NA	NA
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	ND (930)	NA	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	ND (1100)	NA	NA
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	ND (870)	NA	NA
Volatiles (ug/Kg)													
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	NA	NA	NA	NA	ND (10)	ND	ND
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	NA	NA	NA	ND (10)	NA	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	NA	NA	NA	ND (10)	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	NA	NA	NA	NA	ND (10)	ND	ND
1,1-Dichloroethene	-	140	580000	330	3700	78000000	NA	NA	NA	NA	ND (10)	ND	ND

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							SB-17 (1-3) 11/6/96 AOI # 18	SB-6 (1-3) 11/6/96 AOI # 18	SB-7 (1-3) 11/6/96 AOI # 18	SB-8 (1-3) 11/6/96 AOI # 18	PFB-21 (0-0.9) 4/24/97 AOI # 21	MW-5 (3-5) 11/6/96 None	MW-5 (8-10) 11/6/96 None
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	NA	NA	NA	ND (10)	NA	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	NA	NA	NA	ND (10)	NA	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	NA	NA	NA	NA	ND (10)	NA	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	NA	NA	NA	NA	ND (10)	NA	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	NA	NA	NA	ND (10)	NA	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	NA	NA	NA	ND (100)	NA	NA
2-Hexanone	-	58000	2500000	1800000		1200000000	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	NA	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	NA	NA	NA	NA	ND (10)	NA	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	NA	NA	NA	ND (10)	NA	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	NA	NA	NA	NA	ND (10)	NA	NA
Bromomethane	-	580	1000000	1600	13000	150000000	NA	NA	NA	NA	ND (10)	NA	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	NA	NA	NA	ND (10)	NA	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	NA	NA	NA	ND (10)	NA	NA
Chloroethane	-	18000	970000	970000	36000000	29000000000	NA	NA	NA	NA	ND (10)	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	NA	NA	NA	NA	ND (10)	ND	ND
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	NA	NA	NA	ND (10)	NA	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	NA	NA	NA	ND (10)	NA	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	NA	NA	ND (10)	NA	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	NA	NA	NA	ND (10)	NA	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	NA	NA	NA	ND (10)	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	NA	NA	NA	NA	ND (10)	ND	ND
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	95	NA	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	NA	NA	NA	NA	ND (10)	ND	ND
o-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	210	NA	NA
Styrene	-	2700	520000	520000	3200000	6600000000	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	NA	NA	NA	NA	ND (10)	ND	ND
Toluene	-	16000	250000	250000	3300000	12000000000	NA	NA	NA	NA	ND (10)	ND	ND
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	NA	NA	NA	NA	ND (10)	ND	ND
trans-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	NA	NA	ND (10)	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	NA	NA	NA	NA	ND (10)	ND	ND
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	NA	NA	NA	ND (10)	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	NA	NA	NA	NA	ND (10)	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	NA	NA	NA	NA	ND	ND

Notes:

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							MW-6 (3-5) 11/6/96 None	MW-6 (8-10) 11/6/96 None	MW-7 (4-6) 11/6/96 None	MW-8 (4-6) 11/6/96 None	MW-8 (8-10) 11/6/96 None	MW-9 (4-6) 11/6/96 None	MW-10 (4-6) 11/15/96 None
General Chemistry													
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	ND	313000	360000	419000	ND	ND	ND
Metals (ug/Kg)													
Arsenic	5800	23000	100000	-	-	910000	5370	4650	6400	4190	6330	8270	4520
Barium	75000	1300000	320000000	-	-	150000000	49500	41000	68000	41700	39400	54200	42700
Cadmium	1200	6000	4500000	-	-	2200000	ND	ND	ND	ND	ND	ND	ND
Chromium	18000	30000	22000000	-	-	-	11200	12600	12900	11800	12000	12000	12900
Copper	32000	160000000	170000000	-	-	59000000	ND	ND	ND	ND	ND	ND	ND
Lead	21000	1000	900000	-	-	44000000	ND	3800	5610	103000	7450	8890	6640
Mercury	130	1700	1400000	-	-	-	30	ND	ND	ND	ND	ND	ND
Selenium	410	4000	23000000	-	-	59000000	ND	ND	ND	370	ND	ND	ND
Silver	1000	13000	21000000	-	-	2900000	ND	ND	ND	ND	ND	ND	ND
Zinc	47000	5000000	1000000000	-	-	-	ND	ND	ND	ND	ND	ND	ND
PCBs (ug/Kg)													
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	NA	NA	NA
Semi - Volatiles (ug/Kg)													
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							MW-6 (3-5) 11/6/96 None	MW-6 (8-10) 11/6/96 None	MW-7 (4-6) 11/6/96 None	MW-8 (4-6) 11/6/96 None	MW-8 (8-10) 11/6/96 None	MW-9 (4-6) 11/6/96 None	MW-10 (4-6) 11/15/96 None
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA	NA	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA	NA	NA
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA	NA	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA	NA	NA
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA	NA	NA
Volatiles (ug/Kg)													
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND	ND	ND	ND	ND	ND	ND

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #						
							MW-6 (3-5) 11/6/96 None	MW-6 (8-10) 11/6/96 None	MW-7 (4-6) 11/6/96 None	MW-8 (4-6) 11/6/96 None	MW-8 (8-10) 11/6/96 None	MW-9 (4-6) 11/6/96 None	MW-10 (4-6) 11/15/96 AOI # 15
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	NA	NA	NA	NA	NA	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	-	58000	2500000	1800000		1200000000	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	NA	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	NA	NA	NA	NA	NA	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	NA	NA	NA	NA	NA	NA	NA
Bromomethane	-	580	1000000	1600	13000	150000000	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	NA	NA	NA	NA	NA	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	NA	NA	NA	NA	NA	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	ND	ND	ND	ND	ND	ND	ND
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND	ND	ND	ND	5.8	ND	ND
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND	37.1	15.2	54.1	11.7	8.8	ND
o-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Styrene	-	2700	520000	520000	3200000	6600000000	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND	ND	ND	4.4	ND	ND	1
Toluene	-	16000	250000	250000	3300000	12000000000	ND	ND	0.9	ND	ND	ND	ND
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	ND	ND	1.6	ND	ND	0.9	1.1
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	NA	NA	NA	NA	NA	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND	ND	ND	ND	30.5	ND	ND

Notes:

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-10 (4-6) 11/5/96 AOI # 15	MW-10 (4-6) 11/5/96 None	MW-10 (4-6) 11/5/96 None	GP-1 (4-8) 8/30/96 None	GP-2 (0-2) 8/30/96 None
General Chemistry											
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	NA	NA	87.6	NA	NA
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	ND (6.6)	ND (6.6)
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	56000	NA	NA	NA
Metals (ug/Kg)											
Arsenic	5800	23000	100000	-	-	910000	16000	NA	NA	8500	6600
Barium	75000	1300000	320000000	-	-	150000000	34000	NA	NA	57000	73000
Cadmium	1200	6000	4500000	-	-	2200000	110	NA	NA	140	130
Chromium	18000	30000	22000000	-	-	-	7200	NA	NA	14000	11000
Copper	32000	160000000	170000000	-	-	59000000	18000	NA	NA	14000	13000
Lead	21000	1000	900000	-	-	44000000	12000	NA	NA	8800	8100
Mercury	130	1700	1400000	-	-	-	ND (100)	NA	NA	ND (100)	ND (100)
Selenium	410	4000	23000000	-	-	59000000	560	NA	NA	720	660
Silver	1000	13000	21000000	-	-	2900000	ND (500)	NA	NA	ND (500)	ND (500)
Zinc	47000	5000000	1000000000	-	-	-	30000	NA	NA	40000	39000
PCBs (ug/Kg)											
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	NA
Semi - Volatiles (ug/Kg)											
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA

Confidential under FOIA
Alex Rothchild
LFR
Sep 30, 2009 08:55
Confidential under FOIA
Alex Rothchild
LFR
Sep 30, 2009 08:55

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #				
							MW-10 (4-6) 11/5/96 AOI # 15	MW-10 (4-6) 11/5/96 None	MW-10 (4-6) 11/5/96 None	GP-1 (4-8) 8/30/96 None	GP-2 (0-2) 8/30/96 None
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	NA	NA	NA	NA
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	NA
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA
Volatiles (ug/Kg)											
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND (10)	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (10)	NA	NA	NA	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (10)	NA	NA	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND (10)	NA	NA	NA	NA
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND (10)	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) Sample Date AOI # MW-10 (4-6) 11/5/96 AOI # 15	MW-10 (4-6) 11/5/96 None	MW-10 (4-6) 11/5/96 None	GP-1 (4-8) 8/30/96 None	GP-2 (0-2) 8/30/96 None
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	ND (10)	NA	NA	NA	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (10)	NA	NA	NA	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	NA	NA	NA	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	ND (10)	NA	NA	NA	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (10)	NA	NA	NA	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	ND (100)	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA
2-Hexanone	-	58000	2500000	1800000	-	1200000000	ND (100)	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	ND (100)	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	ND (100)	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	ND (10)	NA	NA	NA	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (10)	NA	NA	NA	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (10)	NA	NA	NA	NA
Bromomethane	-	580	1000000	1600	13000	150000000	ND (10)	NA	NA	NA	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	ND (100)	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (10)	NA	NA	NA	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (10)	NA	NA	NA	NA
Chloroethane	-	18000	970000	970000	36000000	29000000000	ND (10)	NA	NA	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	NA	ND (10)	NA	NA	NA
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (10)	NA	NA	NA	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	ND (10)	NA	NA	NA	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	NA	NA	NA	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (10)	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	15000000000000	NA	NA	NA	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	NA	ND (10)	NA	NA	NA
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND (10)	NA	NA	NA	NA
o-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA
Styrene	-	2700	520000	520000	3200000	66000000000	ND (10)	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (10)	NA	NA	NA	NA
Toluene	-	16000	250000	250000	3300000	12000000000	ND (10)	NA	NA	NA	NA
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND (10)	NA	NA	NA	NA
trans-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	NA	NA	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	ND (10)	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	170000000000	NA	NA	NA	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	ND (10)	NA	NA	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND (30)	NA	NA	NA	NA

Notes:

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							GP-5 (0-4) 8/30/96 None	GP-5 (0-4) 8/30/96 None	GP-7 (10-12) 8/30/96 None	HD-1 11/6/96 None	MW-12 (10-12) 11/6/96 None	MW-12 (10-12) 11/6/96 None
General Chemistry												
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	NA	NA	NA	NA	89	NA
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	ND (6.6)	NA	ND (6.6)	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	NA	NA	978000	NA	ND (40000)
Metals (ug/Kg)												
Arsenic	5800	23000	100000	-	-	910000	3500	NA	7800	3630	5700	NA
Barium	75000	1300000	320000000	-	-	150000000	64000	NA	86000	20100	58000	NA
Cadmium	1200	6000	4500000	-	-	2200000	120	NA	160	ND	92	NA
Chromium	18000	30000	22000000	-	-	-	14000	NA	9500	25200	8300	NA
Copper	32000	160000000	170000000	-	-	59000000	16000	NA	13000	ND	22000	NA
Lead	21000	1000	900000	-	-	44000000	10000	NA	7500	175000	13000	NA
Mercury	130	1700	1400000	-	-	-	ND (100)	NA	ND (100)	ND	NA	ND (100)
Selenium	410	4000	23000000	-	-	59000000	ND (500)	NA	680	ND	590	NA
Silver	1000	13000	21000000	-	-	2900000	ND (500)	NA	ND (500)	ND	NA	ND (500)
Zinc	47000	5000000	1000000000	-	-	-	49000	NA	39000	ND	26000	NA
PCBs (ug/Kg)												
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	NA	NA
Semi - Volatiles (ug/Kg)												
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							GP-5 (0-4) 8/30/96 None	GP-5 (0-4) 8/30/96 None	GP-7 (10-12) 8/30/96 None	HD-1 11/6/96 None	MW-12 (10-12) 11/6/96 None	MW-12 (10-12) 11/6/96 None
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	ND (100)	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA	NA
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	NA	NA	NA	NA	NA
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA	NA
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA	NA
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND (10)	NA	NA	NA	NA	ND (10)
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (10)	NA	NA	NA	ND (10)	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (10)	NA	NA	NA	ND (10)	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND (10)	NA	NA	NA	NA	ND (10)
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND (10)	NA	NA	NA	NA	ND (10)

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							GP-5 (0-4) 8/30/96 None	GP-5 (0-4) 8/30/96 None	GP-7 (10-12) 8/30/96 None	HD-1 11/6/96 None	MW-12 (10-12) 11/6/96 None	MW-12 (10-12) 11/6/96 None
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	ND (10)	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	ND (10)	NA	NA	NA	ND (10)	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (10)	NA	NA	NA	ND (10)	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	NA	NA	NA	ND (10)	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	ND (10)	NA	NA	NA	ND (10)	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (10)	NA	NA	NA	ND (10)	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	ND (100)	NA	NA	NA	ND (100)	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Hexanone	-	58000	2500000	1800000	-	1200000000	ND (100)	NA	NA	NA	ND (100)	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	ND (100)	NA	NA	NA	ND (100)	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	ND (100)	NA	NA	NA	ND (100)	NA
Benzene	-	100	400000	8400	45000	470000000	ND (10)	NA	NA	NA	ND (10)	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (10)	NA	NA	NA	ND (10)	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (10)	NA	NA	NA	ND (10)	NA
Bromomethane	-	580	1000000	1600	13000	150000000	ND (10)	NA	NA	NA	ND (10)	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	ND (100)	NA	NA	NA	ND (100)	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (10)	NA	NA	NA	ND (10)	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (10)	NA	NA	NA	ND (10)	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	ND (10)	NA	NA	NA	ND (10)	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	ND (10)	NA	NA	NA	ND (10)	NA
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (10)	NA	NA	NA	ND (10)	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	ND (10)	NA	NA	NA	ND (10)	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	NA	NA	NA	ND (10)	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (10)	NA	NA	NA	ND (10)	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	NA	NA	NA	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND (10)	NA	NA	NA	ND (10)	NA
Ethylene oxide	-	-	-	-	-	-	ND (1000)	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	ND (100)	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	17	NA	NA	NA	ND (10)	NA
o-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Styrene	-	2700	520000	520000	3200000	66000000000	ND (10)	NA	NA	NA	ND (10)	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (10)	NA	NA	NA	ND (10)	NA
Toluene	-	16000	250000	250000	3300000	12000000000	ND (10)	NA	NA	NA	ND (10)	NA
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	NA	ND (10)	NA	NA	ND (10)	NA
trans-1,3-Dichloropropene	-	-	-	-	-	-	ND (10)	NA	NA	NA	ND (10)	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	ND (10)	NA	NA	NA	ND (10)	NA
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	NA	NA	NA	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	ND (10)	NA	NA	NA	ND (10)	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND (30)	NA	NA	NA	ND (30)	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							MW-12 (10-12) 11/6/96 None	PFW-8 (0-2) 3/19/97 None	PFW-8 (6-7.8) 3/19/97 None	Q-12 11/6/96 None	SPL 11/6/96 None	WWB (0.75-2.75) 11/5/96 None
General Chemistry												
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	88300	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	NA	87.9	88.03	NA	NA	87.1
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	ND	NA	NA	NA	NA	NA
Metals (ug/Kg)												
Arsenic	5800	23000	100000	-	-	910000	6880	6000	NA	5980	6030	NA
Barium	75000	1300000	320000000	-	-	150000000	54900	61000	NA	44100	60600	NA
Cadmium	1200	6000	4500000	-	-	2200000	ND	680	NA	ND	ND	NA
Chromium	18000	30000	22000000	-	-	-	11300	15000	NA	11600	13900	NA
Copper	32000	160000000	170000000	-	-	59000000	ND	11000	NA	ND	ND	NA
Lead	21000	1000	900000	-	-	44000000	6380	15000	NA	7200	6040	NA
Mercury	130	1700	1400000	-	-	-	ND	ND (100)	NA	ND	ND	NA
Selenium	410	4000	23000000	-	-	59000000	300	ND (500)	NA	ND	ND	NA
Silver	1000	13000	21000000	-	-	2900000	ND	600	NA	ND	ND	NA
Zinc	47000	5000000	1000000000	-	-	-	ND	37000	NA	ND	ND	NA
PCBs (ug/Kg)												
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	ND (330)
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	ND (330)
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	ND (330)
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	ND (330)
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	ND (330)
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	NA	ND (330)	NA	NA	NA	NA
Semi - Volatiles (ug/Kg)												
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							MW-12 (10-12) 11/6/96 None	PFW-8 (0-2) 3/19/97 None	PFW-8 (6-7.8) 3/19/97 None	Q-12 11/6/96 None	SPL 11/6/96 None	WWB (0.75-2.75) 11/5/96 None
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	ND (330)	NA	NA	NA	ND (330)
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	ND (330)	NA	NA	NA	ND (330)
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	ND (330)	NA	NA	NA	ND (330)
Benzidine	-	1000	1000	-	-	59,000	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-	-	-	NA	ND (330)	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	ND (330)	NA	NA	NA	ND (330)
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	ND (330)	NA	NA	NA	ND (330)
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	ND (330)	NA	NA	NA	ND (330)
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	ND (330)	NA	NA	NA	ND (330)
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	ND (330)	NA	NA	NA	ND (330)
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	ND (330)	NA	NA	NA	ND (330)
Dibenzofuran	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	ND (330)	NA	NA	NA	ND (330)
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	ND (330)	NA	NA	NA	ND (330)
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	ND (330)	NA	NA	NA	ND (330)
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	ND (330)	NA	NA	NA	ND (330)
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	ND (330)	NA	NA	NA	ND (330)
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	ND (330)	NA	NA	NA	ND (330)
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND	NA	ND (10)	ND	ND	NA
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	NA	ND (10)	NA	NA	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	NA	ND (10)	NA	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND	NA	ND (10)	ND	ND	NA
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND	NA	ND (10)	ND	ND	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) Sample Date AOI # MW-12 (10-12) 11/6/96 None	PFW-8 (0-2) 3/19/97 None	PFW-8 (6-7.8) 3/19/97 None	Q-12 11/6/96 None	SPL 11/6/96 None	WWB (0.75-2.75) 11/5/96 None
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	NA	ND (10)	NA	NA	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	NA	ND (10)	NA	NA	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	NA	NA	ND (10)	NA	NA	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	NA	NA	ND (10)	NA	NA	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	NA	ND (10)	NA	NA	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	NA	ND (100)	NA	NA	NA
2-Hexanone	-	58000	2500000	1800000	-	1200000000	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	NA	NA	ND (10)	NA	NA	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	NA	ND (10)	NA	NA	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	NA	NA	ND (10)	NA	NA	NA
Bromomethane	-	580	1000000	1600	13000	150000000	NA	NA	ND (10)	NA	NA	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	NA	ND (10)	NA	NA	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	NA	ND (10)	NA	NA	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	NA	NA	ND (10)	NA	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	ND	NA	ND (10)	ND	ND	NA
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	NA	ND (10)	NA	NA	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	NA	ND (10)	NA	NA	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	ND (10)	NA	NA	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	NA	ND (10)	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	NA	ND (10)	NA	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND	NA	ND (10)	ND	ND	NA
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	NA	ND (30)	NA	NA	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND	NA	ND (10)	12.3	55	NA
o-Xylene	-	-	-	-	-	-	NA	NA	ND (30)	NA	NA	NA
Styrene	-	2700	520000	520000	3200000	6600000000	NA	NA	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND	NA	ND (10)	0.8	ND	NA
Toluene	-	16000	250000	250000	3300000	12000000000	ND	NA	ND (10)	ND	ND	NA
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND	NA	ND (10)	ND	ND	NA
trans-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	ND (10)	NA	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	ND	NA	ND (10)	0.8	ND	NA
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	NA	ND (10)	NA	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	NA	NA	ND (10)	NA	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND	NA	NA	ND	ND	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

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TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							WWB (0.75-2.75) 11/5/96	WWB (0.75-2.75) 11/5/96	WWT-1 11/6/96	WWT-2 11/6/96	WWT-3 11/6/96	WWT-4 11/6/96
							None	None	None	None	None	None
General Chemistry												
Cyanide (total) (ug/Kg)	-	4000	250000	-	-	250000	NA	NA	ND	ND	ND	ND
Total Solids (%)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Diesel Fuel (mg/Kg)	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons (ug/Kg)	-	-	-	-	-	-	NA	ND	NA	NA	NA	NA
Metals (ug/Kg)												
Arsenic	5800	23000	100000	-	-	910000	NA	NA	5370	6160	6530	6950
Barium	75000	1300000	320000000	-	-	150000000	NA	NA	66600	45200	56000	44400
Cadmium	1200	6000	4500000	-	-	2200000	NA	NA	ND	ND	ND	ND
Chromium	18000	30000	22000000	-	-	-	NA	NA	19800	20900	14500	13400
Copper	32000	160000000	170000000	-	-	59000000	NA	NA	ND	ND	ND	ND
Lead	21000	1000	900000	-	-	44000000	NA	NA	6400	ND	4100	ND
Mercury	130	1700	1400000	-	-	-	NA	NA	ND	ND	ND	ND
Selenium	410	4000	23000000	-	-	59000000	NA	NA	ND	ND	ND	ND
Silver	1000	13000	21000000	-	-	2900000	NA	NA	ND	ND	ND	ND
Zinc	47000	5000000	1000000000	-	-	-	NA	NA	ND	ND	ND	ND
PCBs (ug/Kg)												
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	9900	-	-	-	ND (330)	ND	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	ND (330)	ND	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	ND (330)	ND	NA	NA	NA	NA
Semi - Volatiles (ug/Kg)												
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	-	45000	14000000	-	-	1300000000	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	-	7700	10000000	-	-	2300000000	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	-	20000	230000000	-	-	2100000000	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	-	15000	220000	-	-	20000000	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	-	1800000	190000000	-	-	-	NA	NA	NA	NA	NA	NA
2-Chlorophenol	-	2600	4600000	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Nitrophenol	-	1200	13000000	-	-	-	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	-	2000	55000	-	-	8200000	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	-	-	-	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	-	16000	15000000	-	-	-	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							WWB (0.75-2.75) 11/5/96 None	WWB (0.75-2.75) 11/5/96 None	WWT-1 11/6/96 None	WWT-2 11/6/96 None	WWT-3 11/6/96 None	WWT-4 11/6/96 None
4-Nitrophenol	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	NA	NA	NA	NA
Aniline	-	12000	4500000	-	-	29000000	NA	NA	NA	NA	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA	NA
Benzidine	-	1000	1000	-		59,000	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	-	-	210000	-		-	ND (330)	ND	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-		1900000	NA	ND	NA	NA	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	ND	NA	NA	NA	NA
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	ND	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	-	-	8900000000	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	-	310000	310000	-	-	21000000000	NA	NA	NA	NA	NA	NA
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	-		21000	-		-	NA	NA	NA	NA	NA	NA
Dibenzofuran	-	-	-	-	-		NA	NA	NA	NA	NA	NA
Diethyl phthalate	-	320000	740000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	-	790000	790000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	-	760000	760000	-	-	1500000000	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	-	140000000	81000000	-	-	-	NA	NA	NA	NA	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	-	36000	81000	-	-	-	NA	NA	NA	NA	NA	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA
Isophorone	-	74000	2400000	-	-	8200000000	NA	NA	NA	NA	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	-	330	3500	-	-	2000000	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	-	14000	5100000	-	-	-	NA	NA	NA	NA	NA	NA
Octachlorocyclopentene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Pentachlorophenol	-	3200	63000	-	-	130000000	NA	NA	NA	NA	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA	NA
Phenol	-	260000	12000000	-	-	18000000000	NA	NA	NA	NA	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA	NA
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	NA	NA	ND	ND	ND	1.57
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	NA	NA	ND	ND	ND	36
1,1-Dichloroethene	-	140	580000	330	3700	78000000	NA	NA	ND	ND	ND	0.97

TABLE 6.2

SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							WWB (0.75-2.75) 11/5/96 None	WWB (0.75-2.75) 11/5/96 None	WWT-1 11/6/96 None	WWT-2 11/6/96 None	WWT-3 11/6/96 None	WWT-4 11/6/96 None
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	NA	NA	NA	NA	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
2-Hexanone	-	58000	2500000	1800000	-	1200000000	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	NA	NA	NA	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	NA	NA	NA	NA
Benzene	-	100	400000	8400	45000	470000000	NA	NA	NA	NA	NA	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	NA	NA	NA	NA	NA
Bromoform	-	2000	870000	770000	31000000	3600000000	NA	NA	NA	NA	NA	NA
Bromomethane	-	580	1000000	1600	13000	150000000	NA	NA	NA	NA	NA	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	NA	NA	NA	NA	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	NA	NA	NA	NA	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	NA	NA	NA	NA	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	NA	NA	ND	1.1	ND	ND
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	NA	NA	NA	NA	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	NA	NA	ND	ND	ND	ND
Ethylene oxide	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
m&p-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	88000000000	NA	NA	NA	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	NA	NA	ND	ND	ND	ND
o-Xylene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Styrene	-	2700	520000	520000	3200000	66000000000	NA	NA	NA	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	NA	NA	ND	3.5	1.7	2.1
Toluene	-	16000	250000	250000	3300000	12000000000	NA	NA	ND	ND	ND	ND
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	NA	NA	ND	ND	ND	ND
trans-1,3-Dichloropropene	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	NA	NA	ND	ND	139	ND
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	NA	NA	NA	NA	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	NA	NA	NA	NA	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	NA	ND	ND	ND	ND

Notes:

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

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Sep 30, 2009 08:55

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LFR
Sep 30, 2009 08:55

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-14 11/14/96 AOI # 1	MW-14 11/14/96 AOI # 1	MW-14 11/14/96 AOI # 1	PFW-6 3/31/97 AOI # 1	MW-13 11/14/96 AOI # 2	MW-13 11/14/96 AOI # 2	PFW-11 4/1/97 AOI # 3	PFW-10 3/31/97 AOI # 7	PFW-12 3/31/97 AOI # 9
General Chemistry (mg/L)												
Diesel Fuel	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (ug/L)												
Arsenic (Dissolved)	4700	50	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	4700	50	-	NA	NA	NA	ND (5)	NA	NA	ND (5)	ND (5)	ND (5)
Barium (Dissolved)	15000000	2000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	15000000	2000	-	NA	NA	NA	1300	NA	NA	1100	2600	1200
Cadmium (Dissolved)	210000	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	210000	5	-	NA	NA	NA	ND (0.5)	NA	NA	0.6	ND (0.5)	ND (0.5)
Chromium (Dissolved)	1000000	30000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	1000000	30000	-	NA	NA	NA	ND (50)	NA	NA	ND (50)	ND (50)	ND (50)
Copper (Dissolved)	8100000	1000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	8100000	1000	-	NA	NA	NA	ND (25)	NA	NA	ND (25)	ND (25)	ND (25)
Lead (Dissolved)	-	4	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	-	4	-	NA	NA	NA	ND (3)	NA	NA	ND (3)	4	ND (3)
Mercury (Dissolved)	56	2	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	56	2	-	NA	NA	NA	ND (0.2)	NA	NA	ND (0.2)	ND (0.2)	ND (0.2)
Selenium (Dissolved)	1100000	50	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	1100000	50	-	NA	NA	NA	ND (5)	NA	NA	ND (5)	ND (5)	ND (5)
Silver (Dissolved)	1000000	98	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	1000000	98	-	NA	NA	NA	ND (0.5)	NA	NA	ND (0.5)	ND (0.5)	ND (0.5)
Zinc (Dissolved)	70000000	5000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	70000000	5000	-	NA	NA	NA	ND (20)	NA	NA	ND (20)	50	ND (20)
PCBs (ug/L)												
Aroclor-1016	-	-	-	NA	NA	NA	NA	ND (0.20)	NA	NA	NA	NA
Aroclor-1221	-	-	-	NA	NA	NA	NA	ND (0.20)	NA	NA	NA	NA
Aroclor-1232	-	-	-	NA	NA	NA	NA	ND (0.40)	NA	NA	NA	NA
Aroclor-1242	-	-	-	NA	NA	NA	NA	ND (0.20)	NA	NA	NA	NA
Aroclor-1248	-	-	-	NA	NA	NA	NA	ND (0.20)	NA	NA	NA	NA
Aroclor-1254	-	-	-	NA	NA	NA	NA	ND (0.20)	NA	NA	NA	NA
Aroclor-1260	-	-	-	NA	NA	NA	NA	ND (0.20)	NA	NA	NA	NA
Total PCBs	2.3	0.5	45	NA	NA	NA	NA	NA	ND	NA	NA	NA
Semi - Volatiles (ug/L)												
1,2,4-Trichlorobenzene	15000	70	300000	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	130000	2100	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	5500	320	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	40000	210	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	440000	1000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [1]	Industrial Drinking Water Criteria [1]	Industrial Groundwater Volatilization to Inhalation Criteria [1]	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-14 11/14/96 AOI # 1	MW-14 11/14/96 AOI # 1	MW-14 11/14/96 AOI # 1	PFW-6 3/31/97 AOI # 1	MW-13 11/14/96 AOI # 2	MW-13 11/14/96 AOI # 2	PFW-11 4/1/97 AOI # 3	PFW-10 3/31/97 AOI # 7	PFW-12 3/31/97 AOI # 9
2,4-Dinitrotoluene	1300	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	6700	5200	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	82000	130	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl naphthalene	32000	750	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	710000	1000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	72000	58	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	270	8	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	8800	20	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	62000	420	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	75000	100	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	4200	3800	4200	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	3900	75	3900	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	43	43	43	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	5	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	5	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	5	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	5	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	5	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	2100	5	210000	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	47	6	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	2700	2700	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	2900	170	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	5	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	5	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	1100000	16000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	4200000	210000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	11000	2500	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	250	380	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	210	210	210	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	2000	2000	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #								
				MW-14 11/14/96 AOI # 1	MW-14 11/14/96 AOI # 1	MW-14 11/14/96 AOI # 1	PFW-6 3/31/97 AOI # 1	MW-13 11/14/96 AOI # 2	MW-13 11/14/96 AOI # 2	PFW-11 4/1/97 AOI # 3	PFW-10 3/31/97 AOI # 7	PFW-12 3/31/97 AOI # 9
Hexachlorobenzene	2	1	3000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	200	45	3200	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	1400	50	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	1500	250	50000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	1100000	3700	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	31000	750	31000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	9600	10	2100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	220	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	30000	710	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	85	1	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1000	75	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	28000000	13000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	140	140	140	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatiles (ug/L)												
1,1,1-Trichloroethane	220000	200	1300000	NA	ND (1)	ND	9	NA	0.7	ND (1)	ND (1)	ND (1)
1,1,2,2-Tetrachloroethane	2100	17	77000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
1,1,2-Trichloroethane	9500	5	110000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
1,1-Dichloroethane	2100000	2500	5100000	NA	ND (1)	ND	4	NA	ND	ND (1)	ND (1)	ND (1)
1,1-Dichloroethene	9000	7	1300	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
1,2-Dichlorobenzene	160000	600	160000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
1,2-Dichloroethane	11000	5	59000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
1,2-Dichloropropane	7500	5	36000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
1,3-Dichlorobenzene	110000	600	-	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
1,4-Dichlorobenzene	2800	75	74000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
2-Butanone	240000000	38000	240000000	ND (50)	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	NA	NA	NA	ND (10)	NA	NA	ND (10)	ND (10)	ND (10)
2-Hexanone	4800000	2900	8800000	ND (50)	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	12000000	5200	20000000	ND (50)	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	31000000	2100	1000000000	ND (100)	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	9400	5	36000	ND (5.0)	NA	NA	ND (5)	NA	NA	ND (5)	ND (5)	ND (5)
Bromodichloromethane	11000	100	38000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Bromoform	100000	100	3100000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Bromomethane	65000	29	9000	NA	ND (1)	ND	ND (1)	NA	6.7	ND (1)	ND (1)	ND (1)
Carbon disulfide	1100000	2300	550000	ND (50)	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	1600	5	2400	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Chlorobenzene	68000	100	470000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Chloroethane	200000	910	5700000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Chloroform	96000	100	180000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Chloromethane	110000	270	52000	NA	ND (1)	ND	ND (1)	NA	ND	ND (1)	ND (1)	ND (1)

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria (2)	Industrial Drinking Water Criteria (2)	Industrial Groundwater Volatilization to Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #								
				MW-14 11/14/96 AOI # 1	MW-14 11/14/96 AOI # 1	MW-14 11/14/96 AOI # 1	PFW-6 3/31/97 AOI # 1	MW-13 11/14/96 AOI # 2	MW-13 11/14/96 AOI # 2	PFW-11 4/1/97 AOI # 3	PFW-10 3/31/97 AOI # 7	PFW-12 3/31/97 AOI # 9
cis-1,2-Dichloroethene	170000	70	3500000	4	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
cis-1,3-Dichloropropene	-	-	-	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Dibromochloromethane	9500	100	110000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Dichlorodifluoromethane (CFC-12)	300000	4800	300000	NA	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Ethylbenzene	170000	74	170000	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
m&p-Xylene	-	-	-	NA	NA	NA	ND (3)	NA	NA	ND (3)	ND (3)	ND (3)
Methylene chloride	110000	5	1400000	ND (5.0)	NA	NA	ND (5)	NA	NA	ND (5)	ND (5)	ND (5)
o-Xylene	-	-	-	NA	NA	NA	ND (3)	NA	NA	ND (3)	ND (3)	ND (3)
Styrene	3200	100	310000	ND (1.0)	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5100	5	170000	NA	ND (1)	1.1	ND (1)	NA	ND	ND (1)	ND (1)	ND (1)
Toluene	530000	790	530000	NA	ND (1)	1.3	ND (1)	NA	1.1	ND (1)	ND (1)	ND (1)
trans-1,2-Dichloroethene	190000	100	6300000	NA	ND (1)	ND	ND (1)	NA	ND	ND (1)	ND (1)	ND (1)
trans-1,3-Dichloropropene	-	-	-	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Trichloroethene	11000	5	97000	NA	6	21.3	ND (1)	NA	8.4	ND (1)	ND (1)	ND (1)
Trichlorofluoromethane (CFC-11)	1100000	7300	1100000	NA	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Vinyl chloride	290	2	690	ND (1.0)	NA	NA	ND (1)	NA	NA	ND (1)	ND (1)	ND (1)
Xylene (total)	190000	280	190000	ND (3.0)	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #									
				MW-1 11/14/96 AOI # 14	MW-1 11/14/96 AOI # 14	MW-1 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	PFW-2 4/1/97 AOI # 14	PFW-2D 4/1/97 AOI # 14	MW-4 11/14/96 AOI # 15	MW-4 11/14/96 AOI # 15
General Chemistry (mg/L)													
Diesel Fuel	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (ug/L)													
Arsenic (Dissolved)	4700	50	-	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Arsenic	4700	50	-	NA	NA	ND	NA	NA	ND	ND (5)	ND (5)	NA	16
Barium (Dissolved)	15000000	2000	-	NA	NA	NA	NA	ND (200)	NA	NA	NA	NA	NA
Barium	15000000	2000	-	NA	NA	ND	NA	NA	540	610	610	240	NA
Cadmium (Dissolved)	210000	5	-	NA	NA	NA	ND (0.50)	NA	NA	NA	NA	NA	NA
Cadmium	210000	5	-	NA	NA	NA	NA	NA	NA	ND (0.5)	ND (0.5)	ND (0.50)	NA
Chromium (Dissolved)	1000000	30000	-	NA	NA	NA	ND (50)	NA	NA	NA	NA	NA	NA
Chromium	1000000	30000	-	NA	NA	NA	NA	NA	NA	ND (50)	ND (50)	ND (50)	NA
Copper (Dissolved)	8100000	1000	-	NA	NA	NA	NA	ND (25)	NA	NA	NA	NA	NA
Copper	8100000	1000	-	NA	NA	ND	NA	NA	ND	ND (25)	ND (25)	27	NA
Lead (Dissolved)	-	4	-	NA	NA	NA	NA	ND (3)	NA	NA	NA	NA	NA
Lead	-	4	-	NA	NA	ND	NA	NA	ND	ND (3)	ND (3)	NA	25
Mercury (Dissolved)	56	2	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA	NA
Mercury	56	2	-	NA	NA	NA	NA	NA	NA	ND (0.2)	ND (0.2)	ND (0.20)	NA
Selenium (Dissolved)	1100000	50	-	NA	NA	NA	9.5	NA	NA	NA	NA	NA	NA
Selenium	1100000	50	-	NA	NA	ND	NA	NA	ND	ND (5)	ND (5)	NA	12
Silver (Dissolved)	1000000	98	-	NA	NA	NA	ND (0.50)	NA	NA	NA	NA	NA	NA
Silver	1000000	98	-	NA	NA	NA	NA	NA	NA	ND (0.5)	ND (0.5)	ND (0.50)	NA
Zinc (Dissolved)	70000000	5000	-	NA	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA
Zinc	70000000	5000	-	NA	NA	ND	NA	NA	ND	ND (20)	ND (20)	20	NA
PCBs (ug/L)													
Aroclor-1016	-	-	-	ND (0.20)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	-	-	-	ND (0.20)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	-	-	-	ND (0.40)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	-	-	-	ND (0.20)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	-	-	-	ND (0.20)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	-	-	-	ND (0.20)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	-	ND (0.20)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCBs	2.3	0.5	45	NA	ND (.2)	NA	NA	NA	NA	NA	NA	NA	NA
Semi - Volatiles (ug/L)													
1,2,4-Trichlorobenzene	15000	70	300000	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	130000	2100	-	NA	NA	NA	ND (50)	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	5500	320	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	40000	210	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	440000	1000	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA	NA

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #									
				MW-1 11/14/96 AOI # 14	MW-1 11/14/96 AOI # 14	MW-1 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	PFW-2 4/1/97 AOI # 14	PFW-2D 4/1/97 AOI # 14	MW-4 11/14/96 AOI # 15	MW-4 11/14/96 AOI # 15
2,4-Dinitrotoluene	1300	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	6700	5200	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
2-Chlorophenol	82000	130	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
2-Methyl naphthalene	32000	750	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
2-Methylphenol	710000	1000	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA	NA
2-Nitrophenol	72000	58	-	NA	NA	NA	NA	ND (5)	1.8	NA	NA	NA	NA
3,3-Dichlorobenzidine	270	8	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	8800	20	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	62000	420	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
4-Methylphenol	75000	100	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA	NA
4-Nitrophenol	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA	NA
Acenaphthene	4200	3800	4200	NA	NA	NA	NA	ND (5)	0.16	ND (5)	NA	NA	NA
Acenaphthylene	3900	75	3900	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Anthracene	43	43	43	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Benzo(a)anthracene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Benzo(a)pyrene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Benzo(b)fluoranthene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Benzo(g,h,i)perylene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Benzo(k)fluoranthene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	2100	5	210000	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	47	6	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	2700	2700	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Carbazole	2900	170	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Chrysene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Dibenzo(a,h)anthracene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Dibenzofuran	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Diethyl phthalate	1100000	16000	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	4200000	210000	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	11000	2500	-	NA	NA	NA	NA	ND (5)	0.7	NA	NA	NA	NA
Di-n-octyl phthalate	250	380	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Fluoranthene	210	210	210	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Fluorene	2000	2000	2000	NA	NA	NA	NA	ND (5)	0.14	ND (5)	NA	NA	NA

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TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria (2)	Industrial Drinking Water Criteria (2)	Industrial Groundwater Volatilization to Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #									
				MW-1 11/14/96 AOI # 14	MW-1 11/14/96 AOI # 14	MW-1 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	PFW-2 4/1/97 AOI # 14	PFW-2D 4/1/97 AOI # 14	MW-4 11/14/96 AOI # 15	MW-4 11/14/96 AOI # 15
Hexachlorobenzene	2	1	3000	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	200	45	3200	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	1400	50	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Hexachloroethane	1500	250	50000	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Isophorone	1100000	3700	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Naphthalene	31000	750	31000	NA	NA	NA	NA	ND (5)	0.17	ND (5)	NA	NA	NA
Nitrobenzene	9600	10	2100000	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	220	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	30000	710	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Pentachlorophenol	85	1	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA	NA
Phenanthrene	1000	75	1000	NA	NA	NA	NA	ND (5)	0.6	ND (5)	NA	NA	NA
Phenol	28000000	13000	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA	NA
Pyrene	140	140	140	NA	NA	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Volatiles (ug/L)													
1,1,1-Trichloroethane	220000	200	1300000	NA	ND (1)	ND	NA	ND (1)	ND	ND (1)	ND (1)	NA	ND (1)
1,1,2,2-Tetrachloroethane	2100	17	77000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
1,1,2-Trichloroethane	9500	5	110000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
1,1-Dichloroethane	2100000	2500	5100000	NA	ND (1)	1	NA	ND (1)	ND	ND (1)	ND (1)	NA	ND (1)
1,1-Dichloroethene	9000	7	1300	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
1,2-Dichlorobenzene	160000	600	160000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
1,2-Dichloroethane	11000	5	59000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
1,2-Dichloropropane	7500	5	36000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
1,3-Dichlorobenzene	110000	600	-	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
1,4-Dichlorobenzene	2800	75	74000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
2-Butanone	240000000	38000	240000000	ND (50)	NA	NA	ND (50)	NA	NA	NA	NA	ND (50)	NA
2-Chloroethyl vinyl ether	-	-	-	NA	NA	NA	NA	NA	NA	ND (10)	ND (10)	NA	NA
2-Hexanone	4800000	2900	8800000	ND (50)	NA	NA	ND (50)	NA	NA	NA	NA	ND (50)	NA
4-Methyl-2-pentanone	12000000	5200	20000000	ND (50)	NA	NA	ND (50)	NA	NA	NA	NA	ND (50)	NA
Acetone	31000000	2100	1000000000	ND (100)	NA	NA	ND (100)	NA	NA	NA	NA	ND (100)	NA
Benzene	9400	5	36000	ND (5.0)	NA	NA	ND (5.0)	NA	NA	ND (5)	ND (5)	ND (5.0)	NA
Bromodichloromethane	11000	100	38000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
Bromoform	100000	100	3100000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
Bromomethane	65000	29	9000	NA	ND (1)	ND	NA	ND (1)	ND	ND (1)	ND (1)	NA	ND (1)
Carbon disulfide	1100000	2300	550000	ND (50)	NA	NA	ND (50)	NA	NA	NA	NA	ND (50)	NA
Carbon tetrachloride	1600	5	2400	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
Chlorobenzene	68000	100	470000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
Chloroethane	200000	910	5700000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
Chloroform	96000	100	180000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
Chloromethane	110000	270	52000	NA	ND (1)	ND	NA	ND (1)	ND	ND (1)	ND (1)	NA	ND (1)

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria (1)	Industrial Drinking Water Criteria (2)	Industrial Groundwater Volatilization to Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #									
				MW-1 11/14/96 AOI # 14	MW-1 11/14/96 AOI # 14	MW-1 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	MW-2 11/14/96 AOI # 14	PFW-2 4/1/97 AOI # 14	PFW-2D 4/1/97 AOI # 14	MW-4 11/14/96 AOI # 15	MW-4 11/14/96 AOI # 15
cis-1,2-Dichloroethene	170000	70	3500000	5	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
cis-1,3-Dichloropropene	-	-	-	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
Dibromochloromethane	9500	100	110000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
Dichlorodifluoromethane (CFC-12)	300000	4800	300000	NA	NA	NA	NA	NA	NA	ND (1)	ND (1)	NA	NA
Ethylbenzene	170000	74	170000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
m&p-Xylene	-	-	-	NA	NA	NA	NA	NA	NA	ND (3)	ND (3)	NA	NA
Methylene chloride	110000	5	1400000	ND (5.0)	NA	NA	ND (5.0)	NA	NA	ND (5)	ND (5)	ND (5.0)	NA
o-Xylene	-	-	-	NA	NA	NA	NA	NA	NA	ND (3)	ND (3)	NA	NA
Styrene	3200	100	310000	ND (1.0)	NA	NA	ND (1.0)	NA	NA	NA	NA	ND (1.0)	NA
Tetrachloroethene	5100	5	170000	NA	ND (1)	ND	NA	ND (1)	0.5	ND (1)	ND (1)	NA	ND (1)
Toluene	530000	790	530000	NA	ND (1)	0.6	NA	ND (1)	0.7	ND (1)	ND (1)	NA	ND (1)
trans-1,2-Dichloroethene	190000	100	6300000	NA	ND (1)	1.7	NA	ND (1)	ND	ND (1)	ND (1)	NA	ND (1)
trans-1,3-Dichloropropene	-	-	-	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
Trichloroethene	11000	5	97000	NA	ND (1)	4.8	NA	ND (1)	4.4	ND (1)	ND (1)	NA	ND (1)
Trichlorofluoromethane (CFC-11)	1100000	7300	1100000	NA	NA	NA	NA	NA	NA	ND (1)	ND (1)	NA	NA
Vinyl chloride	290	2	690	ND (1.0)	NA	NA	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)	NA
Xylene (total)	190000	280	190000	ND (3.0)	NA	NA	ND (3.0)	NA	NA	NA	NA	ND (3.0)	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO)
EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #								
				MW-4 11/14/96 AOI # 15	PFW-5 3/31/97 AOI # 15	PFW-9 4/1/97 AOI # 16	MW-3 11/14/96 AOI # 18	MW-3 11/14/96 AOI # 18	MW-3 11/14/96 AOI # 18	PFW-4 4/1/97 AOI # 18	PFB-21 GW 4/25/97 AOI # 21	MW-10 11/13/96 AOI # 15
General Chemistry (mg/L)												
Diesel Fuel	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (ug/L)												
Arsenic (Dissolved)	4700	50	-	NA	NA	NA	NA	NA	NA	NA	NA	ND (5.0)
Arsenic	4700	50	-	ND	ND (5)	ND (5)	NA	13	ND	ND (5)	NA	NA
Barium (Dissolved)	15000000	2000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	15000000	2000	-	390	450	970	NA	ND (200)	270	1600	NA	NA
Cadmium (Dissolved)	210000	5	-	NA	NA	NA	NA	NA	NA	NA	NA	ND (0.50)
Cadmium	210000	5	-	NA	1.4	ND (0.5)	ND (0.50)	NA	NA	ND (0.5)	NA	NA
Chromium (Dissolved)	1000000	30000	-	NA	NA	NA	NA	NA	NA	NA	NA	ND (50)
Chromium	1000000	30000	-	NA	ND (50)	ND (50)	ND (50)	NA	NA	ND (50)	NA	NA
Copper (Dissolved)	8100000	1000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	8100000	1000	-	ND	ND (25)	ND (25)	32	NA	ND	ND (25)	NA	NA
Lead (Dissolved)	-	4	-	NA	NA	NA	NA	NA	NA	NA	NA	ND (3.0)
Lead	-	4	-	ND	ND (3)	2	12	NA	ND	ND (3)	NA	NA
Mercury (Dissolved)	56	2	-	NA	NA	NA	NA	NA	NA	NA	NA	ND (0.20)
Mercury	56	2	-	NA	ND (0.2)	ND (0.2)	ND (0.20)	NA	NA	ND (0.2)	NA	NA
Selenium (Dissolved)	1100000	50	-	NA	NA	NA	NA	NA	NA	NA	NA	5.4
Selenium	1100000	50	-	ND	ND (5)	ND (5)	NA	10	ND	ND (5)	NA	NA
Silver (Dissolved)	1000000	98	-	NA	NA	NA	NA	NA	NA	NA	NA	ND (0.50)
Silver	1000000	98	-	NA	ND (0.5)	ND (0.5)	ND (0.50)	NA	NA	ND (0.5)	NA	NA
Zinc (Dissolved)	70000000	5000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	70000000	5000	-	ND	ND (20)	ND (20)	NA	110	ND	20	NA	NA
PCBs (ug/L)												
Aroclor-1016	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Aroclor-1221	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Aroclor-1232	-	-	-	NA	NA	NA	ND (0.40)	NA	NA	NA	NA	NA
Aroclor-1242	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Aroclor-1248	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Aroclor-1254	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Aroclor-1260	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Total PCBs	2.3	0.5	45	NA	NA	NA	NA	ND (.2)	ND	NA	NA	NA
Semi - Volatiles (ug/L)												
1,2,4-Trichlorobenzene	15000	70	300000	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	130000	2100	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	5500	320	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	40000	210	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	440000	1000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [1]	Industrial Drinking Water Criteria [1]	Industrial Groundwater Volatilization to Inhalation Criteria [1]	Sample Location (depth ft. bgs) / Sample Date / AOI #								
				MW-4 11/14/96 AOI # 15	PFW-5 3/31/97 AOI # 15	PFW-9 4/1/97 AOI # 16	MW-3 11/14/96 AOI # 18	MW-3 11/14/96 AOI # 18	MW-3 11/14/96 AOI # 18	PFW-4 4/1/97 AOI # 18	PFB-21 GW 4/25/97 AOI # 21	MW-10 11/13/96 AOI # 15
2,4-Dinitrotoluene	1300	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	6700	5200	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	82000	130	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl naphthalene	32000	750	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	710000	1000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	72000	58	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	270	8	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	8800	20	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	62000	420	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	75000	100	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	4200	3800	4200	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Acenaphthylene	3900	75	3900	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Anthracene	43	43	43	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Benzo(a)anthracene	5	5	-	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Benzo(a)pyrene	5	5	-	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Benzo(b)fluoranthene	5	5	-	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Benzo(g,h,i)perylene	5	5	-	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Benzo(k)fluoranthene	5	5	-	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
bis(2-Chloroethoxy)methane	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	2100	5	210000	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	47	6	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate	2700	2700	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	2900	170	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	5	5	-	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Dibenzo(a,h)anthracene	5	5	-	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Dibenzofuran	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	1100000	16000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	4200000	210000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	11000	2500	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	250	380	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	210	210	210	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Fluorene	2000	2000	2000	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria (2)	Industrial Drinking Water Criteria (2)	Industrial Groundwater Volatilization to Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-4 11/14/96 AOI # 15	PFW-5 3/31/97 AOI # 15	PFW-9 4/1/97 AOI # 16	MW-3 11/14/96 AOI # 18	MW-3 11/14/96 AOI # 18	MW-3 11/14/96 AOI # 18	PFW-4 4/1/97 AOI # 18	PFB-21 GW 4/25/97 AOI # 21	MW-10 11/13/96 AOI # 15
Hexachlorobenzene	2	1	3000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	200	45	3200	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	1400	50	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	1500	250	50000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5	5	-	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Isophorone	1100000	3700	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	31000	750	31000	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Nitrobenzene	9600	10	2100000	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	220	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	30000	710	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	85	1	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1000	75	1000	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Phenol	28000000	13000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	140	140	140	NA	NA	NA	NA	NA	NA	NA	ND (5)	NA
Volatiles (ug/L)												
1,1,1-Trichloroethane	220000	200	1300000	ND	ND (1)	ND (1)	NA	ND (1)	ND	ND (1)	ND (1)	ND (1.0)
1,1,2,2-Tetrachloroethane	2100	17	77000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
1,1,2-Trichloroethane	9500	5	110000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
1,1-Dichloroethane	2100000	2500	5100000	ND	ND (1)	ND (1)	NA	ND (1)	ND	ND (1)	ND (1)	ND (1.0)
1,1-Dichloroethene	9000	7	1300	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
1,2-Dichlorobenzene	160000	600	160000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
1,2-Dichloroethane	11000	5	59000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
1,2-Dichloropropane	7500	5	36000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
1,3-Dichlorobenzene	110000	600	-	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
1,4-Dichlorobenzene	2800	75	74000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
2-Butanone	240000000	38000	240000000	NA	NA	NA	ND (50)	NA	NA	NA	NA	ND (50)
2-Chloroethyl vinyl ether	-	-	-	NA	ND (10)	ND (10)	NA	NA	NA	ND (10)	ND (10)	NA
2-Hexanone	4800000	2900	8800000	NA	NA	NA	ND (50)	NA	NA	NA	NA	ND (50)
4-Methyl-2-pentanone	12000000	5200	20000000	NA	NA	NA	ND (50)	NA	NA	NA	NA	ND (50)
Acetone	31000000	2100	1000000000	NA	NA	NA	ND (100)	NA	NA	NA	NA	ND (100)
Benzene	9400	5	36000	NA	ND (5)	ND (5)	ND (5.0)	NA	NA	ND (5)	ND (5)	ND (5.0)
Bromodichloromethane	11000	100	38000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
Bromoform	100000	100	3100000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
Bromomethane	65000	29	9000	ND	ND (1)	ND (1)	NA	ND (1)	8.8	ND (1)	ND (1)	ND (1.0)
Carbon disulfide	1100000	2300	550000	NA	NA	NA	ND (50)	NA	NA	NA	NA	ND (50)
Carbon tetrachloride	1600	5	2400	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
Chlorobenzene	68000	100	470000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
Chloroethane	200000	910	5700000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
Chloroform	96000	100	180000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
Chloromethane	110000	270	52000	ND	ND (1)	ND (1)	NA	ND (1)	ND	ND (1)	ND (1)	ND (1.0)

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria (2)	Industrial Drinking Water Criteria (2)	Industrial Groundwater Volatilization to Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #								
				MW-4 11/14/96 AOI # 15	PFW-5 3/31/97 AOI # 15	PFW-9 4/1/97 AOI # 16	MW-3 11/14/96 AOI # 18	MW-3 11/14/96 AOI # 18	MW-3 11/14/96 AOI # 18	PFW-4 4/1/97 AOI # 18	PFB-21 GW 4/25/97 AOI # 21	MW-10 11/13/96 AOI # 15
cis-1,2-Dichloroethene	170000	70	3500000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
cis-1,3-Dichloropropene	-	-	-	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
Dibromochloromethane	9500	100	110000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
Dichlorodifluoromethane (CFC-12)	300000	4800	300000	NA	ND (1)	ND (1)	NA	NA	NA	ND (1)	ND (1)	NA
Ethylbenzene	170000	74	170000	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
m&p-Xylene	-	-	-	NA	ND (3)	ND (3)	NA	NA	NA	ND (3)	ND (3)	NA
Methylene chloride	110000	5	1400000	NA	ND (5)	ND (5)	ND (5.0)	NA	NA	ND (5)	ND (5)	ND (5.0)
o-Xylene	-	-	-	NA	ND (3)	ND (3)	NA	NA	NA	ND (3)	ND (3)	NA
Styrene	3200	100	310000	NA	NA	NA	ND (1.0)	NA	NA	NA	NA	ND (1.0)
Tetrachloroethene	5100	5	170000	0.7	ND (1)	ND (1)	NA	ND (1)	ND	ND (1)	ND (1)	ND (1.0)
Toluene	530000	790	530000	0.8	ND (1)	ND (1)	NA	ND (1)	0.5	ND (1)	ND (1)	ND (1.0)
trans-1,2-Dichloroethene	190000	100	6300000	ND	ND (1)	ND (1)	NA	ND (1)	ND	ND (1)	ND (1)	ND (1.0)
trans-1,3-Dichloropropene	-	-	-	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
Trichloroethene	11000	5	97000	5.3	ND (1)	ND (1)	NA	ND (1)	3.8	ND (1)	ND (1)	ND (1.0)
Trichlorofluoromethane (CFC-11)	1100000	7300	1100000	NA	ND (1)	ND (1)	NA	NA	NA	ND (1)	ND (1)	NA
Vinyl chloride	290	2	690	NA	ND (1)	ND (1)	ND (1.0)	NA	NA	ND (1)	ND (1)	ND (1.0)
Xylene (total)	190000	280	190000	NA	NA	NA	ND (3.0)	NA	NA	NA	NA	ND (3.0)

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO)
EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #								
				MW-10 11/13/96 AOI # 15	MW-10 11/13/96 None	MW-10 4/1/97 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-8 11/13/96 None	GP-7 8/30/96 None
General Chemistry (mg/L)												
Diesel Fuel	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	ND (0.20)
Metals (ug/L)												
Arsenic (Dissolved)	4700	50	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	4700	50	-	NA	ND	ND (5)	NA	NA	NA	ND	NA	ND (5.0)
Barium (Dissolved)	15000000	2000	-	ND (200)	NA	NA	NA	NA	NA	NA	NA	NA
Barium	15000000	2000	-	NA	260	1600	NA	NA	NA	340	NA	710
Cadmium (Dissolved)	210000	5	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	210000	5	-	NA	NA	ND (0.5)	NA	NA	NA	NA	NA	2.2
Chromium (Dissolved)	1000000	30000	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	1000000	30000	-	NA	NA	ND (50)	NA	NA	NA	NA	NA	ND (50)
Copper (Dissolved)	8100000	1000	-	ND (25)	NA	NA	NA	NA	NA	NA	NA	NA
Copper	8100000	1000	-	NA	ND	ND (25)	NA	NA	NA	ND	NA	32
Lead (Dissolved)	-	4	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	-	4	-	NA	14	ND (3)	NA	NA	NA	ND	NA	ND (40)
Mercury (Dissolved)	56	2	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	56	2	-	NA	NA	ND (0.2)	NA	NA	NA	NA	NA	ND (0.20)
Selenium (Dissolved)	1100000	50	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	1100000	50	-	NA	ND	ND (5)	NA	NA	NA	ND	NA	ND (5.0)
Silver (Dissolved)	1000000	98	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	1000000	98	-	NA	NA	ND (0.5)	NA	NA	NA	NA	NA	ND (0.50)
Zinc (Dissolved)	70000000	5000	-	ND (20)	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	70000000	5000	-	NA	ND	ND (20)	NA	NA	NA	ND	NA	91
PCBs (ug/L)												
Aroclor-1016	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Aroclor-1221	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Aroclor-1232	-	-	-	NA	NA	NA	ND (0.40)	NA	NA	NA	NA	NA
Aroclor-1242	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Aroclor-1248	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Aroclor-1254	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Aroclor-1260	-	-	-	NA	NA	NA	ND (0.20)	NA	NA	NA	NA	NA
Total PCBs	2.3	0.5	45	ND (.2)	ND	NA	NA	ND (.2)	NA	ND	NA	NA
Semi - Volatiles (ug/L)												
1,2,4-Trichlorobenzene	15000	70	300000	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	130000	2100	-	NA	NA	NA	ND (50)	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	5500	320	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
2,4-Dichlorophenol	40000	210	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
2,4-Dimethylphenol	440000	1000	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
2,4-Dinitrophenol	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-10 11/13/96 AOI # 15	MW-10 11/13/96 None	MW-10 4/1/97 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-8 11/13/96 None	GP-7 8/30/96 None
2,4-Dinitrotoluene	1300	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
2-Chloronaphthalene	6700	5200	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
2-Chlorophenol	82000	130	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
2-Methyl naphthalene	32000	750	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
2-Methylphenol	710000	1000	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
2-Nitroaniline	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA
2-Nitrophenol	72000	58	-	NA	ND	NA	NA	ND (5)	NA	ND	NA	NA
3,3-Dichlorobenzidine	270	8	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA
3-Nitroaniline	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	8800	20	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	62000	420	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
4-Chloroaniline	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
4-Methylphenol	75000	100	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
4-Nitroaniline	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA
4-Nitrophenol	-	-	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA
Acenaphthene	4200	3800	4200	NA	ND	NA	NA	ND (5)	NA	ND	NA	NA
Acenaphthylene	3900	75	3900	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Anthracene	43	43	43	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Benzo(a)anthracene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Benzo(a)pyrene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	2100	5	210000	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	47	6	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Butyl benzylphthalate	2700	2700	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Carbazole	2900	170	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Chrysene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Dibenzofuran	-	-	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Diethyl phthalate	1100000	16000	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Dimethyl phthalate	4200000	210000	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Di-n-butylphthalate	11000	2500	-	NA	ND	NA	NA	ND (5)	NA	ND	NA	NA
Di-n-octyl phthalate	250	380	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Fluoranthene	210	210	210	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Fluorene	2000	2000	2000	NA	ND	NA	NA	ND (5)	NA	ND	NA	NA

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-10 11/13/96 AOI # 15	MW-10 11/13/96 None	MW-10 4/1/97 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-8 11/13/96 None	GP-7 8/30/96 None
Hexachlorobenzene	2	1	3000	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Hexachlorobutadiene	200	45	3200	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	1400	50	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Hexachloroethane	1500	250	50000	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Isophorone	1100000	3700	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Naphthalene	31000	750	31000	NA	ND	NA	NA	ND (5)	NA	ND	NA	NA
Nitrobenzene	9600	10	2100000	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	220	5	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	30000	710	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Pentachlorophenol	85	1	-	NA	NA	NA	ND (20)	NA	NA	NA	NA	NA
Phenanthrene	1000	75	1000	NA	ND	NA	NA	ND (5)	NA	ND	NA	NA
Phenol	28000000	13000	-	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Pyrene	140	140	140	NA	NA	NA	ND (5.0)	NA	NA	NA	NA	NA
Volatiles (ug/L)												
1,1,1-Trichloroethane	220000	200	1300000	NA	ND	ND (1)	NA	ND (1)	NA	ND	ND	NA
1,1,2,2-Tetrachloroethane	2100	17	77000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
1,1,2-Trichloroethane	9500	5	110000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
1,1-Dichloroethane	2100000	2500	5100000	NA	ND	ND (1)	NA	ND (1)	NA	ND	ND	NA
1,1-Dichloroethene	9000	7	1300	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
1,2-Dichlorobenzene	160000	600	160000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
1,2-Dichloroethane	11000	5	59000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
1,2-Dichloropropane	7500	5	36000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
1,3-Dichlorobenzene	110000	600	-	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
1,4-Dichlorobenzene	2800	75	74000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
2-Butanone	240000000	38000	240000000	NA	NA	NA	NA	NA	ND (50)	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	NA	NA	ND (10)	NA	NA	NA	NA	NA	NA
2-Hexanone	4800000	2900	8800000	NA	NA	NA	NA	NA	ND (50)	NA	NA	NA
4-Methyl-2-pentanone	12000000	5200	20000000	NA	NA	NA	NA	NA	ND (50)	NA	NA	NA
Acetone	31000000	2100	1000000000	NA	NA	NA	NA	NA	ND (100)	NA	NA	NA
Benzene	9400	5	36000	NA	NA	ND (5)	NA	NA	ND (5.0)	NA	NA	NA
Bromodichloromethane	11000	100	38000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
Bromoform	100000	100	3100000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
Bromomethane	65000	29	9000	NA	ND	ND (1)	NA	ND (1)	NA	ND	ND	NA
Carbon disulfide	1100000	2300	550000	NA	NA	NA	NA	NA	ND (50)	NA	NA	NA
Carbon tetrachloride	1600	5	2400	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
Chlorobenzene	68000	100	470000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
Chloroethane	200000	910	5700000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
Chloroform	96000	100	180000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
Chloromethane	110000	270	52000	NA	ND	ND (1)	NA	ND (1)	NA	ND	ND	NA

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria (2)	Industrial Drinking Water Criteria (2)	Industrial Groundwater Volatilization to Inhalation Criteria (2)	MW-10 11/13/96 AOI # 15	MW-10 11/13/96 None	MW-10 4/1/97 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-6 11/13/96 None	MW-8 11/13/96 None	GP-7 8/30/96 None
Sample Location (depth ft. bgs)												
Sample Date												
AOI #												
cis-1,2-Dichloroethene	170000	70	3500000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
cis-1,3-Dichloropropene	-	-	-	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
Dibromochloromethane	9500	100	110000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	300000	4800	300000	NA	NA	ND (1)	NA	NA	NA	NA	NA	NA
Ethylbenzene	170000	74	170000	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
m&p-Xylene	-	-	-	NA	NA	ND (3)	NA	NA	NA	NA	NA	NA
Methylene chloride	110000	5	1400000	NA	NA	ND (5)	NA	NA	ND (5.0)	NA	NA	NA
o-Xylene	-	-	-	NA	NA	ND (3)	NA	NA	NA	NA	NA	NA
Styrene	3200	100	310000	NA	NA	NA	NA	NA	ND (1.0)	NA	NA	NA
Tetrachloroethene	5100	5	170000	NA	0.6	ND (1)	NA	ND (1)	NA	0.6	ND	NA
Toluene	530000	790	530000	NA	0.7	ND (1)	NA	ND (1)	NA	0.7	1.4	NA
trans-1,2-Dichloroethene	190000	100	6300000	NA	ND	ND (1)	NA	ND (1)	NA	ND	ND	NA
trans-1,3-Dichloropropene	-	-	-	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
Trichloroethene	11000	5	97000	NA	4.6	ND (1)	NA	ND (1)	NA	4.9	4.7	NA
Trichlorofluoromethane (CFC-11)	1100000	7300	1100000	NA	NA	ND (1)	NA	NA	NA	NA	NA	NA
Vinyl chloride	290	2	690	NA	NA	ND (1)	NA	NA	ND (1.0)	NA	NA	NA
Xylene (total)	190000	280	190000	NA	NA	NA	NA	NA	ND (3.0)	NA	NA	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO)
EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA
sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-11 11/13/96 None	MW-12 11/13/96 None	PFW-1 4/1/97 None
General Chemistry (mg/L)						
Diesel Fuel	-	-	-	NA	NA	NA
Metals (ug/L)						
Arsenic (Dissolved)	4700	50	-	NA	NA	NA
Arsenic	4700	50	-	ND	ND	40
Barium (Dissolved)	15000000	2000	-	NA	NA	NA
Barium	15000000	2000	-	260	270	550
Cadmium (Dissolved)	210000	5	-	NA	NA	NA
Cadmium	210000	5	-	NA	NA	ND (0.5)
Chromium (Dissolved)	1000000	30000	-	NA	NA	NA
Chromium	1000000	30000	-	NA	NA	ND (50)
Copper (Dissolved)	8100000	1000	-	NA	NA	NA
Copper	8100000	1000	-	ND	ND	ND (25)
Lead (Dissolved)	-	4	-	NA	NA	NA
Lead	-	4	-	22	ND	ND (3)
Mercury (Dissolved)	56	2	-	NA	NA	NA
Mercury	56	2	-	NA	NA	ND (0.2)
Selenium (Dissolved)	1100000	50	-	NA	NA	NA
Selenium	1100000	50	-	ND	ND	ND (5)
Silver (Dissolved)	1000000	98	-	NA	NA	NA
Silver	1000000	98	-	NA	NA	ND (0.5)
Zinc (Dissolved)	70000000	5000	-	NA	NA	NA
Zinc	70000000	5000	-	ND	ND	ND (20)
PCBs (ug/L)						
Aroclor-1016	-	-	-	NA	NA	NA
Aroclor-1221	-	-	-	NA	NA	NA
Aroclor-1232	-	-	-	NA	NA	NA
Aroclor-1242	-	-	-	NA	NA	NA
Aroclor-1248	-	-	-	NA	NA	NA
Aroclor-1254	-	-	-	NA	NA	NA
Aroclor-1260	-	-	-	NA	NA	NA
Total PCBs	2.3	0.5	45	ND	NA	NA
Semi - Volatiles (ug/L)						
1,2,4-Trichlorobenzene	15000	70	300000	NA	NA	NA
2,4,5-Trichlorophenol	130000	2100	-	NA	NA	NA
2,4,6-Trichlorophenol	5500	320	-	NA	NA	NA
2,4-Dichlorophenol	40000	210	-	NA	NA	NA
2,4-Dimethylphenol	440000	1000	-	NA	NA	NA
2,4-Dinitrophenol	-	-	-	NA	NA	NA

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-11 11/13/96 None	MW-12 11/13/96 None	PFW-1 4/1/97 None
2,4-Dinitrotoluene	1300	5	-	NA	NA	NA
2,6-Dinitrotoluene	-	-	-	NA	NA	NA
2-Chloronaphthalene	6700	5200	-	NA	NA	NA
2-Chlorophenol	82000	130	-	NA	NA	NA
2-Methyl naphthalene	32000	750	-	NA	NA	NA
2-Methylphenol	710000	1000	-	NA	NA	NA
2-Nitroaniline	-	-	-	NA	NA	NA
2-Nitrophenol	72000	58	-	ND	ND	NA
3,3-Dichlorobenzidine	270	8	-	NA	NA	NA
3-Nitroaniline	-	-	-	NA	NA	NA
4,6-Dinitro-2-methylphenol	8800	20	-	NA	NA	NA
4-Bromophenyl phenyl ether	-	-	-	NA	NA	NA
4-Chloro-3-methylphenol	62000	420	-	NA	NA	NA
4-Chloroaniline	-	-	-	NA	NA	NA
4-Chlorophenyl phenyl ether	-	-	-	NA	NA	NA
4-Methylphenol	75000	100	-	NA	NA	NA
4-Nitroaniline	-	-	-	NA	NA	NA
4-Nitrophenol	-	-	-	NA	NA	NA
Acenaphthene	4200	3800	4200	ND	ND	NA
Acenaphthylene	3900	75	3900	NA	NA	NA
Anthracene	43	43	43	NA	NA	NA
Benzo(a)anthracene	5	5	-	NA	NA	NA
Benzo(a)pyrene	5	5	-	NA	NA	NA
Benzo(b)fluoranthene	5	5	-	NA	NA	NA
Benzo(g,h,i)perylene	5	5	-	NA	NA	NA
Benzo(k)fluoranthene	5	5	-	NA	NA	NA
bis(2-Chloroethoxy)methane	-	-	-	NA	NA	NA
bis(2-Chloroethyl)ether	2100	5	210000	NA	NA	NA
bis(2-Chloroisopropyl)ether	-	-	-	NA	NA	NA
bis(2-Ethylhexyl)phthalate	47	6	-	NA	NA	NA
Butyl benzylphthalate	2700	2700	-	NA	NA	NA
Carbazole	2900	170	-	NA	NA	NA
Chrysene	5	5	-	NA	NA	NA
Dibenzo(a,h)anthracene	5	5	-	NA	NA	NA
Dibenzofuran	-	-	-	NA	NA	NA
Diethyl phthalate	1100000	16000	-	NA	NA	NA
Dimethyl phthalate	4200000	210000	-	NA	NA	NA
Di-n-butylphthalate	11000	2500	-	ND	ND	NA
Di-n-octyl phthalate	250	380	-	NA	NA	NA
Fluoranthene	210	210	210	NA	NA	NA
Fluorene	2000	2000	2000	ND	ND	NA

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-11 11/13/96 None	MW-12 11/13/96 None	PFW-1 4/1/97 None
Hexachlorobenzene	2	1	3000	NA	NA	NA
Hexachlorobutadiene	200	45	3200	NA	NA	NA
Hexachlorocyclopentadiene	1400	50	-	NA	NA	NA
Hexachloroethane	1500	250	50000	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5	5	-	NA	NA	NA
Isophorone	1100000	3700	-	NA	NA	NA
Naphthalene	31000	750	31000	ND	ND	NA
Nitrobenzene	9600	10	2100000	NA	NA	NA
N-Nitrosodi-n-propylamine	220	5	-	NA	NA	NA
N-Nitrosodiphenylamine	30000	710	-	NA	NA	NA
Pentachlorophenol	85	1	-	NA	NA	NA
Phenanthrene	1000	75	1000	0.14	ND	NA
Phenol	28000000	13000	-	NA	NA	NA
Pyrene	140	140	140	NA	NA	NA
Volatiles (ug/L)						
1,1,1-Trichloroethane	220000	200	1300000	ND	ND	ND (1)
1,1,2,2-Tetrachloroethane	2100	17	77000	NA	NA	ND (1)
1,1,2-Trichloroethane	9500	5	110000	NA	NA	ND (1)
1,1-Dichloroethane	2100000	2500	5100000	ND	ND	ND (1)
1,1-Dichloroethene	9000	7	1300	NA	NA	ND (1)
1,2-Dichlorobenzene	160000	600	160000	NA	NA	ND (1)
1,2-Dichloroethane	11000	5	59000	NA	NA	ND (1)
1,2-Dichloropropane	7500	5	36000	NA	NA	ND (1)
1,3-Dichlorobenzene	110000	600	-	NA	NA	ND (1)
1,4-Dichlorobenzene	2800	75	74000	NA	NA	ND (1)
2-Butanone	240000000	38000	240000000	NA	NA	NA
2-Chloroethyl vinyl ether	-	-	-	NA	NA	ND (10)
2-Hexanone	4800000	2900	8800000	NA	NA	NA
4-Methyl-2-pentanone	12000000	5200	20000000	NA	NA	NA
Acetone	31000000	2100	1000000000	NA	NA	NA
Benzene	9400	5	36000	NA	NA	ND (5)
Bromodichloromethane	11000	100	38000	NA	NA	ND (1)
Bromoform	100000	100	3100000	NA	NA	ND (1)
Bromomethane	65000	29	9000	ND	ND	ND (1)
Carbon disulfide	1100000	2300	550000	NA	NA	NA
Carbon tetrachloride	1600	5	2400	NA	NA	ND (1)
Chlorobenzene	68000	100	470000	NA	NA	ND (1)
Chloroethane	200000	910	5700000	NA	NA	ND (1)
Chloroform	96000	100	180000	NA	NA	ND (1)
Chloromethane	110000	270	52000	ND	2.4	ND (1)

TABLE 6.3

WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria (2)	Industrial Drinking Water Criteria (2)	Industrial Groundwater Volatilization to Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-11 11/13/96 None	MW-12 11/13/96 None	PFW-1 4/1/97 None
cis-1,2-Dichloroethene	170000	70	3500000	NA	NA	ND (1)
cis-1,3-Dichloropropene	-	-	-	NA	NA	ND (1)
Dibromochloromethane	9500	100	110000	NA	NA	ND (1)
Dichlorodifluoromethane (CFC-12)	300000	4800	300000	NA	NA	ND (1)
Ethylbenzene	170000	74	170000	NA	NA	ND (1)
m&p-Xylene	-	-	-	NA	NA	ND (3)
Methylene chloride	110000	5	1400000	NA	NA	ND (5)
o-Xylene	-	-	-	NA	NA	ND (3)
Styrene	3200	100	310000	NA	NA	NA
Tetrachloroethene	5100	5	170000	0.6	0.7	ND (1)
Toluene	530000	790	530000	1.6	1.2	ND (1)
trans-1,2-Dichloroethene	190000	100	6300000	ND	ND	ND (1)
trans-1,3-Dichloropropene	-	-	-	NA	NA	ND (1)
Trichloroethene	11000	5	97000	6.2	7.1	ND (1)
Trichlorofluoromethane (CFC-11)	1100000	7300	1100000	NA	NA	ND (1)
Vinyl chloride	290	2	690	NA	NA	ND (1)
Xylene (total)	190000	280	190000	NA	NA	NA

Notes:
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO)
EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA
sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE 6.4

TCLP ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

		Sample Location (depth ft. bgs)										
		Sample Date										
		AOI #										
Parameter	*Regulatory Levels* [1]	*Plater: South Box Tank 4/4/97*	*Plater: Tank 22 Vent Box 4/4/97*	*Plater: Tanks 19/20 Grate 4/4/97*	*Plater: South AST 4/4/97*	*Overhead Waste Pipe 1 4/4/97*	*Overhead Waste Pipe 2 4/4/97*	*Overhead Waste Pipe 3 4/4/97*	*Overhead Waste Pipe 4 4/4/97*	*Overhead Waste Pipe 5 4/4/97*	*AST No.6 4/25/97*	*Tool Room Air Wash Unit 4/7/97*
		AOI # 9	*AOI # 9*	*AOI # 9*	*AOI # 9*	*AOI # 10*	*AOI # 10*	*AOI # 10*	*AOI # 10*	*AOI # 10*	*AOI # 13*	*None*
Metals (ug/L)												
Arsenic	5000	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	11
Barium	100000	ND (600)	700	ND (600)	ND (600)	ND (600)	1200	ND (600)	ND (600)	ND (600)	ND (600)	1200
Cadmium	1000	ND (10)	370	ND (10)	ND (10)	130	40	10	30	30	10	150
Chromium	5000	1200	2000	60	730	100	1400	ND (0.02)	40	ND (0.02)	60	8800
Copper	-	1600	30000	60	350	750	1700	60	50	10	ND (20)	11000
Lead	5000	650	3900	ND (80)	590	ND (80)	130	ND (80)	ND (80)	130	ND (80)	6100
Mercury	200	ND (1)	2	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (2)	ND (1)
Selenium	1000	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
Silver	5000	40	130	ND (20)	30	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)
Zinc	-	4800000	620000	6800000	5100000	23000	270000	850000	3200000	2500	100	12000
Volatiles (ug/L)												
1,1-Dichloroethene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (2000)	NA
1,2-Dichloroethane	500	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (200)	NA
1,4-Dichlorobenzene	7500	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (500)	NA
2-Butanone	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (1000)	NA
Benzene	500	NA	NA	NA	NA	NA	NA	NA	NA	NA	79000	NA
Carbon tetrachloride	500	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (200)	NA
Chlorobenzene	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (500)	NA
Chloroform	6000	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (200)	NA
Tetrachloroethene	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (300)	NA
Trichloroethene	500	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (500)	NA
Vinyl chloride	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (300)	NA

Notes:

_____ TCLP Criteria exceeded.

Metals - Michigan 10 Metals list

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(1) - Resource Conservation and Recovery Act (RCRA) (40 CFR 261.21-24).

TABLE 6.5

PCB ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Regulatory Limit [4]	Sample Location (depth ft. bgs) / Sample Date / AOI #						
		Wood Floor Blocks ML-1_5 4/4/97 AOI #19	Wood Floor Blocks H-19_2 4/4/97 AOI #20	Beneath Transformer 1A Wipe 4A 4/4/97 None	Beneath Transformer 1A Wipe 4B 4/4/97 None	Beneath Transformer 9 Wipe 3A 4/4/97 None	Beneath Transformer 9 Wipe 3B 4/4/97 None	C-7 11/7/96 None
General Chemistry (mg/Kg)								
Petroleum hydrocarbons	10	NA	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	NA	NA	NA	NA	NA	NA	NA
PCBs (ug/100cm2)								
Aroclor-1016	10	NA	NA	NA	NA	NA	NA	ND (1.0)
Aroclor-1221	10	NA	NA	NA	NA	NA	NA	ND (1.0)
Aroclor-1232	10	NA	NA	NA	NA	NA	NA	ND (1.0)
Aroclor-1242	10	NA	NA	NA	NA	NA	NA	ND (1.0)
Aroclor-1248	10	NA	NA	NA	NA	NA	NA	ND (1.0)
Aroclor-1254	10	NA	NA	NA	NA	NA	NA	ND (1.0)
Aroclor-1260	10	NA	NA	NA	NA	NA	NA	ND (1.0)
Total PCBs	50000 [3]	NA	NA	NA	NA	NA	NA	NA
Total PCBs	10	NA	NA	5.5	11	20	ND (5)	NA
Total PCBs (ug/Kg)	9900 [2]	ND (1000)	ND (1000)	NA	NA	NA	NA	NA

Notes:

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14.

(3) - Toxic Substances Control Act (40 CFR 761.60).

(4) - Toxic Substances Control Act (40 CFR 761.125).

TABLE 6.5

PCB ANALYTICAL RESULTS
FORMER PEREGRINE (US), INC., COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Regulatory Limit[4]	Galbestos 4/4/97 None	N-27 11/7/96 None	Pl Floor near C7spill Wipe 2A 4/4/97 None	Pl Floor near C7spill Wipe 2B 4/4/97 None	Pl Floor near C7spill Wipe 2C 4/4/97 None	Wood Floor Blocks D-3 4/4/97 None	Wood Floor Blocks F-2 4/4/97 None	Wood Floor Blocks HJ-11_7 4/4/97 None
Sample Location (depth ft. bgs) / *Sample Date* / *AOI #*									
General Chemistry (mg/Kg)									
Petroleum hydrocarbons	10	NA	56	NA	NA	NA	NA	NA	NA
Total Solids (%)	-	NA	87.6	NA	NA	NA	NA	NA	NA
PCBs (ug/100cm2)									
Aroclor-1016	10	NA	ND (1.0)	NA	NA	NA	NA	NA	NA
Aroclor-1221	10	NA	ND (1.0)	NA	NA	NA	NA	NA	NA
Aroclor-1232	10	NA	ND (1.0)	NA	NA	NA	NA	NA	NA
Aroclor-1242	10	NA	ND (1.0)	NA	NA	NA	NA	NA	NA
Aroclor-1248	10	NA	ND (1.0)	NA	NA	NA	NA	NA	NA
Aroclor-1254	10	NA	ND (1.0)	NA	NA	NA	NA	NA	NA
Aroclor-1260	10	NA	ND (1.0)	NA	NA	NA	NA	NA	NA
Total PCBs	50000[3]	1300	NA	NA	NA	NA	NA	NA	NA
Total PCBs	10	NA	NA	ND (5)	ND (5)	ND (5)	NA	NA	NA
Total PCBs (ug/Kg)	9900[2]	NA	NA	NA	NA	NA	ND (1000)	ND (1000)	ND (1000)

Notes:

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14.

(3) - Toxic Substances Control Act (40 CFR 761.60).

(4) - Toxic Substances Control Act (40 CFR 761.125).

TABLE 6.6

WIPE ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

		Sample Location (depth ft. bgs)						
		Sample Date						
		AOI #						
Parameter	*Regulatory Limits* [4]	*BeneathTransformer 1A Wipe 4A* 4/4/97 *None*	*BeneathTransformer 1A Wipe 4B* 4/4/97 *None*	*BeneathTransformer 9 Wipe 3A* 4/4/97 *None*	*BeneathTransformer 9 Wipe 3B* 4/4/97 *None*	*Pl Floor near C7spill Wipe 2A* 4/4/97 *None*	*Pl Floor near C7spill Wipe 2B* 4/4/97 *None*	*Pl Floor near C7spill Wipe 2C* 4/4/97 *None*
Total PCBs (ug/100cm2)	10	5.5	11	20	ND (5)	ND (5)	ND (5)	ND (5)

Notes:

_____ Regulatory Limits exceeded.

PCBs - Polychlorinated Biphenyls.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

(4) - Toxic Substances Control Act (40 CFR 761.125).

APPENDIX A

MONITORING WELL AND BORING LOGS

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LFR
Sep 30, 2009 08:55

APPENDIX A

LIST OF BOREHOLE AND MONITORING WELL LOGS
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Boring/ Well ID	*Date Completed*
Study 1 (08/96)	
GP-1	08/30/96
GP-2	08/30/96
GP-3	08/30/96
GP-4	08/30/96
GP-5	08/30/96
GP-6	08/30/96
GP-7	08/30/96
Study 4 (03/04/97)	
PFW-1	03/13/97
PFW-2	03/14/97
PFW-3	03/17/97
PFW-4	03/17/97
PFB-5	03/18/97
PFW-5	03/18/97
PFW-6	03/18/97
PFB-7	03/18/97
PFW-8	03/19/97
PFW-9	03/19/97
PFW-10	03/20/97
PFW-11	03/20/97
PFW-12	03/21/97
PFB-13	03/24/97
PFB-14	03/24/97
PFB-15	03/24/97
PFB-16	03/25/97
PFB-17	03/26/97
PFB-18	03/26/97
PFB-19	03/26/97
PFB-20	03/26/97
PFB-21	04/24/97
PFB-22	04/24/97
PFB-23	04/24/97
PFB-24	04/24/97
PFB-25	04/24/97
PFB-26	04/25/97
PFB-27	04/25/97

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Sep 30, 2009 08:55

General Motors Corporation
Phase II Environmental Site Assessment

September 1996

SOIL BOREHOLE LOG

TE NAME & LOCATION: GM Delphi Coldwater Road Plant Press Room (outside) South End GP-1

DRILLING METHOD: Geoprobe

SAMPLING METHOD: 4' Continuous sampler

	BORING NO.	SHEET	DRILLING START	DRILLING FINISH
	GP-1	1 OF 1	Time 1125	Time 1200
WATER LEVEL				
TIME				
DATE			Date 8/30/96 →	Date
CASING DEPTH				

ATUM ELEVATION

RILL RIG

NGLE BEARING

AMPLE HAMMER TORQUE Ft.-Lbs.

SURFACE CONDITIONS: Grassy area near (2") water main for sprinkling system adjacent to east side of Press Room

Drilling Contractor Stems Drilling

DEPTH IN FEET (Elevation)	BLOWS / 6 in. ON SAMPLER (Recovery)	RECOVERY	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	GRAPHIC SYMBOL	DEPTH IN FEET From	DEPTH IN FEET To	DESCRIPTION OF OPERATION AND REMARKS
1							
2	NO SAMPLE						
3							
4			Brown St.ff Clay w/ some sand and a few pebbles slight sheen on inside of plastic sample tube @ 7'. Collected composite soil sample for DRO TPH and MI 10 Metals.				Sample GP-1 4'-8' Composite
5							
6		100%					
7							
8							
9			Brown / Gray Stiff Clay				
10							
11		100%	Saturated @ ~ 11.5' Brown fine wet sand.				
12					12		Temporary well Screened from 12-14' did not produce enough water to
13					13		
14					14		

Logged By Angela Cook Chk'd By

Date 8/30/96

General Motors Corporation
Phase II Environmental Site Assessment

September 1996

SOIL BOREHOLE LOG

TE NAME & LOCATION: GM Delphi Coldwater Road Plant Press Room (outside) GP-2

DRILLING METHOD: Geoprobe

SAMPLING METHOD: 4' Continuous

BORING NO. GP-2

SHEET 1 OF 1

DRILLING

	START	FINISH
WATER LEVEL		
TIME	Time 1230	Time 1310
DATE	Date 8/5/96	Date 8/5/96
CASING DEPTH		

DATUM ELEVATION

DRILL RIG

ANGLE BEARING

SAMPLE HAMMER TORQUE Ft.-Lbs.

SURFACE CONDITIONS: Gravel area adjacent to the east side of the press room next to piping outfall w/ concrete catchment pad.

Drilling Contractor Stearns Drilling

Logged By Angela Cook

DEPTH IN FEET (Elevation)	BLOWS / 6 in. ON SAMPLER (Recovery)	RECOVERY	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	GRAPHIC SYMBOL	DEPTH IN FEET From	DEPTH IN FEET To	DESCRIPTION OF OPERATION AND REMARKS
		50%	Gravely slightly wet, sheen inside of sample tube from 0-1'				
2		100%	Brown stiff clay with some pebbles. Does not appear to be impact past 1' by visual inspection.				Sample taken 0-2' composite for DRO TPH and MI 10 Metals
3			No odor				
4			From 4'→ until hit water table				
			Tried to collect a water sample from 11-13' did not produce. 12-14' saturated and very silty, did not produce. 14-16' drove back into clay and could not collect a water				

General Motors Corporation
Phase II Environmental Site Assessment

September, 1996
963-8311

SOIL BOREHOLE LOG

TE NAME & LOCATION:
GM Delphi
Coldwater Road Plant
Bone Yard GP-3

DRILLING METHOD: Geoprobe

SAMPLING METHOD: 4' Continuous Sampler

BORING NO. GP-3

SHEET 1 OF 1

DRILLING

	START	FINISH
Time	1320	1445
Date	8/30/96	8/30/96

WATER LEVEL				
TIME				
DATE				
CASING DEPTH				

DATUM ELEVATION

RILL RIG

NGLE BEARING

SAMPLE HAMMER TORQUE Ft.-Lbs.

SURFACE CONDITIONS: 10" of concrete. Visable hydraulic oil ponded on surface.

Drilling Contractor Storna

DEPTH IN FEET (Elevation)	BLOWS / 6 In. ON SAMPLER (Recovery)	RECOVERY	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	GRAPHIC SYMBOL	DEPTH IN FEET From	DEPTH IN FEET To	DESCRIPTION OF OPERATION AND REMARKS
2			10" of concrete w/ rebar				Sampled Composite 1-4'
3		90%	Lt. Brown fill sand. No odor				• Metals • DRO TPH • VOC's
4			↓				

Logged By Douglas Castle

SOIL BOREHOLE LOG

SITE NAME & LOCATION: GM Delphi Coldwater Road Plant Boneyard GP 4

DRILLING METHOD: Geoprobe

BORING NO. GP 4

SHEET 1 OF 1

SAMPLING METHOD: continuous samples

DRILLING START: Time 1500 — Date 8/30/96; FINISH: Time 1515 — Date 8/30/96

WATER LEVEL / TIME / DATE / CASING DEPTH

DATUM — ELEVATION

DRILL RIG

ANGLE — BEARING

SAMPLE HAMMER TORQUE — Ft-Lbs.

SURFACE CONDITIONS: Concrete near stored press equipment leaking hidraulic oil

DEPTH IN FEET (Elevation)	BLOWS / 6 in. ON SAMPLER (Recovery)	RECOVERY	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	GRAPHIC SYMBOL	DEPTH IN FEET From	To	DESCRIPTION OF OPERATION AND REMARKS
			2" concrete on surface				0-4'
			Stiff brown clay				Composite taken for
2							· VOCs
3		90%	Sandy lense at 3'				· DRO TPH
4			Dark brown moist sand				· metals
			Stiff clay from 3.5-4'				

Drilling Contractor: [illegible]

Logged By: [illegible]

General Motors Corporation — Phase II Environmental Site Assessment — September 2009

SOIL BOREHOLE LOG

TE NAME & LOCATION: GM Delphi Coldwater Road Plant Boneyard GP-5

DRILLING METHOD: Geoprobe

SAMPLING METHOD: 4' continuous Sleeve

BORING NO. GP-5

SHEET 1 OF 1

	DRILLING START	DRILLING FINISH
WATER LEVEL		
TIME	Time 1520	Time 1530
DATE	Date 8/30/09	Date 8/30/09
CASING DEPTH		

DATUM ELEVATION

DRILL RIG

ANGLE BEARING

SAMPLE HAMMER TORQUE Ft.-Lbs.

SURFACE CONDITIONS: 1" Dirt over 2" concrete. Visually stained soil scrap area

Drilling Contractor: Stearns

DEPTH IN FEET (Elevation)	BLOWS / 6 in. ON SAMPLER (Recovery)	RECOVERY	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	GRAPHIC SYMBOL	DEPTH IN FEET From	DEPTH IN FEET To	DESCRIPTION OF OPERATION AND REMARKS
			1" Black Dirt 2" concrete ~~on surface~~ (FC) over remaining subsurface. 0				0-4' Composite taken for • VOCs • DRO TPH • MI 10 Metals
2			Stiff Brown to Dark Grey Clay 2-4'				
3		90%					
4							

Logged By: Angela Cook 9/1/09

SOIL BOREHOLE LOG

SITE NAME & LOCATION: GM Delphi Coldwater Road Plant Abandoned Chemical Storage Towers NW corner GP-6

DRILLING METHOD: Geoprobe

BORING NO. GP-6

SHEET 1 OF 1

SAMPLING METHOD: 4' continuous Geoprobe Sleeve

DRILLING: START Time 1030; FINISH Time 1110 [illegible]; Date 4/30/[illegible]

WATER LEVEL / TIME / DATE / CASING DEPTH

DATUM / ELEVATION

DRILL RIG

ANGLE / BEARING

SAMPLE HAMMER TORQUE Ft-Lbs.

SURFACE CONDITIONS: Vegetated area in Corner of Chemical Storage towers

DEPTH IN FEET (Elevation)	BLOWS / 6 In. ON SAMPLER (Recovery)	RECOVERY	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	GRAPHIC SYMBOL	DEPTH IN FEET From	To	DESCRIPTION OF OPERATION AND REMARKS
			0-4" Organic soils				
-			4"-12" Sand Brown soil w/ pebbles/cobbles				Sampled 0-4' Composite for VOCs SVOCs
-2		90%	1'-4' Brown stiff clay				
-3			No odor				
-4							
-12			4-14' Very stiff Material (clay)				
-13			14' No water				
-14							

Logged By: [illegible]

Drilling Contractor: [illegible]

SOIL BOREHOLE LOG

SITE NAME & LOCATION: GM Delphi Coldwater Rd Plant West Side of WWTP GP 7

DRILLING METHOD: Geoprobe

BORING NO.: GP 7

SHEET 1 OF 1

SAMPLING METHOD: Macro Core Sampler

DRILLING START / FINISH

WATER LEVEL					Time 1400	Time
TIME	1430					
DATE	9/30/96				Date 9/30/96	Date
CASING DEPTH	NA					

DATUM ELEVATION

DRILL RIG

SURFACE CONDITIONS: Vegetated West Side of WWTP

ANGLE BEARING

SAMPLE HAMMER TORQUE Ft-Lbs.

DEPTH IN FEET (Elevation)	BLOWS / 6 in. ON SAMPLER (Recovery)	RECOVERY	SAMPLE NUMBER AND DESCRIPTION OF MATERIAL	GRAPHIC SYMBOL	DEPTH IN FEET From	To	DESCRIPTION OF OPERATION AND REMARKS
2			Measured Depth to Bottom of WWTP basin ~10' BGS water level 11' BGS bottom of basin				
3							
4							
8			Decided to take sample @ 10-12' [illegible]				
9							
10		10	Saturated Brown Sand. Lost drive pt in top of 2" casing				Sampled ~12' Composite for DRO TPH and Metals
11		100% 11	Dk Gray Stiff clay				
12		12	Approx 5' of standing water in the hole				

Drilling Contractor: [illegible]

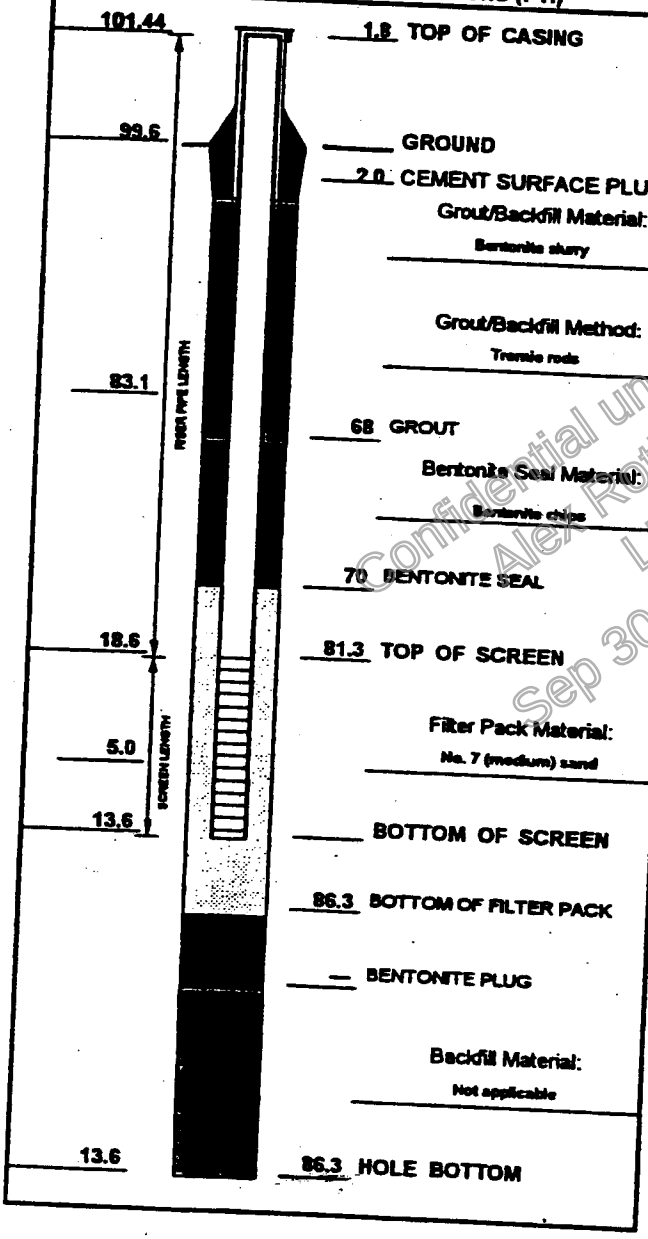
Logged By: [illegible]

ENVIRONMENTAL AUDIT REPORT
PRIVILEGED DOCUMENT

RMT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-1
PROJ. NO:	4036.05	DATE INSTALLED:	3-13-97	OBSV. BY:	DPR	CHECKED BY:	DPR



1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 86.3 Ft.
____ In. From ____ To ____ Ft.

F) Surf. Casing Diameter: ____ In. From ____ To ____ Ft.
2nd Surface Casing: ____ In. From ____ To ____ Ft.

G) Installed Protective Cover W/ Lock? Yes

2. WELL DEVELOPMENT:

A) Method: Surge/pump with Bremer check valve

B) Time Spent Developing: 24 Hours

C) Water Removed: 300 Gallons
Added: 10 Gallons

D) Water Clarity Before/After Development:
Before: Opaque, gray
After: Slightly turbid (approximately 50 NTU)

F) Odor (Descr. if present) None

3. WATER LEVEL SUMMARY:

A) After Developing: ____ Ft. Below Top Of Casing

B) Other Date/Time: 3-31-97/1358 80.52 Ft.
Other Date/Time: ____ Ft.

Notes: Approximately 10 gallons of clean water were added to eliminate a temporary bridge during filter packing

ENVIRONMENTAL AUDIT REPORT
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-1
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 7
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-13-97
		SURFACE ELEV.	99.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
1	SS	17	16	0.6		Asphalt, broken. Fill: well-graded sand with gravel, little silt, little clay, brown, wet.	
2	SS	15	18	0		SANDY LEAN CLAY (CL), little fine to coarse sand, few fine to coarse gravel, slightly plastic, brown 10YR 4/3 with some mottling to grayish brown and yellowish brown, moist, (hard Pp > 4.5) (Glacial Till).	
3	SS	16	24	0		As above (CL), very stiff from 2 to 2.5 ft.	
					5	As above (CL), fractured, very stiff (Pp=3.4) below 5.7 feet.	
4	SS	15	24	0			
5	SS	22	24	0		As above (CL), becoming mottled brown, dark grayish brown and dark gray 10YR 4/1 - 4/2.	
6	SS	16	24	0	10	As above (CL), wet at sand partings @ 8.5' and 9.1', brown, trace fractures.	

GENERAL NOTES

DATE STARTED	12 MAR 97
DATE COMPLETED	13 MAR 97
RIG	CME 750 ATV
CREW CHIEF	R. BENNETT
LOGGED	DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	78.0 ft. bgl
AT COMPLETION ▽	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

ENVIRONMENTAL AUDIT REPORT
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-1
LOCATION	FLINT, MICHIGAN	SHEET NO.	2 OF 7
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-13-97
		SURFACE ELEV.	99.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
						As above (CL), stiff to very stiff, (Pp= 1.6 to 2.7).	
7	SS	15	24			As above (CL).	
						WELL-GRADED SAND WITH SILT (SW), fine to medium, trace gravel, few clay, brown 10YR 4/3, moist, pieces of clay till.	
					15	SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, brown 10YR 4/3, moist, stiff to very stiff (Glacial Till).	
8	SS	15	24	0		As above (CL), hard (Pp > 4).	
					20		
						As above (CL).	
9	SS	19	24	0			
						LEAN CLAY (CL), gradational areas of	

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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-1
LOCATION	FLINT, MICHIGAN	SHEET NO.	3 OF 7
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-13-97
		SURFACE ELEV.	99.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
						clayey silt and sandy silt, slightly plastic, mottled brown, dark yellowish brown, and brownish gray, hard, fractured, friable, (Glacial Till).	
					25	SILTY SAND (SM), fine, brown, wet.	
10	SS	40	24	0			
						LEAN CLAY (CL), slightly plastic, brown with dark yellowish brown and black precipitate along fractures, mostly dark grayish brown below 29.6', moist to wet along silt partings, very hard, faint lamination (Glaciolacustrine).	
					30		
					35		

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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-1
LOCATION	FLINT, MICHIGAN	SHEET NO.	4 OF 7
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-13-97
		SURFACE ELEV.	99.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
11	SS	20	0			As above (CL), gray 10YR 5/1 (based on cuttings).	
					40		
12	SS	17	24	0.6		As above (CL), wet along silt partings, very stiff (Pp = 3.2 to 3.7).	
					45	SILT (ML), grading from above clay, nonplastic, gray 10YR 5/1, moist, very stiff.	

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LOG OF TEST BORING

F-203 (R 01-87)

KMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-1
LOCATION	FLINT, MICHIGAN	SHEET NO.	5 OF 7
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-13-97
		SURFACE ELEV.	99.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
13	SS	14	24	0.3	50	LEAN CLAY (CL), trace fine gravel, trace fine to coarse sand, medium plastic, gray 10YR 5/1, moist, very stiff (Pp = 2.3 to 2.7), faint lamination (Glaciolacustrine).	
					55		
					60		

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LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFW-1
SHEET NO.: 6 OF 7
PROJECT NO.: 4036.05
INSTALLATION: 3-13-97
SURFACE ELEV.: 99.6
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
14	SS	16	24	0.2		As above (CL), abundant silt partings.	
					65		
					70	<— Drillers note change in resistance @ 71 feet.	
15	SS	88	18			POORLY-GRADED SAND (SP), fine, trace silt, light gray 10YR 7/1, moist to dry, faint stratification.	
					75		

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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-1
LOCATION	FLINT, MICHIGAN	SHEET NO.	7 OF 7
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-13-97
		SURFACE ELEV.	99.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES

INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH	VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
16	SS	23	18			As above (SP), some medium sand, gray 10YR 6/1, wet.	
					80		
17	SS	40	24			As above (SP), mostly medium grained.	
					85	LEAN CLAY (CL).	
						End of boring at 85 feet.	

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LOG OF TEST BORING

F-203 (R 01-87)

RMT

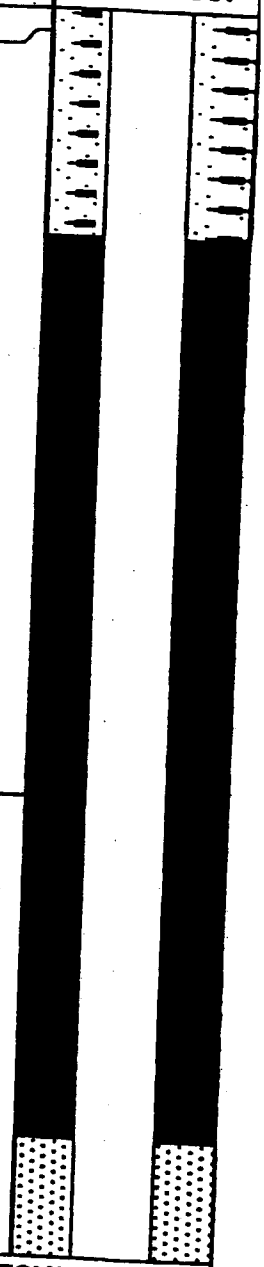
PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFW-2
SHEET NO.: 1 OF 2
PROJECT NO.: 4036.05
INSTALLATION: 3-14-97
SURFACE ELEV.: 98.5
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES

INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH	VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
1	SS	26	18	0		Topsoil, wet.
						SANDY LEAN CLAY WITH GRAVEL (CL), some fine to coarse sand, little fine to coarse gravel, slightly plastic, brown 10YR 4/3 with some dark yellowish brown mottling, moist, hard (Pp > 4.5).
2	SS	15	16	0		
						As above (CL), increasing moisture below 3 feet, stiff (Pp = 1.2 to 1.5).
3	SS	12	16	0		
					5	As above (CL), some brownish gray mottling, some very stiff areas (Pp = 2.5).
4	SS	5	18	0		
						As above (CL), with gray areas.
					▽	WELL-GRADED SAND WITH CLAY (SW-SC), fine to medium sand, little coarse sand, few clay, trace gravel, brown 10YR 4/3, wet.
5	SS	1	18			
						As above (SW-SC), 2" to 4" zone stiff sandy clay.
6	SS	2	6		10	

GENERAL WELL CONSTRUCT.



GENERAL NOTES

DATE STARTED: 14 MAR 97
DATE COMPLETED: 14 MAR 97
RIG: CME 750 ATV
CREW CHIEF: R. BENNETT
LOGGED: DPR CHECKED: JPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 7.3 ft. bgl
AT COMPLETION ▽
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

ENVIRONMENTAL AUDIT REPORT
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-2
LOCATION	FLINT, MICHIGAN	SHEET NO.	2 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-14-97
		SURFACE ELEV.	98.5
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
7	SS	4	20			As above (SP-SC), trace clay, dark yellowish brown 10YR 4/4.	
						WELL-GRADED SAND (SW), fine to coarse, trace silt, trace clay, dark yellowish brown becoming dark grayish brown @ 13.4' with black steaks, diesel hydrocarbon odor.	
						SANDY LEAN CLAY (CL), some sand, trace fine to coarse gravel, slightly plastic, dark grayish brown, moist, hard (Pp > 4).	
					15	End of boring at 14 feet.	
					20		

ENVIRONMENTAL AUDIT REPORT
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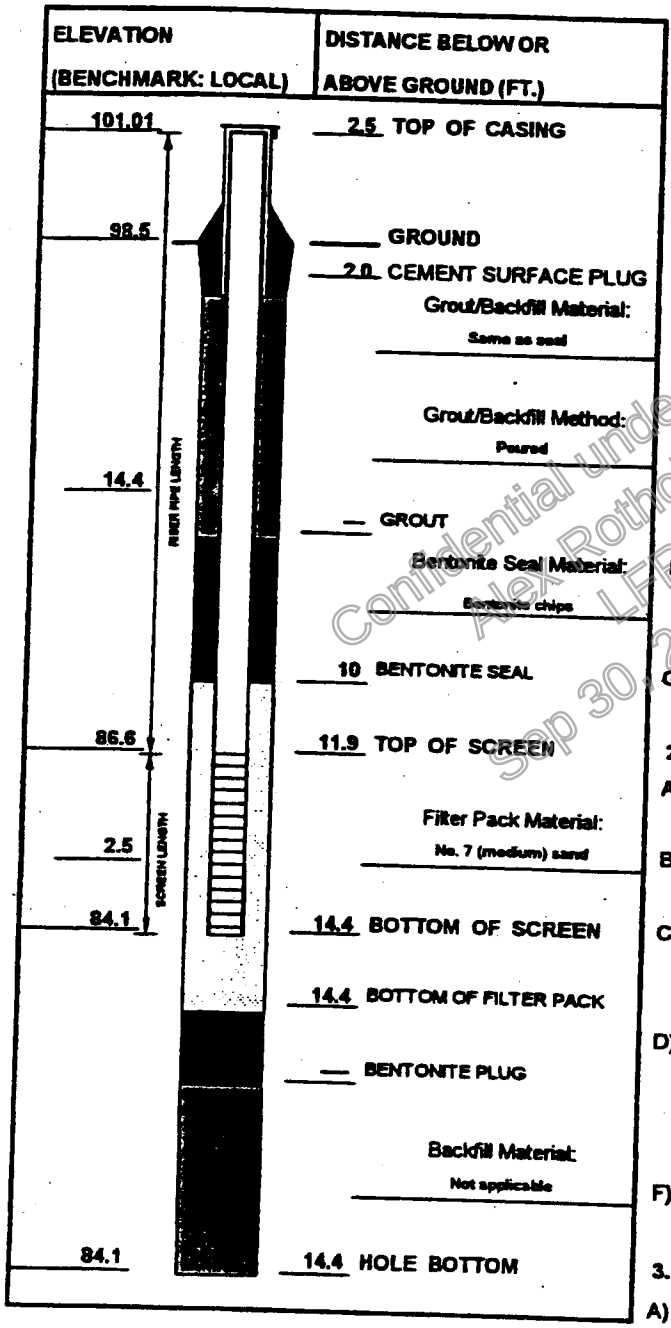
RMT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-2
PROJ. NO:	4036.05	DATE INSTALLED:	3-14-97	OBSV. BY:	DPR	CHECKED BY:	DPR



1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 14 Ft.
___ In. From ___ To ___ Ft.

F) Surf. Casing Diameter: ___ In. From ___ To ___ Ft.
2nd Surface Casing: ___ In. From ___ To ___ Ft.

G) Installed Protective Cover W/ Lock? Yes

2. WELL DEVELOPMENT:

A) Method: Surge/pump with Bremer check valve

B) Time Spent Developing: 1 Hours

C) Water Removed: 27 Gallons
Added: 0 Gallons

D) Water Clarity Before/After Development:
Before: Opaque, brown
After: Slightly turbid (approximately 100 NTU)

F) Odor (Descr. if present) diesel range hydrocarbons

3. WATER LEVEL SUMMARY:

A) After Developing: ___ Ft. Below Top Of Casing

B) Other Date/Time: 3-31-97/0946 6.74 Ft.
Other Date/Time: ___ Ft.

Notes:

ENVIRONMENTAL AUDIT REPORT:
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LOG OF TEST BORING

F-203 (R 01-87)

KMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO. PFW-3
SHEET NO. 1 OF 2
PROJECT NO. 4036.05
INSTALLATION 3-17-97
SURFACE ELEV. 100.3
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
1	SS	49	18	0.6		Fill: sand, gravel crushed limestone, upper few inches frozen.	
						SANDY LEAN CLAY (CL), some fine to coarse sand, trace fine gravel, slightly plastic, brown 10YR 4/3 with some gray and dark yellowish brown mottling, moist, hard.	
2	SS	17	16	0.2		WELL-GRADED SAND WITH CLAY (SW-SC), fine to coarse, dark brown 10YR 3/3, moist.	
						SANDY LEAN CLAY WITH GRAVEL (CL), little coarse gravel, dark grayish brown 10YR 4/2, moist, hard.	
3	SS	6	18	0.2		SILTY SAND (SM), fine, brown 10YR 4/3, moist.	
					5	SANDY LEAN CLAY WITH GRAVEL (CL), some fine to coarse sand, little fine to coarse gravel, moderately plastic, dark gray 10YR 4/1, moist, very stiff (Pp = 2.6).	
4	SS	12	20			As above (CL).	
5	SS	14	24			As above (CL), stiff (Pp = 1.3 to 2.0).	
6	SS	12	24		10	As above (CL).	

GENERAL NOTES

DATE STARTED 17 MAR 97
DATE COMPLETED 17 MAR 97
RIG CME LC 60
CREW CHIEF M. HEFFERAN
LOGGED DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ none observed
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

ENVIRONMENTAL AUDIT REPORT:
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-3
LOCATION	FLINT, MICHIGAN	SHEET NO.	2 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-17-97
		SURFACE ELEV.	100.3
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
7	SS	14	24				
						POORLY-GRADED SAND WITH SILT (SP-SM), fine, gray, moist.	
8	SS	15	24			SANDY LEAN CLAY (CL), some sand, little fine to coarse gravel, slightly plastic, dark gray 10YR 4/1, moist, stiff.	
					15	As above (CL), medium stiff (Pp = 1.0).	
9	SS	11	24				
						As above (CL), (Pp = 0.5).	
10	SS	10	24				
						As above (CL), (Pp = 1.0).	
					20	End of boring at 20 feet.	

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ENVIRONMENTAL AUDIT REPORT:
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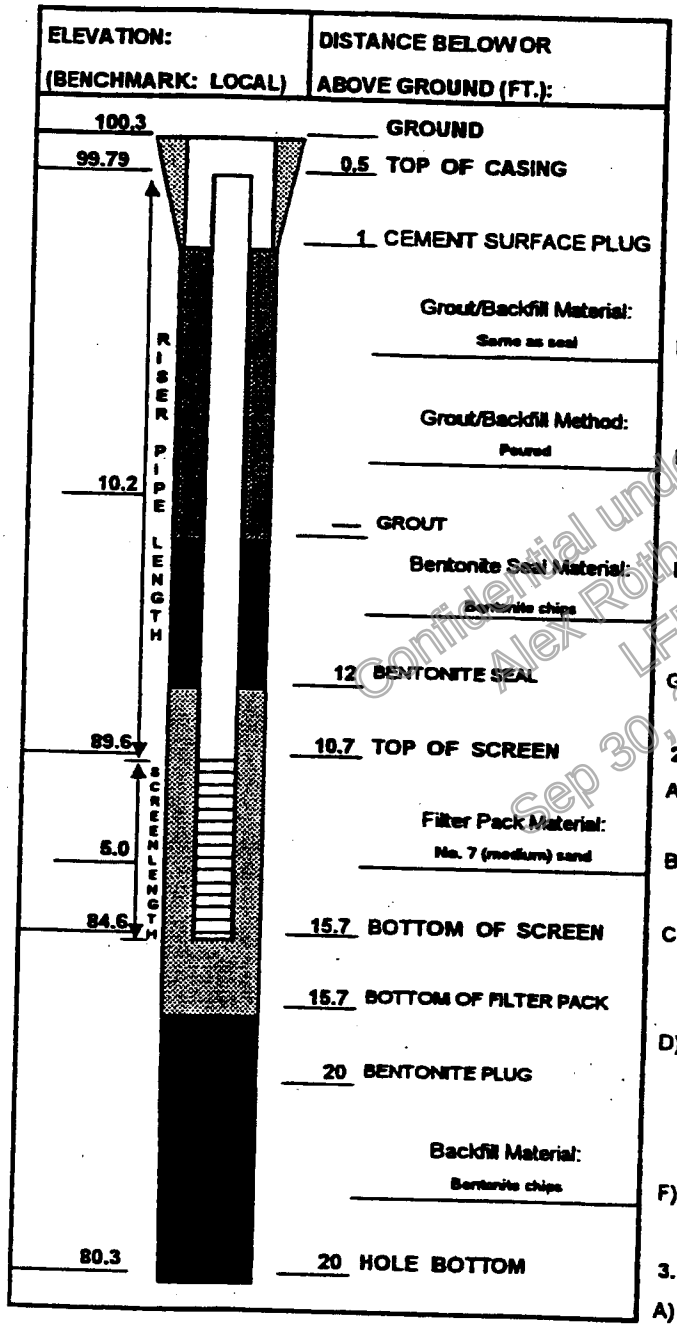
RMT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-3
PROJ. NO:	4036.05	DATE INSTALLED:	3-17-97	OBSV. BY:	DPR	CHECKED BY:	DPR



1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 18 Ft.
3 In. From ____ To 20 Ft.

F) Surf. Casing Diameter: ____ In. From ____ To ____ Ft.
2nd Surface Casing: ____ In. From ____ To ____ Ft.

G) Installed Protective Cover W/ Lock? Yes

2. WELL DEVELOPMENT:

A) Method: None - dry well

B) Time Spent Developing: ____ Hours

C) Water Removed: ____ Gallons
Added: ____ Gallons

D) Water Clarity Before/After Development:
Before: ____
After: ____

F) Odor (Descr. if present) None

3. WATER LEVEL SUMMARY:

A) After Developing: ____ Ft. Below Top Of Casing

B) Other Date/Time: ____ Ft.
Other Date/Time: ____ Ft.

Notes: ____

ENVIRONMENTAL AUDIT REPORT
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-4
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 3
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-17-97
		SURFACE ELEV.	99.8
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
						Concrete.	
1	SS	23	18	0.2		Fill: sand and gravel, few fines, pale brown, moist.	
						SANDY LEAN CLAY WITH GRAVEL (CL), some fine to coarse sand, little fine gravel, slightly plastic, brown 10YR 4/3 with pale brown along occasional silt partings and fractures, some dark yellowish brown mottling, no odor, moist, hard (Pp > 4).	
2	SS	31	24	0			
						Silt and silty sand stringers at 4.4 feet.	
3	SS	29	24		5	SANDY LEAN CLAY (CL) as above to 4.4 feet, wet sand parting at 4.8 feet.	
						As above (CL), some dark yellowish brown along fractures, occasional wet	

GENERAL NOTES

DATE STARTED	17 MAR 97
DATE COMPLETED	17 MAR 97
RIG	CME LC 60
CREW CHIEF	M. HEFFERAN
LOGGED	DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	none observed
AT COMPLETION ▼	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

ENVIRONMENTAL AUDIT REPORT:
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-4
LOCATION	FLINT, MICHIGAN	SHEET NO.	2 OF 3
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-17-97
		SURFACE ELEV.	99.8
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
						sand partings, very stiff.	
4	SS	21	24			As above (CL).	
						SILTY SAND (SM), brown, wet, laminated.	
						SANDY LEAN CLAY as above to 7.3 feet, very stiff to hard.	
5	SS	30	24			SILT (ML), little clay, few fine sand, brown with dark yellowish brown mottling, wet, nonlaminated.	
					10	SANDY LEAN CLAY WITH GRAVEL (CL), slightly plastic, dark grayish brown 10YR 4/2 with dark yellowish brown along fractures, moist, very stiff, sand partings.	
						SILT (ML), some clay, few sand, mottled dark grayish brown and dark yellowish brown, moist.	
6	SS	28	24			SANDY LEAN CLAY WITH GRAVEL (CL), slightly plastic, dark grayish brown 10YR 4/2 with dark yellowish brown along fractures, moist, very stiff, sand partings.	
						SILTY SAND (SM), fine to medium, trace clay, brown, wet.	
						SANDY LEAN CLAY WITH GRAVEL (CL), dark grayish brown, slightly plastic, 10YR 4/2, moist, very stiff.	
						SILT (ML), mottled grays and dark yellowish brown, moist to wet, nonlaminated, fractured.	

ENVIRONMENTAL AUDIT REPORT
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-4
LOCATION	FLINT, MICHIGAN	SHEET NO.	3 OF 3
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-17-97
		SURFACE ELEV.	99.8
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH		
7	SS	44	24			SANDY LEAN CLAY (CL), brown to dark yellowish brown, hard.	
						SILT (ML), little clay, few fine sand, brown, nonlaminated, moist to wet.	
						SILTY SAND (SM), trace clay, brown to dark yellowish brown to dark grayish brown, stratified.	
8	SS	16	24		15	SANDY LEAN CLAY (CL), dark grayish brown, moist.	
						SILTY SAND (SM), trace clay, dark grayish brown, wet, stratified.	
						SANDY LEAN CLAY (CL), some sand, few fine gravel, medium plastic, dark gray 10YR 4/1, moist, very stiff (Pp = 3.0).	
						End of boring at 17 feet.	
					20		

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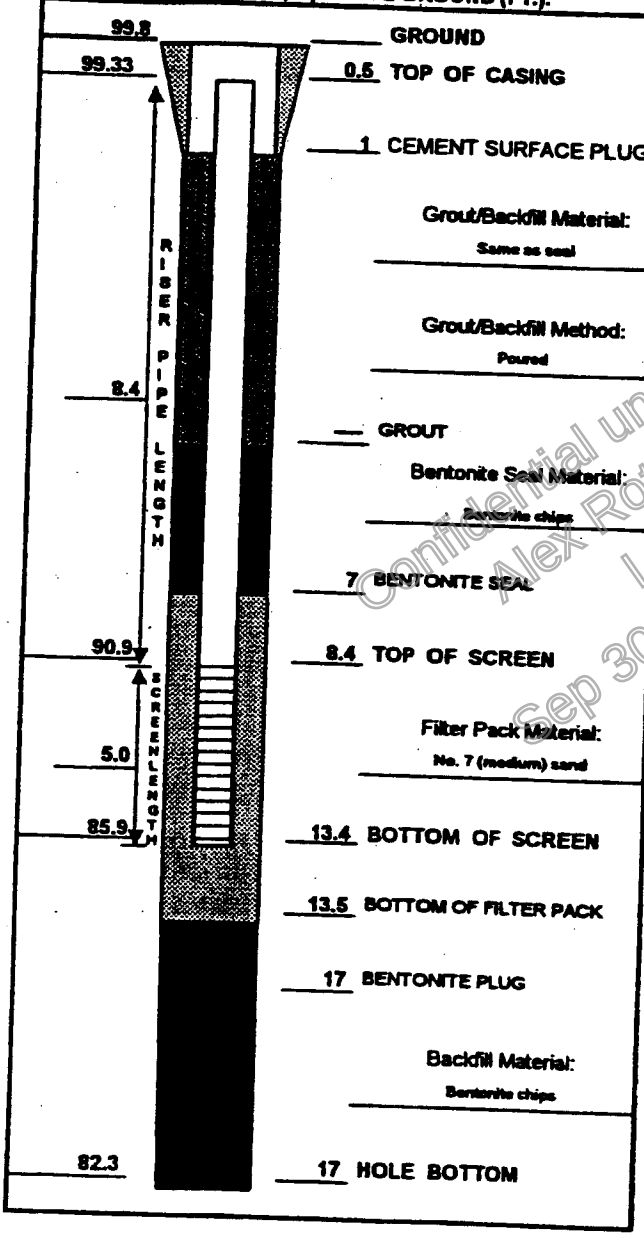
RMT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-4
PROJ. NO:	4036.05	DATE INSTALLED:	3-17-97	OBSV. BY:	DPR	CHECKED BY:	DPR



1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 15 Ft.
3 In. From 15 To 17 Ft.

F) Surf. Casing Diameter: ____ In. From ____ To ____ Ft.
2nd Surface Casing: ____ In. From ____ To ____ Ft.

G) Installed Protective Cover W/ Lock? Yes

2. WELL DEVELOPMENT:

A) Method: Gently bail

B) Time Spent Developing: 1 Hours

C) Water Removed: 7.1 Gallons
Added: 0 Gallons

D) Water Clarity Before/After Development:
Before: Clear
After: Slightly turbid (approximately 50 NTU)

F) Odor (Descr. if present) None

3. WATER LEVEL SUMMARY:

A) After Developing: ____ Ft. Below Top Of Casing

B) Other Date/Time: 3-31-97/1240 5.52 Ft.
Other Date/Time: ____ Ft.

Notes:

ENVIRONMENTAL AUDIT REPORT
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LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFB-5
SHEET NO.: 1 OF 1
PROJECT NO.: 4036.05
INSTALLATION: 3-18-97
SURFACE ELEV.: 98.9
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH	
						Asphalt and concrete.
1	SS	12	12			Fill: poorly graded sand, medium, some coarse gravel.
						Obstruction @ 3 feet; move and redrill PFW-5.
						End of boring at 3 feet. Boring backfilled with cuttings.
					5	
					10	

GENERAL NOTES

DATE STARTED: 18 MAR 97
DATE COMPLETED: 18 MAR 97
RIG: CME LC 60
CREW CHIEF: M. HEFFERAN
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽: none observed
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

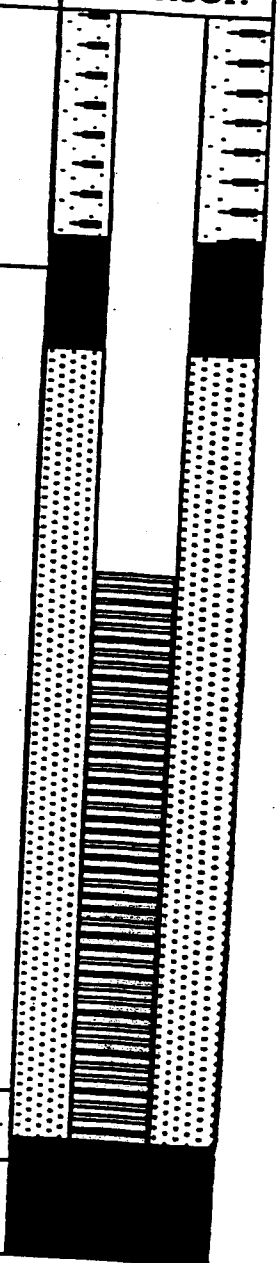
RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-5
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-18-97
		SURFACE ELEV.	98.9
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES

INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH	VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
1	SS	8	20	0.1		Fill: mostly medium sand, little fine to coarse rounded gravel, brown to 15 inches, then dark yellowish brown, no odor, moist.
2	SS	9	22	0.1		As above.
3	SS	2	12	0		Fill: fine to medium sand, dark yellowish brown, becoming brown and wet @ 3.7 ft.
					5	
4	SS	1	0			As above, dark grayish brown.
5	SS	2	20			As above (based on blow counts and contents of 8 to 10 ft. sample).
6	SS	10	16		10	As above.
						SANDY LEAN CLAY (CL), medium plastic, gray.
						SILT (ML), dark gray, laminated with clayey silt and sandy silt, wet.

GENERAL WELL CONSTRUCT.



GENERAL NOTES

DATE STARTED	18 MAR 97
DATE COMPLETED	18 MAR 97
RIG	CME LC 60
CREW CHIEF	M. HEFFERAN
LOGGED	DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	3.7 ft. bgl
AT COMPLETION ▼	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

ENVIRONMENTAL AUDIT REPORT:
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

RMT

BORING NO. PFW-5
SHEET NO. 2 OF 2
PROJECT NAME PEREGRINE FLINT
PROJECT NO. 4036.05
LOCATION FLINT, MICHIGAN
INSTALLATION 3-18-97
CONTRACTOR STEARNS DRILLING CO
SURFACE ELEV. 98.9
DRILLING METHOD 4.25" HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
7	SS	10	18			SANDY LEAN CLAY (CL), some fine to coarse sand, few fine gravel, slightly plastic, dark gray 10YR 4/1, moist, very stiff (Pp = 3.0 to 3.7).	
						As above (CL).	
						End of boring at 14 feet.	
					15		
					20		

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LFR
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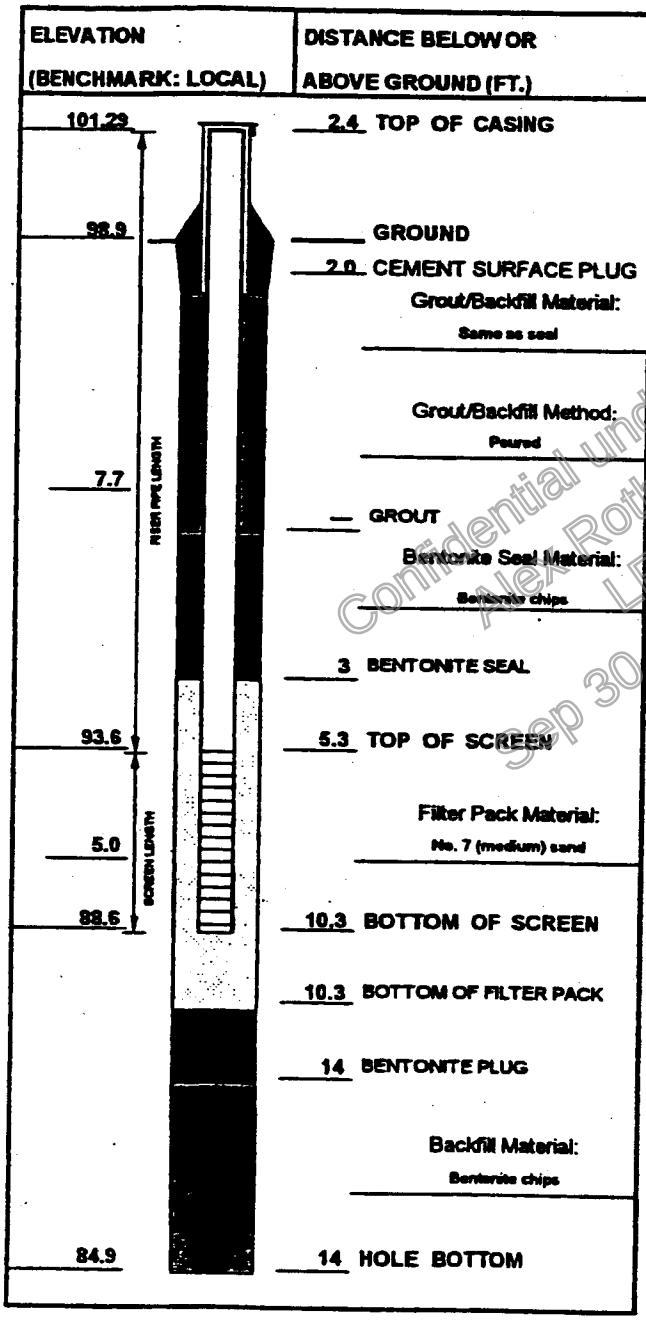
ENVIRONMENTAL AUDIT REPORT:
PRIVILEGED DOCUMENT

RMT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-5
PROJ. NO:	4036.05	DATE INSTALLED:	3-18-97	OBSV. BY:	DPR	CHECKED BY:	DPR



1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 10 Ft.
3 In. From 10 To 14 Ft.

F) Surf. Casing Diameter: ____ In. From ____ To ____ Ft.
2nd Surface Casing: ____ In. From ____ To ____ Ft.

G) Installed Protective Cover W/ Lock? Yes

2. WELL DEVELOPMENT:

A) Method: Gently bail

B) Time Spent Developing: 1.5 Hours

C) Water Removed: 25 Gallons
Added: 0 Gallons

D) Water Clarity Before/After Development:
Before: Opaque brown
After: Slightly turbid (approximately 100 NTU)

F) Odor (Descr. if present) None

3. WATER LEVEL SUMMARY:

A) After Developing: _____ Ft. Below Top Of Casing

B) Other Date/Time: 3-31-97/1305 5.77 Ft.
Other Date/Time: _____ Ft.

Notes:

ENVIRONMENTAL AUDIT REPORT
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-6
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-18-97
		SURFACE ELEV.	98.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
						Asphalt.	
						Concrete.	
1	SS	16	18	9.4		Fill: medium to coarse sand with coarse rounded gravel, few silt, few clay, dark grayish brown, wet.	
2	SS	25	20	10.2		SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, brown 10YR 4/3 with some gray mottling, no odor, moist, hard (Pp > 4.0), fractured.	
						As above (CL).	
3	SS	22	24		5	As above (CL).	
4	SS	21	24			As above (CL), dark gray 10YR 4/1 below 7.3 feet, very stiff (Pp = 2.7 to 3.5).	
5	SS	23	6			As above (CL).	
					10		

GENERAL NOTES

DATE STARTED 18 MAR 97
DATE COMPLETED 18 MAR 97
RIG CME LC 60
CREW CHIEF M. HEFFERAN
LOGGED DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ none observed
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME ____ DEPTH ____
WATER: DATE/TIME ____ DEPTH ____

ENVIRONMENTAL AUDIT REPORT
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-6
LOCATION	FLINT, MICHIGAN	SHEET NO.	2 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-18-97
		SURFACE ELEV.	98.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH		
6	SS	16	24			As above (CL), stiff (Pp = 1.4 to 1.7).	
7	SS	17	24			As above (CL), medium stiff (Pp = 1.0).	
					15	End of boring at 15 feet.	
					20		

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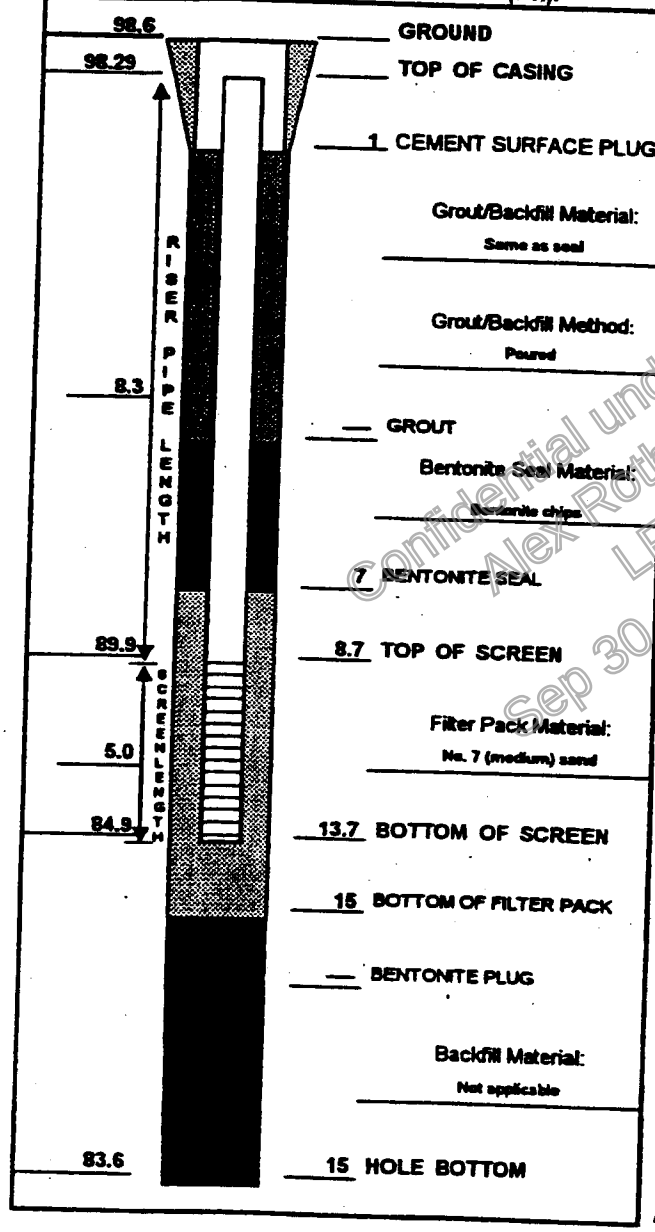
ENVIRONMENTAL AUDIT REPOF
PRIVILEGED DOCUMENT

RMT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-6
PROJ. NO:	4036.05	DATE INSTALLED:	3-18-97	OBSV. BY:	DPR	CHECKED BY:	DPR



1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 13 Ft.
3 In. From 13 To 15 Ft.

F) Surf. Casing Diameter: ____ In. From ____ To ____ Ft.
2nd Surface Casing: ____ In. From ____ To ____ Ft.

G) Installed Protective Cover W/ Lock? Yes

2. WELL DEVELOPMENT:

A) Method: Gently bail

B) Time Spent Developing: 0.2 Hours

C) Water Removed: 3.7 Gallons
Added: 0 Gallons

D) Water Clarity Before/After Development:
Before: Slightly turbid, light brown
After: Slightly turbid, light gray

F) Odor (Descr. if present) None

3. WATER LEVEL SUMMARY:

A) After Developing: (dry) Ft. Below Top Of Casing

B) Other Date/Time: 3-18-97/1500 dry Ft.
Other Date/Time: 3-31-97/1320 1.05 Ft.

Notes:

ENVIRONMENTAL AUDIT REPORT:
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFB-7
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-18-97
		SURFACE ELEV.	
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH	
						Concrete.
1	SS	24	16	0		Fill: fine to medium sand, dark yellowish brown, no odor, moist.
2	SS	29	20	0		SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, dark brown to brown, dry to moist, hard (Pp > 4.5), fractured, some areas of fill sand as above.
3	SS	29	24	0	5	SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, brown with some gray and dark yellowish brown mottling, no odor, dry to moist, hard (Pp > 4.5), fractured.
4	SS	20	24	0		As above (CL), dark gray below 7 feet, dark yellowish brown along sporatic fractures, very stiff (Pp = 2.5 to 3.5).
5	SS	18	18	2.2		As above (CL), dark yellowish brown to dark brown along fracture from 9 to 9.5 feet, hard.
6	SS	14	24	0	10	As above (CL), dark gray with occasional dark yellow brown zones, stiff (Pp = 1.5).

GENERAL NOTES

DATE STARTED 18 MAR 97
DATE COMPLETED 18 MAR 97
RIG CME LC 60
CREW CHIEF M. HEFFERAN
LOGGED DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 22.5 ft. bgl
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFB-7
SHEET NO.: 2 OF 2
PROJECT NO.: 4036.05
INSTALLATION: 3-18-97
SURFACE ELEV.:
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH	
7	SS	14	24	0		As above (CL).
8	SS	16	24	0	15	As above (CL), all dark gray below 14.3 feet, stiff to very stiff (Pp = 1.5 to 2.2).
9	SS	14	24	0		As above (CL), stiff (Pp = 1.5 to 1.7).
10	SS	16	24	0		As above (CL).
11	SS	13	24	0	20	As above (CL).
12	SS	15	24	0	▽	As above (CL), 1/4-inch wet fine to coarse sand stringer @ 22.5'.
						LEAN CLAY (CL), moderately plastic, pale red 10YR 6/2, moist.
						SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, dark gray, moist, stiff.
						End of boring at 24 feet.
					25	

LOG OF TEST BORING

F-203 (R 01-87)

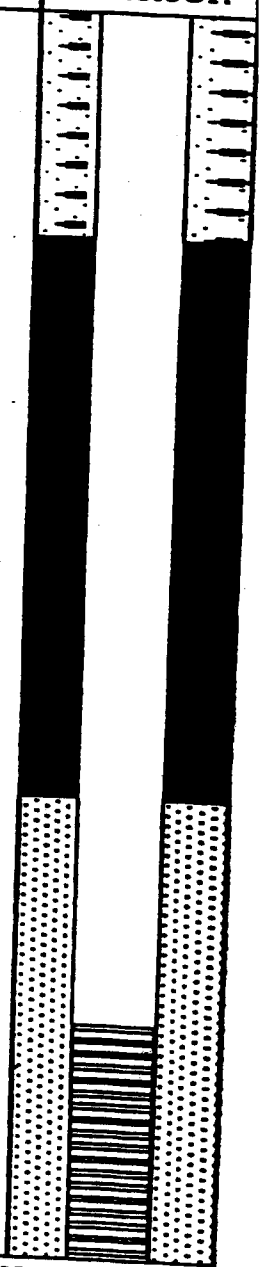
RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-8
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-19-97
		SURFACE ELEV.	101.1
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES

INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH	VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
1	SS	18	24	0		SANDY LEAN CLAY (CL), some sand, few fine to coarse gravel, slightly plastic, dark grayish brown 10YR 4/2 with some dark yellowish brown and dark gray mottling, black precipitate along fractures, moist, hard (Pp > 4.5) (Glacial Till).
2	SS	19	18	0		As above (CL), dark gray below 2.5 feet, (Pp = 4.2 to 4.5).
3	SS	17	18	0	5	As above (CL).
4	SS	18	21	0.4		As above (CL), very stiff (Pp = 3.2 to 3.5).
5	SS	17	24	0		As above (CL), stiff (Pp = 1.4 to 1.7).
6	SS	21	24	0	10	As above (CL).

GENERAL WELL CONSTRUCT.



GENERAL NOTES

DATE STARTED	19 MAR 97
DATE COMPLETED	19 MAR 97
RIG	CME LC 60
CREW CHIEF	M. HEFFERAN
LOGGED	DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	none observed
AT COMPLETION ▼	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

ENVIRONMENTAL AUDIT REPORT
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-8
LOCATION	FLINT, MICHIGAN	SHEET NO.	2 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-19-97
		SURFACE ELEV.	101.1
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
7	SS	14	24	0		As above (CL).	
8	SS	15	24	0		As above (CL), medium stiff (Pp = 0.5 to 1.0).	
					15		
9	SS	12	24	0		As above (CL).	
						End of boring at 18 feet.	
					20		

ENVIRONMENTAL AUDIT REPC
PRIVILEGED DOCUMENT

RMT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-8
PROJ. NO:	4036.05	DATE INSTALLED:		OBSV. BY:	DPR	CHECKED BY:	DPR

ELEVATION: (BENCHMARK: LOCAL)	DISTANCE BELOW OR ABOVE GROUND (FT.):
101.1	GROUND
100.79	0.3 TOP OF CASING
	CEMENT SURFACE PLUG
	Grout/Backfill Material: Same as seal
	Grout/Backfill Method: Poured
9.3	GROUT
	Bentonite Seal Material: Bentonite chips
	7 BENTONITE SEAL
91.5	9.6 TOP OF SCREEN
	Filter Pack Material: No. 7 (medium) sand
5.0	
86.5	14.6 BOTTOM OF SCREEN
	14.6 BOTTOM OF FILTER PACK
	18 BENTONITE PLUG
	Backfill Material:
83.1	18 HOLE BOTTOM

RISER PIPE LENGTH

SCREEN LENGTH

1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 16 Ft.
3 In. From 16 To 18 Ft.

F) Surf. Casing Diameter: ____ In. From ____ To ____ Ft.
2nd Surface Casing: ____ In. From ____ To ____ Ft.

G) Installed Protective Cover W// Lock? Yes

2. WELL DEVELOPMENT:

A) Method: None - dry well

B) Time Spent Developing: ____ Hours

C) Water Removed: ____ Gallons
Added: ____ Gallons

D) Water Clarity Before/After Development:
Before:
After:

F) Odor (Descr. if present) None

3. WATER LEVEL SUMMARY:

A) After Developing: ____ Ft. Below Top Of Casing

B) Other Date/Time: ____ Ft.
Other Date/Time: ____ Ft.

Notes:

ENVIRONMENTAL AUDIT REPOR
PRIVILEGED DOCUMENT

LOG OF TEST BORING

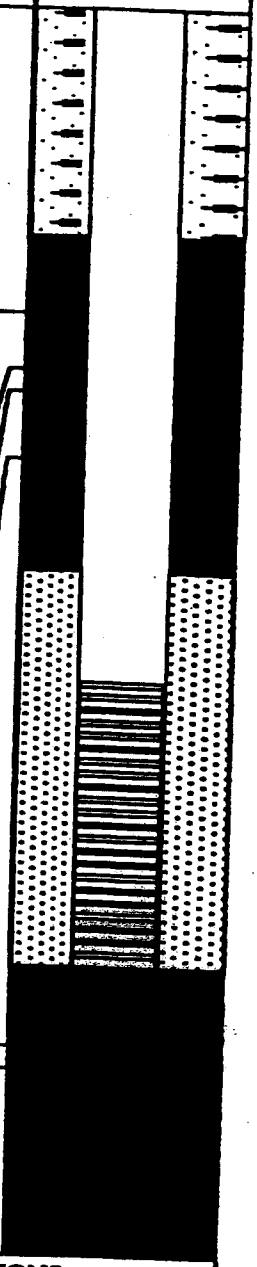
F-203 (R 01-87)

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-9
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-19-97
		SURFACE ELEV.	98.8
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES

INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH	VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
1	SS	7	20	0		SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, mottled brown, dark yellowish brown, and gray, moist, very stiff to hard, fractured (Glacial Till).
2	SS	13	24	0		As above (CL).
						WELL-GRADED SAND (SW), fine to coarse, trace silt, trace clay, dark yellowish brown 10YR 3/6, moist.
3	SS	6	20	0		SILT (ML), dark yellowish brown, moist, laminated.
						WELL-GRADED SAND (SW), fine to coarse, trace silt, trace clay, dark yellowish brown 10Y R3/6, moist.
					▽ 5	
4	SS	5	20	0		SANDY LEAN CLAY (CL), few fine to coarse gravel, slightly plastic, brown, moist, stiff (Pp = 1.5), abundant moist to wet sand partings below 5 feet (Glacial Till).
5	SS	8	19	0		As above (CL), very stiff (Pp = 2.2).
						PEAT, black humic material, some plant fragments, no odor.
6	SS	16	24	0	10	SANDY LEAN CLAY (CL), brown 10YR 4/3 with yellowish brown and gray mottling and fractures, moist, hard.

GENERAL WELL CONSTRUCT.



GENERAL NOTES

DATE STARTED	19 MAR 97
DATE COMPLETED	19 MAR 97
RIG	CME LC 60
CREW CHIEF	M. HEFFERAN
LOGGED	DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	5.0 ft. bgl
AT COMPLETION ▼	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

ENVIRONMENTAL AUDIT REPORT:
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-9
LOCATION	FLINT, MICHIGAN	SHEET NO.	2 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-19-97
		SURFACE ELEV.	98.8
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
7	SS	17	24	0		As above (CL), very stiff (Pp = 3.5 to 4.0), olive brown, continued mottling.	
						As above (CL).	
8	SS	37	24	0			
					15	As above (CL), hard (Pp > 4.5), mostly brown 10YR 4/3, gray along fractures.	
9	SS	39	24	0		As above (CL), fewer fractures.	
10	SS	46	24	0		As above (CL).	
					20	End of boring at 20 feet. Original boring backfilled with bentonite slurry. Moved 5 feet northwest to install well.	

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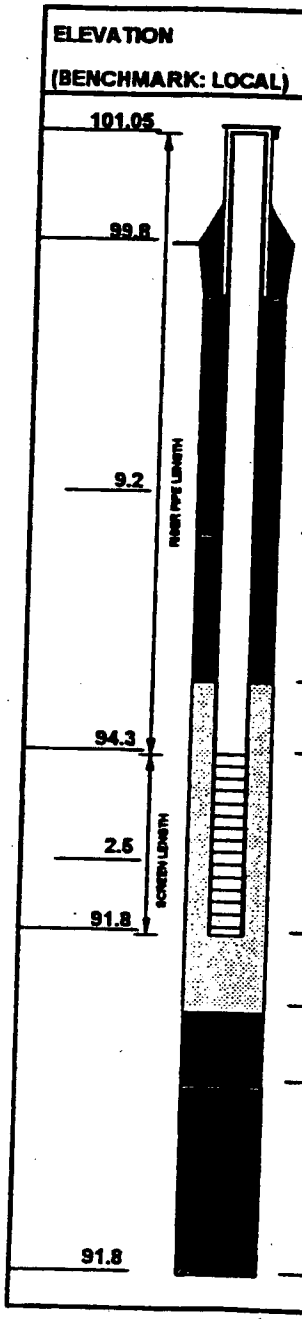
LFR
Sep 30, 2009 08:55

RMT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-9
PROJ. NO:	4036.05	DATE INSTALLED:	3-19-97	OBSV. BY:	DPR	CHECKED BY:	DPR



1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 8.5 Ft.
____ In. From ____ To ____ Ft.

F) Surf. Casing Diameter: ____ In. From ____ To ____ Ft.
2nd Surface Casing: ____ In. From ____ To ____ Ft.

G) Installed Protective Cover W/ Lock? Yes

2. WELL DEVELOPMENT:

A) Method: Gently bail

B) Time Spent Developing: 0.2 Hours

C) Water Removed: 1.5 Gallons
Added: 0 Gallons

D) Water Clarity Before/After Development:
Before: Clear
After: Slightly turbid, light brown

F) Odor (Descr. if present) None

3. WATER LEVEL SUMMARY:

A) After Developing: _____ Ft. Below Top Of Casing

B) Other Date/Time: 3-21-97/1515 dry Ft.
Other Date/Time: 3-31-97/0936 8.53 Ft.

Notes:

ENVIRONMENTAL AUDIT REPORT:
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFW-10
SHEET NO.: 1 OF 2
PROJECT NO.: 4036.05
INSTALLATION: 3-20-97
SURFACE ELEV.: 100.5
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES

INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH	VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
1	SS	11	15	0.1		Asphalt.	
						Fill: fine to medium sand, little coarse gravel, dark yellowish brown, moist to wet.	
2	SS	12	20	0.2		SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, brown 10YR 4/3 with some gray mottling along fractures, moist, hard (Pp > 4.5) (Glacial Till).	
3	SS	18	24	0		As above (CL), very dark gray 10YR 3/1 to olive brown 2.5Y 3/6 to grayish brown 10YR 4/2, stiff to very stiff (Pp = 1.5 to 2.5).	
					5	As above (CL), brown 10YR 4/3, hard (Pp = 4.4) below 5 feet.	
4	SS	29	24	0		As above (CL), less gray mottling below 7 feet.	
5	SS	29	24	0		As above (CL), (Pp = 4.0 to 4.5), fracture from 9.2 to 9.8 ft.	
6	SS	24	24	0	10	As above (CL), fracture 11.5 to 11.8'.	

GENERAL NOTES

DATE STARTED: 20 MAR 97
DATE COMPLETED: 20 MAR 97
RIG: CME LC 60
CREW CHIEF: M. HEFFERAN
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽: 13.8 ft. bgl
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

ENVIRONMENTAL AUDIT REPC
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LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-10
LOCATION	FLINT, MICHIGAN	SHEET NO.	2 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-20-97
		SURFACE ELEV.	100.5
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
7	SS	24	22	0		As above (CL), areas of dark grayish brown below 12.2 ft, very stiff (Pp = 2.5 to 3.5).	
8	SS	19	24	0		<— Wet sand parting at 13.8 feet.	
					15	As above (CL), dark gray 10YR 4/1, stiff (Pp = 1.7).	
9	SS	14	24	0		As above (CL).	
10	SS	13	24	0		As above (CL).	
					20	End of boring at 20 feet.	

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ENVIRONMENTAL AUDIT REPORT
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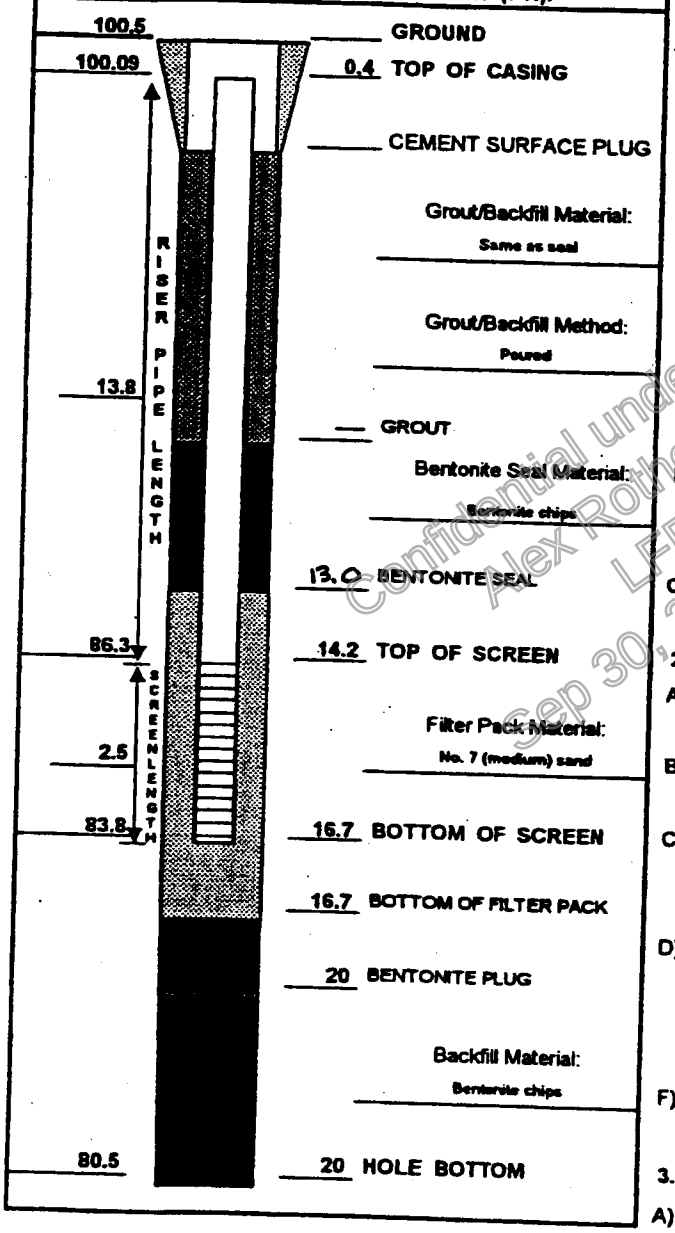
RMT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-10
PROJ. NO:	4036.05	DATE INSTALLED:	3-20-97	OBSV. BY:	DPR	CHECKED BY:	



1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 18 Ft.
3 In. From 18 To 20 Ft.

F) Surf. Casing Diameter: ____ In. From ____ To ____ Ft.
2nd Surface Casing: ____ In. From ____ To ____ Ft.

G) Installed Protective Cover W/ Lock? Yes

2. WELL DEVELOPMENT:

A) Method: Gently bail

B) Time Spent Developing: 0.2 Hours

C) Water Removed: 1.5 Gallons
Added: 0 Gallons

D) Water Clarity Before/After Development:
Before: Slightly turbid, light brown
After: Clear

F) Odor (Descr. if present) None

3. WATER LEVEL SUMMARY:

A) After Developing: ____ Ft. Below Top Of Casing

B) Other Date/Time: 3-20-97/1145 dry Ft.
Other Date/Time: 3-31-97/1410 11.67 Ft.

Notes:

ENVIRONMENTAL AUDIT REPORT:
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LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFW-11
SHEET NO.: 1 OF 2
PROJECT NO.: 4036.05
INSTALLATION: 3-20-97
SURFACE ELEV.: 101.3
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
						Asphalt and concrete.	
1	SS	19	18	0		Fill: medium sand, dark yellowish brown, moist.	
						SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, brown 10YR 4/3 with some yellowish brown mottling and gray along fractures, moist, hard (Pp > 4.5) (Glacial Till).	
2	SS	23	24	0			
3	SS	24	24	0		As above (CL).	
					5	SILT (ML), dark yellowish brown, moist, stratified.	
						LEAN CLAY (CL), dark grayish brown, hard, moist, laminated.	
						SILT (ML), brown, moist, laminated.	

GENERAL NOTES

DATE STARTED: 20 MAR 97
DATE COMPLETED: 20 MAR 97
RIG: CME LC 60
CREW CHIEF: M. HEFFERAN
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING: 6.9 ft. bgl
AT COMPLETION:
AFTER DRILLING
CAVE-IN: DATE/TIME ____ DEPTH ____
WATER: DATE/TIME ____ DEPTH ____

ENVIRONMENTAL AUDIT REPORT:
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LOG OF TEST BORING

F-203 (R 01-87)

KMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFW-11
SHEET NO.: 2 OF 2
PROJECT NO.: 4036.05
INSTALLATION: 3-20-97
SURFACE ELEV.: 101.3
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH		
4	SS	19	20	0		SILTY SAND (SM), fine, very pale brown 10YR 7/3, moist.	
						SANDY LEAN CLAY (CL), gray 10YR 5/1, moist, very stiff.	
						SANDY SILT (ML), little fine sand, gray 10YR 5/1, moist to wet, stratified and laminated.	
5	SS	21	24			As above (ML).	
						POORLY-GRADED SAND (SP), wet.	
						SANDY SILT (ML), wet.	
						POORLY-GRADED SAND (SP), wet.	
						SILT (ML), wet.	
6	SS	14	20		10	SANDY SILT (ML), wet.	
						POORLY-GRADED SAND (SP), wet.	
						SANDY SILT (ML), wet.	
						SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, dark gray 10YR 4/1, moist, very stiff (Pp = 3.3).	
						End of boring at 12 feet.	

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ENVIRONMENTAL AUDIT REPC
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RMT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-11
PROJ. NO:	4036.05	DATE INSTALLED:	3-20-97	OBSV. BY:	DPR	CHECKED BY:	DPR

ELEVATION: (BENCHMARK: LOCAL)	DISTANCE BELOW OR ABOVE GROUND (FT.):
101.3	GROUND
100.98	0.3 TOP OF CASING
	1 CEMENT SURFACE PLUG
	Grout/Backfill Material: Same as seal
	Grout/Backfill Method: Poured
7.8	RISER PIPE LENGTH
	GROUT
	Bentonite Seal Material: Bentonite chips
	6.5 BENTONITE SEAL
93.2	8.1 TOP OF SCREEN
2.5	SCREEN LENGTH
	Filter Pack Material: No. 7 (medium) sand
90.7	10.6 BOTTOM OF SCREEN
	12 BOTTOM OF FILTER PACK
	BENTONITE PLUG
	Backfill Material: Not applicable
89.3	12 HOLE BOTTOM

1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 11 Ft.
3 In. From 11 To 12 Ft.

F) Surf. Casing Diameter: ____ In. From ____ To ____ Ft.
2nd Surface Casing: ____ In. From ____ To ____ Ft.

G) Installed Protective Cover W/ Lock? Yes

2. WELL DEVELOPMENT:

A) Method: Gently bail

B) Time Spent Developing: 0.3 Hours

C) Water Removed: 1.6 Gallons
Added: 0 Gallons

D) Water Clarity Before/After Development:
Before: Slightly turbid, light brown
After: Moderately turbid, light brown

F) Odor (Descr. if present) None

3. WATER LEVEL SUMMARY:

A) After Developing: (dry) Ft. Below Top Of Casing

B) Other Date/Time: 3-20-97/1400 7.2 Ft.
Other Date/Time: 3-31-97/1406 1.57 Ft.

Notes:

ENVIRONMENTAL AUDIT REPOR
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-12
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-21-97
		SURFACE ELEV.	101.7
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
1	SS	21	15	12		Concrete.	
						Fill: wood blocks.	
2	SS	26	24	8.1		SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, dark grayish brown to brown 10YR 4/3 with gray mottling, moist, very stiff to hard, fractures, strong hydrocarbon odor.	
3	SS	28	24	23.3		As above (CL), hard, less hydrocarbon odor.	
					5		
4	SS	23	24	28.3		As above (CL), heavy fracturing with dark red precipitate along with gray fractures.	
5	SS	23	24	5.6		As above (CL).	
6	SS	20	24	0	10	As above (CL), fewer fractures, dark grayish brown.	

GENERAL NOTES

DATE STARTED	21 MAR 97
DATE COMPLETED	21 MAR 97
RIG	CME LC 60
CREW CHIEF	M. HEFFERAN
LOGGED	DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	17.8 ft. bgl
AT COMPLETION ▽	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

ENVIRONMENTAL AUDIT REPORT:
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-12
LOCATION	FLINT, MICHIGAN	SHEET NO.	2 OF 2
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-21-97
		SURFACE ELEV.	101.7
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
7	SS	20	24	6		As above (CL), no odor.	
						As above (CL).	
8	SS	24	24	3.1		WELL-GRADED SAND (SW), fine to coarse, trace silt, trace clay, yellow to brown to dark gray and black, hydrocarbon odor, moist.	
					15	SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, dark grayish brown, moist, stiff (Pp = 1.5 to 2.0), some sand partings.	
9	SS	16	24	0			
						SANDY SILT (ML), dark grayish brown, moist.	
10	SS	8	20			SILTY SAND (SM), dark grayish brown, wet, some laminated with sandy silt and clayey silt.	
					20	SANDY LEAN CLAY (CL), slightly plastic, dark gray 10YR 4/1, medium stiff (Pp = 0.8), moist.	
						End of boring at 20 feet.	

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ENVIRONMENTAL AUDIT REPORT:
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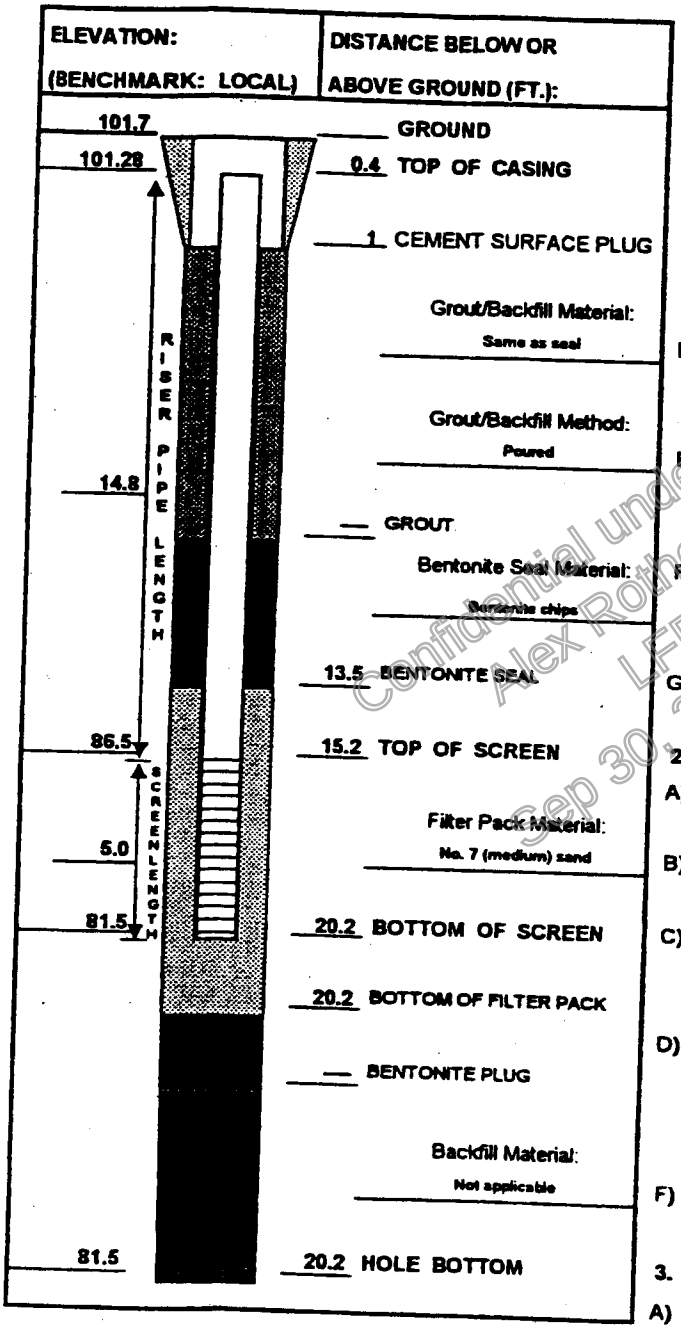
WELL CONSTRUCTION DIAGRAM

PROJECT:	Peregrine - Flint					WELL NO.:	PFW-12
PROJ. NO:	4036.05	DATE INSTALLED:	3-21-97	OBSV. BY:	DPR	CHECKED BY:	DPR



1. CASING AND SCREEN DETAILS:

A) Type Of Pipe: 2" PVC — Pipe Schedule: 40

B) Pipe Joints: Flush with O-ring

C) Solvent Used? No

D) Screen Type: 2" with machined slots, flush joint — Screen Slot Size: 0.01"

E) Borehole Diameter: 8 In. From 0 To 19.5 Ft.
3 In. From 19.5 To 20 Ft.

F) Surf. Casing Diameter: ____ In. From ____ To ____ Ft.
2nd Surface Casing: ____ In. From ____ To ____ Ft.

G) Installed Protective Cover W/ Lock? Yes

2. WELL DEVELOPMENT:

A) Method: Gently bail

B) Time Spent Developing: 1 Hours

C) Water Removed: 5.9 Gallons
Added: 0 Gallons

D) Water Clarity Before/After Development:
Before: Opaque dark grayish brown
After: Slightly turbid (approximately 100 NTU)

F) Odor (Descr. if present) None

3. WATER LEVEL SUMMARY:

A) After Developing: ____ Ft. Below Top Of Casing

B) Other Date/Time: 3-24-97/1040 15.19 Ft.
Other Date/Time: 3-31-97/1418 15.21 Ft.

Notes:

ENVIRONMENTAL AUDIT REPORT:
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFB-13
SHEET NO.: 1 OF 1
PROJECT NO.: 4036.05
INSTALLATION: 3-24-97
SURFACE ELEV.: 101.7
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH	
						Concrete.
1	SS	12	13	0.8		Fill: sand and coarse gravel, brown, no odor, dry to moist.
2	SS	15	19	0		SANDY LEAN CLAY (CL), some fine to coarse sand, few gravel, slightly plastic, grayish brown 10YR 5/2 to dark grayish brown 10YR 5/3 with gray along fractures, dry to moist, hard (Pp > 4.5) (Glacial Till).
3	SS	13	18	0		As above (CL), no odor, moist, very stiff (Pp = 3.6), fracture at 3.3'.
					5	
4	SS	17	20	0		As above (CL), few fractures.
5	SS	28	24	0		As above (CL), little gravel, mottled dark grayish brown, dark gray, and dark yellowish brown, very stiff to hard (Pp = 3.3 to 4.5).
						As above (CL), brown 10YR 4/3, dark gray along occasional fractures.
					10	End of boring at 10 feet. Boring backfilled with bentonite chips.

GENERAL NOTES

DATE STARTED: 24 MAR 97
DATE COMPLETED: 24 MAR 97
RIG: CME LC 60
CREW CHIEF: M. HEFFERAN
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽: none observed
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

ENVIRONMENTAL AUDIT REPORT:
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFB-14
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 1
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-25-97
		SURFACE ELEV.	101.7
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH	
						Concrete.
1	SS	NA	12			
2	SS	NA	16			Fill: medium sand, dark yellowish brown, no odor, moist (backfill from die cast area pit).
						Split spoon refusal at 4.2 feet.
						Concrete.
3	SS	12	12	29.2	5	Fill: medium to coarse sand, dark gray, moist, strong hydrocarbon odor.
						SANDY LEAN CLAY (CL), some sand, few gravel, slightly plastic, dark gray 10YR 4/1, strong hydrocarbon odor, moist, stiff (Pp = 1.6) (Glacial Till).
4	SS	10	22	23.2		
						As above (CL), less odor.
5	SS	12	24	11.2		
						As above (CL), medium stiff (Pp = 0.8), 1/8" sand parting @ 8.3 feet.
					10	End of boring at 10 feet. Boring backfilled with bentonite chips.

GENERAL NOTES

DATE STARTED 24 MAR 97
DATE COMPLETED 25 MAR 97
RIG CME LC 60
CREW CHIEF M. HEFFERAN
LOGGED DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ none observed
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME ____ DEPTH ____
WATER: DATE/TIME ____ DEPTH ____

ENVIRONMENTAL AUDIT REPORT
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFB-15
SHEET NO.: 1 OF 2
PROJECT NO.: 4036.05
INSTALLATION: 3-24-97
SURFACE ELEV.:
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH	
						Concrete.
1	SS	15	17	0		Fill: medium sand, dark yellowish brown, no odor, moist.
2	SS	35	15	0		SANDY LEAN CLAY (CL), some sand, few gravel, slightly plastic, brown 10YR 4/3, no odor, moist, hard (Pp > 4.5), occasional fracture.
						As above (CL), dark grayish brown 10YR 4/2 below 3.1 ft.
3	SS	19	20	0		
					5	As above (CL), hard to stiff, no fracturing.
4	SS	18	22	0		
						As above (CL).
5	SS	17	24	0		
						As above (CL).
6	SS	18	24	0	10	

GENERAL NOTES

DATE STARTED: 24 MAR 97
DATE COMPLETED: 24 MAR 97
RIG: CME LC 60
CREW CHIEF: M. HEFFERAN
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽: none observed
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

ENVIRONMENTAL AUDIT REPORT:
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFB-15
SHEET NO.: 2 OF 2
PROJECT NO.: 4036.05
INSTALLATION: 3-24-97
SURFACE ELEV.:
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH	
7	SS	17	24	0		As above (CL), 1/4" sand parting @ 11.2 ft, no odor.
						As above (CL).
					15	End of boring at 14 feet. Boring backfilled with bentonite chips.
					20	

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LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFB-16
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 1
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-25-97
		SURFACE ELEV.	101.7
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH	
						Concrete.
1	SS	6	12			Fill: fine to medium sand, dark yellowish brown, moist, no odor.
2	SS	5	6			Concrete.
3	SS	15	22	32.2		SANDY LEAN CLAY (CL), some sand, few gravel, slightly plastic, dark gray 10YR 4/1, no odor, moist, very stiff (Pp = 3.3), occasional fracture.
4	SS	15	24	4.4	5	As above (CL), 1/8" silty sand parting @ 5.4 ft, no fractures.
5	SS	16	24	5.6		As above (CL), (Pp = 2.2 to 2.5).
6	SS	6	12	22.2		As above (CL).
					10	End of boring at 10 feet. Boring backfilled with bentonite chips.

GENERAL NOTES

DATE STARTED	25 MAR 97
DATE COMPLETED	25 MAR 97
RIG	CME LC 60
CREW CHIEF	M. HEFFERAN
LOGGED	DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	none observed
AT COMPLETION ▼	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

ENVIRONMENTAL AUDIT REPORT:
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFB-17
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 1
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-26-97
		SURFACE ELEV.	
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH	
						Concrete.
1	SS	10	15	0		Fill: fine sand, brown 10YR 4/3, pieces of dark gray sandy lean clay, no odor, dry to moist.
2	SS	4	22	0		As above.
3	SS	10	24	0	5	As above, dark yellowish brown.
						Fill: silty fine sand, small pieces of dark gray sandy lean clay, brown to grayish brown, no odor, dry to moist.
4	SS	26	20	0		SANDY SILT (ML), light brownish gray 10YR 6/2, dry to moist, laminated and stratified.
5	SS	14	20	0		LEAN CLAY (CL), medium plastic, dark gray, moist, stiff (Pp =1.4), increasingly laminated.
					10	SANDY LEAN CLAY (CL), some sand, few gravel, slightly plastic, dark gray 10YR 4/1, moist, stiff (Glacial Till).
						End of boring at 10 feet. Boring backfilled with bentonite chips.

GENERAL NOTES

DATE STARTED	26 MAR 97
DATE COMPLETED	26 MAR 97
RIG	CME LC 60
CREW CHIEF	M. HEFFERAN
LOGGED	DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	none observed
AT COMPLETION ▼	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

ENVIRONMENTAL AUDIT REPORT
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LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFB-18
SHEET NO.: 1 OF 1
PROJECT NO.: 4036.05
INSTALLATION: 3-26-97
SURFACE ELEV.:
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH	
						Concrete.
1	SS	15	16	0.6		Fill: fine sand with silt, dark yellowish brown, dry to moist.
2	SS	19	24	0		SANDY LEAN CLAY (CL), some sand, few gravel, slightly plastic, dark gray 10YR 4/1, no odor, dry to moist, hard, occasional gray silt parting (Glacial Till).
3	SS	12	24	0		As above (CL), moist, very stiff (Pp = 3.3 to 3.8).
					5	As above (CL).
4	SS	13	18	0		As above (CL), (Pp = 2.7 to 3.3).
						SANDY SILT (ML), dark grayish brown, moist.
5	SS	15	24	0		SANDY LEAN CLAY (CL), some sand, few gravel, slightly plastic, dark gray 10YR 4/1, no odor, moist, stiff (Pp = 1.7), no silt partings.
					10	End of boring at 10 feet. Boring backfilled with bentonite chips.

GENERAL NOTES

DATE STARTED: 26 MAR 97
DATE COMPLETED: 26 MAR 97
RIG: CME LC 60
CREW CHIEF: M. HEFFERAN
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING: none observed
AT COMPLETION:
AFTER DRILLING
CAVE-IN: DATE/TIME: DEPTH:
WATER: DATE/TIME: DEPTH:

ENVIRONMENTAL AUDIT REPORT:
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFB-19
SHEET NO.: 1 OF 1
PROJECT NO.: 4036.05
INSTALLATION: 3-26-97
SURFACE ELEV.:
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH	
						Concrete.
1	SS	12	16	0		Fill: silty fine sand, dark yellowish brown, dry to moist.
						SANDY LEAN CLAY (CL), some sand, few gravel, slightly plastic, dark gray 10YR 4/1, no odor, dry to moist, hard (Pp > 4.5) (Glacial Till).
2	SS	12	24	0		
						As above (CL), dark yellowish brown along fractures, very stiff (Pp = 2.7 to 3.3).
3	SS	14	20	0		
					5	As above (CL), no fractures.
4	SS	12	24	0		
						As above (CL), (Pp = 2.1).
5	SS	12	24	0		
						<— 1/8" moist gray silty sand parting @ 8.3 ft.
						As above (CL), but gray to dark gray along occasional fractures, stiff (Pp = 1.0).
					10	
						End of boring at 10 feet. Boring backfilled with bentonite chips.

GENERAL NOTES

DATE STARTED: 26 MAR 97
DATE COMPLETED: 26 MAR 97
RIG: CME LC 60
CREW CHIEF: M. HEFFERAN
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽: none observed
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFB-20
SHEET NO.: 1 OF 1
PROJECT NO.: 4036.05
INSTALLATION: 3-26-97
SURFACE ELEV.:
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH	
						Concrete.
1	SS	17	20	0		Fill: silty fine sand, dark yellowish brown, no odor, moist.
						SANDY LEAN CLAY (CL), some sand, few gravel, slightly plastic, dark gray 10YR 4/1, dry to moist, hard (Pp > 4.5), occasional fractures (Glacial Till).
2	SS	11	22	0		SANDY SILT (ML), pale brown, moist.
						SANDY LEAN CLAY (CL), some sand, few gravel, slightly plastic, dark gray 10YR 4/1, dry to moist, very stiff (Pp = 3.3 to 3.8), occasional fractures.
3	SS	8	24	0	5	
						SANDY SILT (ML), dark yellowish brown, moist.
						SANDY LEAN CLAY (CL), some sand, few gravel, slightly plastic, dark gray 10YR 4/1, dry to moist, stiff (Pp = 1.4 to 1.8), gray along occasional fractures.
4	SS	NA	24	0		
						As above (CL), no fractures.
5	SS	NA	12	0		
						As above (CL).
					10	End of boring at 10 feet. Boring backfilled with bentonite chips.

GENERAL NOTES

DATE STARTED: 26 MAR 97
DATE COMPLETED: 26 MAR 97
RIG: CME LC 60
CREW CHIEF: M. HEFFERAN
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽: none observed
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME: DEPTH:
WATER: DATE/TIME: DEPTH:

ENVIRONMENTAL AUDIT REPORT
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFB-21
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 1
CONTRACTOR	FIBERTEC	PROJECT NO.	4036.05
DRILLING METHOD	DIRECT PUSH	INSTALLATION	4-24-97
		SURFACE ELEV.	
		BOREHOLE DIA.	2 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	MOISTURE	DEPTH	
1	GP		27	M		FILL: Mostly fine to medium sand, little fine gravel, black, moist, oily residue and heavy hydrocarbon odor, PID = 5.1.
						FILL: poorly-graded sand, fine, yellowish brown, moist, slight odor above 1.5 feet.
2	GP		34	M/W		As above.
					5	FILL: mostly poorly-graded fine sand, little lean clay, mostly brown to dark brown, slight hydrocarbon odor, moist, PID = 1.0 .
						FILL: poorly-graded sand, fine, yellowish brown with occasional black streaks, no odor, wet @ 6.6 ft.
3	GP		18	W		As above.
						Obstruction @ 9.5 ft.
					10	End of boring at 9.5 feet. Collected groundwater sample from 1" PVC temporary well screened from 4.5 to 9.5 ft.

GENERAL NOTES

DATE STARTED	24 APR 97
DATE COMPLETED	24 APR 97
RIG	GEOPROBE
CREW CHIEF	K. BELL
LOGGED	DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	6.6 ft. bgl
AT COMPLETION ▼	7.7 ft. bgl
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: FIBERTEC
DRILLING METHOD: DIRECT PUSH

BORING NO.: PFB-22
SHEET NO.: 1 OF 1
PROJECT NO.: 4036.05
INSTALLATION: 4-24-97
SURFACE ELEV.:
BOREHOLE DIA.: 2 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	MOISTURE	DEPTH	
1	GP		34	M		Topsoil. FILL: mostly lean clay with gravel, some areas of yellowish brown sand, brown, dark grayish brown, no odor, moist, stiff (reworked glacial till).
						FILL: poorly graded sand, fine, yellow brown, no odor, moist.
2	GP		28	M		FILL: poorly-graded sand, fine, few medium to coarse sand, trace fine gravel, trace silt and clay, yellow brown, no odor, moist.
					5	
					10	End of boring at 8 feet.

GENERAL NOTES

DATE STARTED: 24 APR 97
DATE COMPLETED: 24 APR 97
RIG: GEOPROBE
CREW CHIEF: K. BELL
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING: none observed
AT COMPLETION:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

FOMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: FIBERTEC
DRILLING METHOD: DIRECT PUSH

BORING NO.: PFB-23
SHEET NO.: 1 OF 1
PROJECT NO.: 4036.05
INSTALLATION: 4-24-97
SURFACE ELEV.:
BOREHOLE DIA.: 2 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	MOISTURE	DEPTH	
1	GP		48	M		Coal.
						SANDY LEAN CLAY (CL), some fine to coarse sand, few percent fine to coarse subangular gravel, occasional silt and sand parting, mottled mostly brown, dark yellowish brown, with gray along abundant fractures, no odor, moist, hard, PID = 0.2.
2	GP		48	M		
					5	As above (CL), mostly dark olive brown 2.5Y 4/2 below 5.8 ft, increasing moisture, very stiff, PID =0.1 .
						As above (CL), PID = 0.1.
						End of boring at 8 feet.
					10	

GENERAL NOTES

DATE STARTED: 24 APR 97
DATE COMPLETED: 24 APR 97
RIG: GEOPROBE
CREW CHIEF: K. BELL
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽: none observed
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: FIBERTEC
DRILLING METHOD: DIRECT PUSH

BORING NO.: PFB-24
SHEET NO.: 1 OF 1
PROJECT NO.: 4036.05
INSTALLATION: 4-24-97
SURFACE ELEV.:
BOREHOLE DIA.: 2 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	MOISTURE	DEPTH	
1	GP		48	M		Coal.
						SANDY LEAN CLAY (CL), some fine to coarse sand, few percent fine to coarse subangular gravel, occasional silt and sand parting, mottled mostly brown, dark yellowish brown, with gray along abundant fractures, no odor, moist, hard, PID = 0.1.
2	GP		48	M		
					5	As above (CL), increasing moisture, very stiff, PID = 0.1.
						As above (CL), PID = 0.1.
						End of boring at 8 feet.
					10	

GENERAL NOTES

DATE STARTED: 24 APR 97
DATE COMPLETED: 24 APR 97
RIG: GEOPROBE
CREW CHIEF: K. BELL
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING: none observed
AT COMPLETION:
AFTER DRILLING
CAVE-IN: DATE/TIME: DEPTH:
WATER: DATE/TIME: DEPTH:

ENVIRONMENTAL AUDIT REPORT:
PRIVILEGED DOCUMENT

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: FIBERTEC
DRILLING METHOD: DIRECT PUSH

BORING NO.: PFB-25
SHEET NO.: 1 OF 1
PROJECT NO.: 4036.05
INSTALLATION: 4-24-97
SURFACE ELEV.:
BOREHOLE DIA.: 2 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	MOISTURE	DEPTH	
1	GP		32	M		Concrete.
						FILL: poorly-graded sand, fine, yellow brown, no odor, moist, PID = 0.1.
2	GP		34	M	5	SANDY LEAN CLAY (CL), some fine to coarse sand, few percent fine gravel, slightly plastic, mottled mostly brown, dark yellowish brown, with gray along abundant fractures, no odor, moist, hard (Glacial Till), PID = 0.2.
						As above (CL), PID = 0.2.
3	GP		48	M	10	As above (CL), reddish black precipitate along fractures, mostly gray below 9.5 feet, no odor, very stiff, PID = 0.2.
						As above (CL), yellowish brown in fewer fractures, PID = 0.2.
						End of boring at 12 feet.

GENERAL NOTES

DATE STARTED: 24 APR 97
DATE COMPLETED: 24 APR 97
RIG: GEOPROBE
CREW CHIEF: K. BELL
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽: none observed
AT COMPLETION ▼:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFB-26
LOCATION	FLINT, MICHIGAN	SHEET NO.	1 OF 1
CONTRACTOR	FIBERTEC	PROJECT NO.	4036.05
DRILLING METHOD	DIRECT PUSH	INSTALLATION	4-25-97
		SURFACE ELEV.	
		BOREHOLE DIA.	2 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	TYPE	RECOVERY N	IN	MOISTURE	DEPTH	
1	GP		30	M		Concrete.
						FILL: poorly-graded sand, fine, yellow brown, no odor, moist.
2	GP		32	M	5	SANDY LEAN CLAY (CL), some fine to coarse sand, few percent fine gravel, slightly plastic, mottled mostly brown, dark yellowish brown, with gray along abundant fractures, no odor, moist, hard, PID = 0 (Glacial Till).
3	GP		48	M		As above (CL), dark precipitate along fractures.
						<– Abrupt color change at 9.2 feet, PID = 0.
					10	As above (CL), mostly gray, yellowish brown along occasional fractures, PID = 0.
						End of boring at 12 feet.

GENERAL NOTES

DATE STARTED	25 APR 97
DATE COMPLETED	25 APR 97
RIG	GEOPROBE
CREW CHIEF	K. BELL
LOGGED	DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽	none observed
AT COMPLETION ▼	
AFTER DRILLING	
CAVE-IN: DATE/TIME	DEPTH
WATER: DATE/TIME	DEPTH

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. PFB-27
SHEET NO. 1 OF 1
PROJECT NO. 4036.05
INSTALLATION 4-25-97
SURFACE ELEV.
BOREHOLE DIA. 2 IN.

PROJECT NAME PEREGRINE FLINT
LOCATION FLINT, MICHIGAN
CONTRACTOR FIBERTEC
DRILLING METHOD DIRECT PUSH

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS
INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	MOISTURE	DEPTH	
1	GP		28	M		Concrete.
						FILL: poorly-graded sand, fine, yellow brown, no odor, moist.
2	GP		10	M		As above.
					5	End of boring at 5 feet. Encountered obstruction. Moved 3 feet to the N/NE; hit (same?) obstruction at approximately 5 feet. Did not attempt to redrill within area of pillars G-H/37-38.
					10	

GENERAL NOTES

DATE STARTED 25 APR 97
DATE COMPLETED 25 APR 97
RIG GEOPROBE
CREW CHIEF K. BELL
LOGGED DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ none observed
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME ____ DEPTH ____
WATER: DATE/TIME ____ DEPTH ____

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS – STUDY 1 (08/96)

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TABLE B.1

STUDY 1 (08/96) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Infinite Source Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # GP-1 (4-8) 8/30/96 None	GP-2 (0-2) 8/30/96 None	GP-3 (1-4) 8/30/96 AOI # 18	GP-4 (0-4) 8/30/96 AOI # 18	GP-5 (0-4) 8/30/96 None	GP-6 (0-4) 8/30/86 AOI # 13	GP-7 (10-12) 8/30/96 None
General Chemistry (mg/Kg)													
Diesel Fuel	-	-	-	None	None	None	ND (6.6)	ND (6.6)	ND (6.6)	11	ND (6.6)	NA	ND (6.6)
Metals (ug/Kg)													
Arsenic	5800	23000	100000	None	None	910000	8500	6600	8500	7000	3500	NA	7800
Barium	75000	1300000	320000000	None	None	150000000	57000	73000	10000	73000	64000	NA	86000
Cadmium	1200	6000	4500000	None	None	2200000	140	130	82	88	120	NA	160
Chromium	18000	30000	22000000	None	None	None	14000	11000	4500	13000	14000	NA	9500
Copper	32000	160000000	170000000	None	None	59000000	14000	13000	7600	12000	16000	NA	13000
Lead	21000	1000	900000	None	None	44000000	8800	8100	4100	10000	10000	NA	7500
Mercury	130	1700	1400000	NLV	NLV	ID	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	NA	ND (100)
Selenium	410	4000	23000000	None	None	59000000	720	660	940	800	ND (500)	NA	680
Silver	1000	13000	21000000	None	None	2900000	ND (500)	ND (500)	ND (500)	ND (500)	ND (500)	NA	ND (500)
Zinc	47000	5000000	1000000000	NLV	NLV	ID	40000	39000	25000	42000	49000	NA	39000
Semi - Volatiles (ug/Kg)													
1,2,4-Trichlorobenzene	-	4200	1100000	1100000	34000000	11000000000	NA	NA	NA	NA	NA	ND (330)	NA
2,4,6-Trichlorophenol	-	45000	14000000	None	None	1300000000	NA	NA	NA	NA	NA	ND (330)	NA
2,4-Dichlorophenol	-	7700	10000000	None	None	2300000000	NA	NA	NA	NA	NA	ND (330)	NA
2,4-Dimethylphenol	-	20000	230000000	None	None	2100000000	NA	NA	NA	NA	NA	ND (330)	NA
2,4-Dinitrophenol	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (1700)	NA
2,4-Dinitrotoluene	-	15000	220000	None	None	20000000	NA	NA	NA	NA	NA	ND (330)	NA
2,6-Dinitrotoluene	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (330)	NA
2-Chloronaphthalene	-	1800000	190000000	ID	ID	ID	NA	NA	NA	NA	NA	ND (330)	NA
2-Chlorophenol	-	2600	4600000	ID	ID	ID	NA	NA	NA	NA	NA	ND (330)	NA
2-Nitroaniline	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (1700)	NA
2-Nitrophenol	-	1200	13000000	NLV	NLV	ID	NA	NA	NA	NA	NA	ND (330)	NA
3,3-Dichlorobenzidine	-	2000	55000	None	None	8200000	NA	NA	NA	NA	NA	ND (2000)	NA
3-Nitroaniline	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (1700)	NA
4,6-Dinitro-2-methylphenol	-	1700	1600000	NLV	NLV	ID	NA	NA	NA	NA	NA	ND (1700)	NA
4-Bromophenyl phenyl ether	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (330)	NA
4-Chloro-3-methylphenol	-	16000	15000000	NLV	NLV	ID	NA	NA	NA	NA	NA	ND (330)	NA
4-Chloroaniline	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (1300)	NA
4-Chlorophenyl phenyl ether	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (330)	NA
4-Nitroaniline	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (1700)	NA
4-Nitrophenol	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (1700)	NA
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA	ND (330)	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA	ND (330)	NA
Acetonitrile	-	8000	14000000	22000000	11000000	10000000000	NA	NA	ND (100)	ND (100)	ND (100)	ND (100)	NA
Aniline	-	12000	4500000	None	None	29000000	NA	NA	NA	NA	NA	ND (1700)	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA	ND (330)	NA
Benzidine	-	1000	1000	None	None	59,000	NA	NA	NA	NA	NA	ND (5000)	NA
Benzo(a)anthracene	-	-	210000	NLV	NLV	ID	NA	NA	NA	NA	NA	ND (330)	NA
Benzo(a)pyrene	-	-	21000	None	None	1900000	NA	NA	NA	NA	NA	ND (330)	NA

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Sep 30, 2009 08:55

TABLE B.1

STUDY 1 (08/96) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Infinite Source Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI # GP-1 (4-8) 8/30/96 None	GP-2 (0-2) 8/30/96 None	GP-3 (1-4) 8/30/96 AOI # 18	GP-4 (0-4) 8/30/96 AOI # 18	GP-5 (0-4) 8/30/96 None	GP-6 (0-4) 8/30/86 AOI # 13	GP-7 (10-12) 8/30/96 None
Benzo(b)fluoranthene	-	-	210000	ID	ID	ID	NA	NA	NA	NA	NA	ND (330)	NA
Benzo(g,h,i)perylene	-	-	16000000	None	None	350000000	NA	NA	NA	NA	NA	ND (330)	NA
Benzo(k)fluoranthene	-	-	2100000	NLV	NLV	ID	NA	NA	NA	NA	NA	ND (330)	NA
bis(2-Chloroethoxy)methane	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (330)	NA
bis(2-Chloroethyl)ether	-	330	23000	44000	13000	12000000	NA	NA	NA	NA	NA	ND (330)	NA
bis(2-Chloroisopropyl)ether	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (330)	NA
bis(2-Ethylhexyl)phthalate	-	-	10000000	None	None	8900000000	NA	NA	NA	NA	NA	ND (330)	NA
Butyl benzylphthalate	-	310000	310000	None	None	21000000000	NA	NA	NA	NA	NA	ND (330)	NA
Chrysene	-	-	21000000	ID	ID	ID	NA	NA	NA	NA	NA	ND (330)	NA
Dibenzo(a,h)anthracene	-		21000	NLV	NLV	ID	NA	NA	NA	NA	NA	ND (330)	NA
Dibenzofuran	-	-	-	ID	ID	ID	NA	NA	NA	NA	NA	ND (330)	NA
Diethyl phthalate	-	320000	740000	None	None	1500000000	NA	NA	NA	NA	NA	ND (330)	NA
Dimethyl phthalate	-	790000	790000	None	None	1500000000	NA	NA	NA	NA	NA	ND (330)	NA
Di-n-butylphthalate	-	760000	760000	None	None	1500000000	NA	NA	NA	NA	NA	ND (330)	NA
Di-n-octyl phthalate	-	140000000	81000000	NLV	NLV	ID	NA	NA	NA	NA	NA	ND (330)	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA	ND (330)	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA	ND (330)	NA
Hexachlorobenzene	-	1800	94000	220000	56000	85000000	NA	NA	NA	NA	NA	ND (330)	NA
Hexachlorobutadiene	-	77000	350000	350000	460000	180000000	NA	NA	NA	NA	NA	ND (330)	NA
Hexachlorocyclopentadiene	-	36000	81000	ID	ID	ID	NA	NA	NA	NA	NA	ND (330)	NA
Hexachloroethane	-	69000	1800000	370000	1400000	100000000	NA	NA	NA	NA	NA	ND (330)	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	NLV	NLV	ID	NA	NA	NA	NA	NA	ND (330)	NA
Isophorone	-	74000	2400000	None	None	8200000000	NA	NA	NA	NA	NA	ND (330)	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA	ND (330)	NA
Nitrobenzene	-	330	340000	490000	4600000	1500000000	NA	NA	NA	NA	NA	ND (330)	NA
N-Nitrosodi-n-propylamine	-	330	3500	None	None	2000000	NA	NA	NA	NA	NA	ND (330)	NA
N-Nitrosodiphenylamine	-	14000	5100000	NLV	NLV	ID	NA	NA	NA	NA	NA	ND (330)	NA
Octachlorocyclopentene	-	-	-	None	None	None	NA	NA	NA	NA	NA	ND (330)	NA
Pentachlorophenol	-	3200	63000	None	None	130000000	NA	NA	NA	NA	NA	ND (3400)	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA	ND (330)	NA
Phenol	-	260000	12000000	None	None	18000000000	NA	NA	NA	NA	NA	ND (330)	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA	ND (330)	NA
Volatiles (ug/Kg)													
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,1-Dichloroethene	-	140	580000	330	3700	78000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,2-Dibromoethane (EDB)	-	10	290	3600	5800	18000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,3-Dichlorobenzene	-	18000	200000	ID	ID	ID	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	NA	ND (100)	ND (100)	ND (100)	ND (100)	NA

TABLE B.1

STUDY 1 (08/96) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (1)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Infinite Source Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI # GP-1 (4-8) 8/30/96 None	GP-2 (0-2) 8/30/96 None	GP-3 (1-4) 8/30/96 AOI # 18	GP-4 (0-4) 8/30/96 AOI # 18	GP-5 (0-4) 8/30/96 None	GP-6 (0-4) 8/30/86 AOI # 13	GP-7 (10-12) 8/30/96 None
2-Hexanone	-	58000	2500000	1800000		1200000000	NA	NA	ND (100)	ND (100)	ND (100)	ND (100)	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	600000000000	NA	NA	ND (100)	ND (100)	ND (100)	ND (100)	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	NA	ND (100)	ND (100)	ND (100)	ND (100)	NA
Benzene	-	100	400000	8400	45000	470000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Bromomethane	-	580	1000000	1600	13000	150000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	NA	ND (100)	ND (100)	ND (100)	ND (100)	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
cis-1,3-Dichloropropene	-	-	-	None	None	None	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Ethylene oxide	-	-	-	None	None	None	NA	NA	ND (1000)	ND (1000)	ND (1000)	ND (1000)	NA
Methyl Tert Butyl Ether	-	800	6000000	6000000	31000000	880000000000	NA	NA	ND (100)	ND (100)	ND (100)	ND (100)	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	NA	NA	14	17	17	37	NA
Styrene	-	2700	520000	520000	3200000	6600000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Toluene	-	16000	250000	250000	3300000	12000000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
trans-1,3-Dichloropropene	-	-	-	None	None	None	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Vinyl chloride	-	40	11000	150	1500	47000000	NA	NA	ND (10)	ND (10)	ND (10)	ND (10)	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	NA	ND (30)	ND (30)	ND (30)	ND (30)	NA

Notes:

Industrial Drinking Water Protection Criteria exceeded (Statewide for Lead).

Industrial Direct Contact Criteria exceeded.

None - No standard.

ND - Analyte not detected at the method detection limit.

ID - Criterion not currently developed by MDEQ.

NA - Parameter not analyzed.

NLV - Chemical is not likely to volatilize under most conditions.

(2) - MDEQ/ERD Operational Memo No. 14.

TABLE B.2

STUDY 1 (08/96) WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	*Groundwater Contact Criteria* [2]	*Industrial Drinking Water Criteria* [2]	*Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria* [2]	*Sample Location (depth ft. bgs)* *Sample Date* *AOI #*
				GP-7 (10-20) *8/30/96* *None*
Metals (ug/Kg)				
Arsenic	4700	50	None	ND (5.0)
Barium	15000000	2000	None	710
Cadmium	210000	5	None	2.2
Chromium	1000000	30000	None	ND (50)
Copper	8100000	1000	None	32
Lead	-	4	None	ND (40)
Mercury	56	2	NLV	ND (0.20)
Selenium	1100000	50	None	ND (5.0)
Silver	1000000	98	None	ND (0.50)
Zinc	70000000	5000	NLV	91
General Chemistry (mg/Kg)				
Diesel Fuel	-	-	None	ND (0.20)

Notes:

[ ] Groundwater Contact Criteria exceeded.

_____ Industrial Drinking Water Criteria exceeded.

None - No standard.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NLV - Chemical is not likely to volatilize wider most conditions.

(2) - MDEQ/ERD Operational Memorandum No. 14.

Table 1
PHASE II SAMPLING ANALYTICAL RESULTS - SOILS
DELPHI INTERIOR AND LIGHTING SYSTEMS
COLDWATER ROAD FACILITY
Flint, Michigan

Sample ID sample type depth of sample date sampled	GP-1 clay 4-8' 8/30/96	GP-2 clay 0-2' 8/30/96	GP-3 sand 1-4' 8/30/96	GP-4 clay 0-4' 8/30/96	GP-5 clay 0-4' 8/30/96	GP-6 clay 0-4' 8/30/96	GP-7 clay 10-12' 8/30/96	Michigan Background Soil Concentrations* (ug/Kg)	MDEQ Industrial Direct Contact Cleanup Criteria** (ug/Kg)
TPH (DRO) (mg/Kg)	ND	ND	ND	11	ND	NA	ND	—	—
% Solids	86.3	87.9	95.4	83.3	84.6	NA	86.8	—	—
Volatile Organics (ug/Kg)									
Methylene chloride	NA	NA	14B	17B	17B	37B	NA	—	3,300,000
Semi-Volatile Organics (ug/Kg)	NA	NA	NA	NA	NA	ND	NA	—	—
Metals (ug/Kg)									
Arsenic	8,500	6,600	8,500	7,000	3,500	NA	7,800	34,300	83,000
Barium	57,000	73,000	10,000	73,000	64,000	NA	86,000	249,300	320,000,000
Cadmium	140	130	82	88	120	NA	160	3,000	2,300,000
Chromium	14,000	11,000	4,500	13,000	14,000	NA	9,500	49,800	22,000,000
Copper	14,000	13,000	7,600	12,000	16,000	NA	13,000	35,900	170,000,000
Lead	8,800	8,100	4,100	10,000	10,000	NA	7,500	39,800	400,000
Mercury	ND	ND	ND	ND	ND	NA	ND	250	1,400,000
Selenium	720	660	940	800	ND	NA	680	1,340	23,000,000
Silver	ND	ND	ND	ND	ND	NA	ND	3,560	21,000,000
Zinc	40,000	39,000	25,000	42,000	49,000	NA	39,000	98,200	1,000,000,000

B = Result not detected substantially above levels reported in laboratory blanks.
NA = Sample not analyzed for this analysis.
TPH = Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
Metals = Michigan 10 metals list
VOC = EPA Method 624/8260 purgeables by GC/MS.
SVOC = EPA Method 625/8270 Base Neutral Acid Extractables.
ND = Analyte not detected at the method detection limit.
* = Comparison Values from the MDNR "Michigan Background Soil Survey", April 1991, Waste Management Division.
** = Cleanup Criteria from the MDEQ Operational Memo #14, Revision 2), Environmental Response Division.

Table 2
PHASE II SAMPLING ANALYTICAL RESULTS -GROUNDWATER
DELPHI INTERIOR AND LIGHTING SYSTEMS
COLDWATER ROAD FACILITY
Flint, Michigan

Sample ID sample type depth of sample date sampled	GP-7 water 12-14' 8/30/96	MDEQ Health-Based Drinking Water Cleanup Criteria
TPH (DRO) (mg/L)	ND	—
Metals (ug/L)		
Arsenic	ND	50
Barium	710	2,000
Cadmium	2.2	5
Chromium	ND	100
Copper	32	4,000
Lead	ND	4
Mercury	ND	2
Selenium	ND	50
Silver	ND	98
Zinc	91	6,900

NA = Sample not analyzed for this analysis.
TPH = Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
Metals = Michigan 10 metals list
VOC = EPA Method 624/8260 purgeables by GC/MS.
SVOC = EPA Method 625/8270 Base Neutral Acid Extractables.
ND = Analyte not detected at the method detection limit.

APPENDIX C

SUMMARY OF ANALYTICAL RESULTS – STUDY 2 (11/96)

Confidential under FOIA
Alex Rothchild
LFR
Sep 30, 2009 08:55

TABLE C.1

STUDY 2 (11/96) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Infinite Source Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #									
							BLD 63-24 11/6/96 AOI # 8	BLD 63-25 11/6/96 AOI # 8	F-30 (0-2) 11/6/96 AOI # 9	F-34 11/14/96 AOI # 9	HD-1 11/6/96 None	K-2 11/6/96 AOI # 9	K-32 11/6/96 AOI # 9	K-33 11/6/96 AOI # 9	K-35 11/6/96 AOI # 9	M-1 (6-8) 11/6/96 AOI # 7
General Chemistry (ug/Kg)																
Cyanide (total)	-	4000	250000	-	-	250000	NA	NA	31800	ND	NA	ND	ND	NA	NA	NA
Petroleum hydrocarbons	-	-	-	-	-	-	471,000	945,000	ND	NA	978,000	NA	NA	NA	NA	NA
Metals (ug/Kg)																
Arsenic	5800	23000	100000	-	-	910000	5150	5280	3250	3360	3630	5190	2950	3060	10700	6810
Barium	75000	1300000	320000000	-	-	150000000	47300	35600	9420	33100	20100	57700	10400	10300	325000	72600
Cadmium	1200	6000	4500000	-	-	2200000	ND	ND	ND	ND	ND	ND	ND	ND	6050	ND
Chromium	18000	30000	22000000	-	-	-	10800	9300	5470	11200	25200	12500	42800	9720	1160000	13700
Copper	32000	160000000	170000000	-	-	59000000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	21000	1000	900000	-	-	44000000	5480	4500	ND	4990	175000	7000	5030	ND	1280000	8070
Mercury	130	1700	1400000	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	90	ND
Selenium	410	4000	23000000	-	-	59000000	ND	ND	ND	ND	ND	ND	ND	ND	649	ND
Silver	1000	13000	21000000	-	-	2900000	ND	ND	ND	ND	ND	ND	ND	ND	2970	ND
Zinc	47000	5000000	1000000000	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCBs (ug/Kg)																
Aroclor-1254	-	-	9900	-	-	-	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
Semi - Volatiles (ug/Kg)																
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatiles (ug/Kg)																
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND
Chloroform	-	2000	1500000	38000	150000	1600000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	1.3
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	19.3
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND
Toluene	-	16000	250000	250000	3300000	120000000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND
Trichloroethene	-	100	500000	37000	260000	2300000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND	ND	NA	NA	NA	NA	NA	NA	NA	14

Notes:

Industrial Drinking Water Protection Criteria exceeded.

Industrial Direct Contact Criteria exceeded.

PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE C.1

STUDY 2 (11/96) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Infinite Source Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #								
							M-1 (8-10) 11/6/96 AOI # 7	MW-1 (2-4) 11/6/96 AOI # 14	MW-10 (4-6) 11/15/96 AOI # 15	MW-12 (10-12) 11/6/96 None	MW-13 (4-6) 11/6/96 AOI # 2	MW-14 (3-5) 11/6/96 AOI # 1	MW-2 (8-10) 11/6/96 AOI # 16	MW-3 (2-4) 11/6/96 AOI # 18	MW-4 (6-8) 11/6/96 AOI # 15
General Chemistry (ug/Kg)															
Cyanide (total)	-	4000	250000	-	-	250000	NA	NA	NA	88300	NA	NA	NA	NA	NA
Petroleum hydrocarbons	-	-	-	-	-	-	NA	336,000	ND	ND	NA	NA	NA	396,000	NA
Metals (ug/Kg)															
Arsenic	5800	23000	100000	-	-	910000	4300	NA	4520	6880	NA	NA	NA	NA	NA
Barium	75000	1300000	320000000	-	-	150000000	43400	NA	42700	54900	NA	NA	NA	NA	NA
Cadmium	1200	6000	4500000	-	-	2200000	ND	NA	ND	ND	NA	NA	NA	NA	NA
Chromium	18000	30000	22000000	-	-	-	12800	NA	12900	11300	NA	NA	NA	NA	NA
Copper	32000	160000000	170000000	-	-	59000000	ND	NA	ND	ND	NA	NA	NA	NA	NA
Lead	21000	1000	900000	-	-	44000000	8980	NA	6640	6380	NA	NA	NA	NA	NA
Mercury	130	1700	1400000	-	-	-	ND	NA	ND	ND	NA	NA	NA	NA	NA
Selenium	410	4000	23000000	-	-	59000000	ND	NA	ND	300	NA	NA	NA	NA	NA
Silver	1000	13000	21000000	-	-	2900000	ND	NA	ND	ND	NA	NA	NA	NA	NA
Zinc	47000	5000000	1000000000	-	-	-	ND	NA	ND	ND	NA	NA	NA	NA	NA
PCBs (ug/Kg)															
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	ND	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	ND	NA
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	NA	NA	NA	ND	NA
Semi - Volatiles (ug/Kg)															
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA	ND	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	NA	NA	NA	ND	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA	ND	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	NA	NA	NA	ND	NA
Volatiles (ug/Kg)															
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND	ND	ND	ND	10.4	ND	ND	NA	ND
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND	ND	ND	ND	33.8	1.7	ND	NA	ND
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND	ND	ND	ND	ND	ND	ND	NA	ND
Chloroform	-	2000	1500000	38000	150000	1600000000	ND	ND	ND	ND	ND	ND	ND	NA	ND
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND	1.3	ND	ND	ND	ND	ND	NA	ND
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND	14.3	ND	ND	66.7	11.4	ND	NA	ND
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND	ND	1	ND	ND	1.3	ND	NA	1.6
Toluene	-	16000	250000	250000	3300000	12000000000	ND	4.6	ND	ND	ND	1	ND	NA	ND
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND	ND	ND	ND	ND	4.7	ND	NA	ND
Trichloroethene	-	100	500000	37000	260000	2300000000	ND	ND	1.1	ND	ND	2210	ND	NA	ND
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND	8.1	ND	ND	ND	ND	ND	NA	ND

Notes:

[ ] Industrial Drinking Water Protection Criteria exceeded.
[ ] Industrial Direct Contact Criteria exceeded.
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

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TABLE C.1

STUDY 2 (11/96) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	*Statewide Default Background Levels* [2]	*Industrial Drinking Water Protection Criteria* [2]	*Industrial Direct Contact Criteria* [2]	*Soil Volatilization to Indoor Air Inhalation Criteria* [2]	*Infinite Source Volatile Soil Inhalation Criteria* [2]	*Particulate Soil Inhalation Criteria* [2]	*Sample Location (depth ft. bgs) / Sample Date / AOI #* MW-5 (3-5) 11/6/96 None	MW-5 (8-10) 11/6/96 None	MW-6 (3-5) 11/6/96 None	MW-6 (8-10) 11/6/96 None	MW-7 (4-6) 11/6/96 None	MW-8 (4-6) 11/6/96 None	MW-8 (8-10) 11/6/96 None	MW-9 (4-6) 11/6/96 None
General Chemistry (ug/Kg)														
Cyanide (total)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons	-	-	-	-	-	-	ND	ND	ND	313,000	360,000	419,000	ND	ND
Metals (ug/Kg)														
Arsenic	5800	23000	100000	-	-	910000	7120	5340	5370	4650	6400	4190	6330	8270
Barium	75000	1300000	320000000	-	-	150000000	52200	38400	49500	41000	68000	41700	39400	54200
Cadmium	1200	6000	4500000	-	-	2200000	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	18000	30000	22000000	-	-	-	11700	12900	11200	12600	12900	11800	12000	12000
Copper	32000	160000000	170000000	-	-	59000000	ND	ND	ND	ND	ND	ND	ND	ND
Lead	21000	1000	900000	-	-	44000000	3720	6920	ND	3800	5610	103000	7450	8890
Mercury	130	1700	1400000	-	-	-	ND	ND	30	ND	ND	ND	ND	ND
Selenium	410	4000	23000000	-	-	59000000	260	ND	ND	ND	ND	370	ND	ND
Silver	1000	13000	21000000	-	-	2900000	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	47000	5000000	1000000000	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND
PCBs (ug/Kg)														
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	NA	NA	NA	NA
Semi - Volatiles (ug/Kg)														
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA
Volatiles (ug/Kg)														
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	-	2000	1500000	38000	150000	1600000000	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND	ND	ND	ND	ND	ND	5.8	ND
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND	ND	ND	37.1	15.2	54.1	11.7	8.8
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND	ND	ND	ND	ND	4.4	ND	ND
Toluene	-	16000	250000	250000	3300000	12000000000	ND	ND	ND	ND	0.9	ND	ND	ND
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	-	100	500000	37000	260000	2300000000	ND	ND	ND	ND	1.6	ND	ND	0.9
Xylene (total)	-	5600	150000	150000	54000000	130000000000	ND	ND	ND	ND	ND	ND	30.5	ND

Notes:

Industrial Drinking Water Protection Criteria exceeded.

Industrial Direct Contact Criteria exceeded.

PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE C.1

STUDY 2 (11/96) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Infinite Source Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI # P-28 11/6/96 AOI # 7	Q-12 11/6/96 None	Q-32 11/6/96 AOI # 7	Q-33 11/6/96 AOI # 7	Q-34 11/6/96 AOI # 7	SB-14 (1-3) 11/6/96 AOI # 1	SB-15 (1-3) 11/6/96 AOI # 1	SB-17 (1-3) 11/6/96 AOI # 18	SB-2 (0-2) 11/7/96 AOI # 17	SB-6 (1-3) 11/6/96 AOI # 18
General Chemistry (ug/Kg)																
Cyanide (total)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Petroleum hydrocarbons	-	-	-	-	-	-	505,000	NA	576,000	480,000	NA	NA	NA	308,000	NA	384,000
Metals (ug/Kg)																
Arsenic	5800	23000	100000	-	-	910000	NA	5980	NA	NA	NA	NA	NA	NA	NA	NA
Barium	75000	1300000	320000000	-	-	150000000	NA	44100	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	1200	6000	4500000	-	-	2200000	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	18000	30000	22000000	-	-	-	NA	11600	NA	NA	NA	NA	NA	NA	NA	NA
Copper	32000	160000000	170000000	-	-	59000000	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Lead	21000	1000	900000	-	-	44000000	NA	7200	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	130	1700	1400000	-	-	-	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	410	4000	23000000	-	-	59000000	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Silver	1000	13000	21000000	-	-	2900000	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	47000	5000000	1000000000	-	-	-	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
PCBs (ug/Kg)																
Aroclor-1254	-	-	9900	-	-	-	ND	NA	ND	ND	279	NA	NA	ND	ND	ND
Aroclor-1260	-	-	9900	-	-	-	ND	NA	ND	ND	ND	NA	NA	ND	150	ND
Total PCBs	-	-	9900	16000000	820000	6500000	ND	NA	ND	ND	279	NA	NA	ND	ND	ND
Semi - Volatiles (ug/Kg)																
Benzo(a)anthracene	-	-	210000	-	-	-	ND	NA	ND	ND	32.6	NA	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	ND	NA	ND	ND	26.1	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	ND	NA	ND	ND	40.6	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	ND	NA	ND	ND	13.1	NA	NA	NA	NA	NA
Volatiles (ug/Kg)																
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	NA	ND	NA	NA	NA	ND	ND	NA	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	NA	ND	NA	NA	NA	ND	ND	NA	NA	NA
1,1-Dichloroethene	-	140	580000	330	3700	78000000	NA	ND	NA	NA	NA	ND	ND	NA	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	NA	ND	NA	NA	NA	ND	ND	NA	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	NA	ND	NA	NA	NA	ND	ND	NA	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	NA	12.3	NA	NA	NA	ND	ND	NA	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	NA	0.8	NA	NA	NA	ND	1.6	NA	NA	NA
Toluene	-	16000	250000	250000	3300000	12000000000	NA	ND	NA	NA	NA	2.7	1.1	NA	NA	NA
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	NA	ND	NA	NA	NA	ND	ND	NA	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	NA	0.8	NA	NA	NA	ND	86.3	NA	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	ND	NA	NA	NA	ND	1	NA	NA	NA

Notes:

Industrial Drinking Water Protection Criteria exceeded.

Industrial Direct Contact Criteria exceeded.

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

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TABLE C.1

STUDY 2 (11/96) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Infinite Source Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #								
							SB-7 (1-3) 11/6/96 AOI # 18	SB-8 (1-3) 11/6/96 AOI # 18	SB-9 (3-5) 11/6/96 AOI # 15	SPL 11/6/96 None	WWB (0.75-2.75) 11/5/96 None	WWT-1 11/6/96 None	WWT-2 11/6/96 None	WWT-3 11/6/96 None	WWT-4 11/6/96 None
General Chemistry (ug/Kg)															
Cyanide (total)	-	4000	250000	-	-	250000	NA	NA	NA	NA	NA	ND	ND	ND	ND
Petroleum hydrocarbons	-	-	-	-	-	-	556,000	ND	NA	NA	ND	NA	NA	NA	NA
Metals (ug/Kg)															
Arsenic	5800	23000	100000	-	-	910000	NA	NA	NA	6030	NA	5370	6160	6530	6950
Barium	75000	1300000	320000000	-	-	150000000	NA	NA	NA	60600	NA	66600	45200	56000	44400
Cadmium	1200	6000	4500000	-	-	2200000	NA	NA	NA	ND	NA	ND	ND	ND	ND
Chromium	18000	30000	22000000	-	-	-	NA	NA	NA	13900	NA	19800	20900	14500	13400
Copper	32000	160000000	170000000	-	-	59000000	NA	NA	NA	ND	NA	ND	ND	ND	ND
Lead	21000	1000	900000	-	-	44000000	NA	NA	NA	6040	NA	6400	ND	4100	ND
Mercury	130	1700	1400000	-	-	-	NA	NA	NA	ND	NA	ND	ND	ND	ND
Selenium	410	4000	23000000	-	-	59000000	NA	NA	NA	ND	NA	ND	ND	ND	ND
Silver	1000	13000	21000000	-	-	2900000	NA	NA	NA	ND	NA	ND	ND	ND	ND
Zinc	47000	5000000	1000000000	-	-	-	NA	NA	NA	ND	NA	ND	ND	ND	ND
PCBs (ug/Kg)															
Aroclor-1254	-	-	9900	-	-	-	ND	ND	NA	NA	ND	NA	NA	NA	NA
Aroclor-1260	-	-	9900	-	-	-	ND	ND	NA	NA	ND	NA	NA	NA	NA
Total PCBs	-	-	9900	16000000	820000	6500000	ND	ND	NA	NA	ND	NA	NA	NA	NA
Semi - Volatiles (ug/Kg)															
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	11	NA	ND	NA	NA	NA	NA
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	ND	NA	ND	NA	NA	NA	NA
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	14	NA	ND	NA	NA	NA	NA
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	ND	NA	ND	NA	NA	NA	NA
Volatiles (ug/Kg)															
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	NA	NA	ND	ND	NA	ND	ND	ND	1.57
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	NA	NA	ND	ND	NA	ND	ND	ND	36
1,1-Dichloroethene	-	140	580000	330	3700	78000000	NA	NA	ND	ND	NA	ND	ND	ND	0.97
Chloroform	-	2000	1500000	38000	150000	1600000000	NA	NA	ND	ND	NA	ND	1.1	ND	ND
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	NA	NA	ND	ND	NA	ND	ND	ND	ND
Methylene chloride	-	100	2300000	240000	700000	8300000000	NA	NA	83.1	55	NA	ND	ND	ND	ND
Tetrachloroethene	-	100	88000	60000	600000	6800000000	NA	NA	ND	ND	NA	ND	3.5	1.7	2.1
Toluene	-	16000	250000	250000	3300000	12000000000	NA	NA	2.9	ND	NA	ND	ND	ND	ND
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	NA	NA	ND	ND	NA	ND	ND	ND	ND
Trichloroethene	-	100	500000	37000	260000	2300000000	NA	NA	ND	ND	NA	ND	ND	139	ND
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	NA	ND	ND	NA	ND	ND	ND	ND

Notes:

Industrial Drinking Water Protection Criteria exceeded.

Industrial Direct Contact Criteria exceeded.

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

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TABLE C.2

STUDY 2 (11/96) WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria (2)	Industrial Drinking Water Criteria (2)	Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #										
				MW-1 11/14/96 AOI # 14	MW-10 11/13/96 AOI # 15	MW-11 11/13/96 None	MW-12 11/13/96 None	MW-13 11/14/96 AOI # 2	MW-14 11/14/96 AOI # 1	MW-2 11/14/96 AOI # 14	MW-3 11/14/96 AOI # 18	MW-4 11/14/96 AOI # 15	MW-6 11/13/96 None	MW-8 11/13/96 None
Metals (ug/L)														
Arsenic	4700	50	None	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	NA
Barium	15000000	2000	None	ND	260	260	270	NA	NA	540	270	390	340	NA
Copper	8100000	1000	None	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	NA
Lead	-	4	None	ND	14	22	ND	NA	NA	ND	ND	ND	ND	NA
Selenium	1100000	50	None	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	NA
Zinc	70000000	5000	NLV	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	NA
PCBs (ug/L)														
Total PCBs	2.3	0.5	45	NA	ND	ND	NA	ND	NA	NA	ND	NA	ND	NA
Semi - Volatiles (ug/L)														
2-Nitrophenol	72000	58	NLV	NA	ND	ND	ND	NA	NA	1.8	NA	NA	ND	NA
Acenaphthene	4200	3800	4200	NA	ND	ND	ND	NA	NA	0.16	NA	NA	ND	NA
Di-n-butylphthalate	11000	2500	None	NA	ND	ND	ND	NA	NA	0.7	NA	NA	ND	NA
Fluorene	2000	2000	2000	NA	ND	ND	ND	NA	NA	0.14	NA	NA	ND	NA
Naphthalene	31000	750	31000	NA	ND	ND	ND	NA	NA	0.17	NA	NA	ND	NA
Phenanthrene	1000	75	1000	NA	ND	0.14	ND	NA	NA	0.6	NA	NA	ND	NA
Volatiles (ug/L)														
1,1,1-Trichloroethane	220000	200	1300000	ND	ND	ND	ND	0.7	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	2100000	2500	5100000	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	65000	29	9000	ND	ND	ND	ND	6.7	ND	ND	8.8	ND	ND	ND
Chloromethane	110000	270	52000	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5100	5	170000	ND	0.6	0.6	0.7	ND	1.1	0.5	ND	0.7	0.6	ND
Toluene	530000	790	530000	0.6	0.7	1.6	1.2	1.1	1.3	0.7	0.5	0.8	0.7	1.4
trans-1,2-Dichloroethene	190000	100	6300000	1.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	11000	5	97000	4.8	4.6	6.2	7.1	8.4	21.3	4.4	3.8	5.3	4.9	4.7

Notes:

[ ] Groundwater Contact Criteria exceeded.

_____ Industrial Drinking Water Criteria exceeded.

None - No standard.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NLV - Chemical is not likely to volatilize wider most conditions.

(2) - MDEQ/ERD Operational Memorandum No. 14.

Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Analytical Results	Comment
rtheast	MW-1	Check for contaminants from former incinerator.	First portion of boring was fine to coarse silty sand with gravel (fill) to at least 4 feet bgs. No odor noted. At 19 feet bgs, soil was homogeneous silty clay.	soil: MW-1 2-4' water: MW-1	soil: VOCs & TPH water: VOCs, PAH, Metals	soil: dichloromethane 14.3 ppb toluene 4.6 ppb ethylbenzene 1.3 ppb xylenes 8.1 ppb TPH 336 ppm water: 1,1-dichloroethane 1.0 ppb trans-1,2-dichloroethene 1.7 ppb trichloroethene 4.8 ppb toluene 0.6 ppb	SSL: 20[C], 1[D] 12,000[C], 600[D] 13,000[C], 700[D] 600,000[C], 29,000[D] 100[F] MCL: 2500[F] 100[E] 5[E] 1,000[E]
rtheast	MW-2	Check for contaminants from former USTs.	Mostly grey silty clays. No odors or PID readings. Water indicated at 13 feet bgs.	soil: MW-2 8-10' water: MW-2	soil: VOCs water: VOCs, SVOCs, & metals	soil: No VOCs detected water: trichloroethene 4.4 ppb tetrachloroethene 0.5 ppb toluene 0.7 ppb naphthalene 0.17 ppb acenaphthene 0.16 ppb fluorene 0.14 ppb phenanthrene 0.6 ppb di-n-butylphthalate 0.7 ppb 2-nitrophenol 1.8 ppb barium 0.54 ppm	SSL: - MCL: 5[E] 5[E] 1,000[E] 29[F] 3.8[F] 2500[F] 75[F] 2500[F] 58[F] 2[E]

IA
IL

S:

oil Screening Levels in USEPA Guidance documents EPA540/R-96/018 July 1996. MCL: Maximum Contaminant Level of USEPA Safe Drinking Water Standards. Pathway Specific values for soil.A: Ingestion; ulation; Migration to Groundwater Pathway: C: Dilution and attenuation factor of 20; D: Dilution and attenuation factor of 1; E: MCL - Drinking Water; F: Michigan Groundwater Standards.

Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Results	Comment
st	MW-3	Check for contamination in an area used to store discarded machinery and plating equipment (the "bone yard").	Mottled medium brown/dark gray silty clay - some - fill type material to 4 feet bgs. Water in well.	soil: MW-3 2-4' water: MW-3	soil: PNA, TPH, and PCB water: VOCs, PCBs, metals	soil: TPH 396 ppm No PNAs or PCBs detected. water: bromomethane 8.8 ppb trichloroethene 3.8 ppb toluene 0.5 ppb barium 0.27 ppm No PCBs detected.	SSL: 100[F] MCL: 11[F] 5[E] 1,000[E] 2[E]
st	MW-4	Check for potential contamination from chemical tower.	Mostly grey silty clays with some sandy intervals. No odors or indications of contamination. Water in well.	soil: MW-4 6-8' water: MW-4	soil: VOCs water: VOCs and metals	soil: tetrachloroethene 1.6 ppb water: trichloroethene 5.3 ppb tetrachloroethene 0.7 ppb toluene 0.8 ppb barium 0.39 ppm	SSL: 60[C], 3[D] MCL: 5[E] 5[E] 1,000[E] 2[E]
st	MW-5	Check for contaminants from past plating operations and current oil accumulation in sumps.	Mostly grey silty clays. No odors or indications of contamination. Dry well.	soil: MW-5 3-5' MW-5 8-10'	soil: VOCs, TPH, and metals water: well dry	soil: MW-5 3-5' arsenic 7.12 ppm barium 52.2 ppm chromium 11.7 ppm lead 3.72 ppm selenium 0.26 ppm soil: MW-5 8-10' arsenic 5.34 ppm barium 38.4 ppm chromium 12.9 ppm lead 6.92 ppm No VOCs or TPH detected in either sample.	SSL: 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A] 5[C], 0.3[D] SSL: 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]

ES:

Soil Screening Levels in USEPA Guidance documents EPA540/R-96/018 July 1996. MCL: Maximum Contaminant Level of USEPA Safe Drinking Water Standards. Pathway Specific values for soil.A: Ingestion; halation; Migration to Groundwater Pathway: C; Dilution and attenuation factor of 20; D: Dilution and attenuation factor of 1; E: MCL - Drinking Water; F: Michigan Groundwater Standards.

Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Results	Comment
West	MW-6	Check for contaminants from past plating operations and current oil accumulation in sumps.	Clayey silt to 5 feet bgs. Grey silty clay to 28 feet bgs. No indications of contamination.	soil: MW-6 3-5' MW-6 8-10' water: MW-6	soil: VOCs, TPH, and metals water: VOCs, SVOCs, PCBs, and metals	soil: MW-6 3-5' arsenic 5.37 ppm barium 49.5 ppm chromium 11.2 ppm mercury 0.03 ppm No VOCs or TPH detected in the sample from 3 to 5 feet. soil: MW-6 8-10' dichloromethane 37.1 ppb TPH 313 ppm arsenic 4.65 ppm barium 41 ppm chromium 12.6 ppm lead 3.8 ppm water: trichloroethene 4.9 ppb barium 0.34 ppm tetrachloroethene 0.6 ppb toluene 0.7 ppb No SVOCs or PCBs detected in the groundwater.	SSL: 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 2[C], 0.1[D] SSL: 20[C], 1[D] 100[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A] MCL: 5[E] 2[E] 5[E] 1,000[E]
West	MW-7	Check for contaminants from past plating operations and current oil accumulation in sumps.	Clayey silt to 6 feet bgs. Grey silty clay to 25 feet bgs. No evidence of contamination. Dry well.	soil: MW-7 4-6' MW-7 8-10' (archived)	soil: VOCs, TPH, and metals	soil: dichloromethane 15.2 ppb trichloroethene 1.6 ppb toluene 0.9 ppb TPH 360 ppm arsenic 6.4 ppm barium 68 ppm chromium 12.9 ppm lead 5.61 ppm	SSL: 20[C], 1[D] 60[C], 3[D] 12,000[C], 600[D] 100[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]

NOTES:

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Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Results		Comment
West	MW-8	Check for contaminants from past plating operations and current oil accumulation in sumps.	Mostly gray silty clays. No indications of contamination.	soil: MW-8 4-6' MW-8 8-10' water: MW-8	soil: VOCs, TPH, and metals water: VOCs, SVOCs, PCBs, and metals SVOCs, PCBs and metals containers broke during transport.	soil: MW-8 4-6' dichloromethane tetrachloroethene TPH arsenic barium chromium lead selenium soil: MW-8 8-10' dichloromethane ethylbenzene xylenes arsenic barium chromium lead No TPH detected. water: trichloroethene toluene	 54.1 ppb 4.4 ppb 419 ppm 4.19 ppm 41.7 ppm 11.8 ppm 103 ppm 0.37 ppm 11.7 ppb 5.8 ppb 30.5 6.33 ppm 39.4 ppm 12 ppm 7.45 ppm 4.7 ppb 1.4 ppb	SSL: 20[C], 1[D] 60[C], 3[D] 100[F] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A] 5[C], 0.3[D] 20[C], 1[D] 13,000[C], 700[D] 600,000[C], 29,000[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A] MCL: 5[E] 1,000[E]
West	MW-9	Check for contaminants from past plating operations and current oil accumulation in sumps.	Gray silty clay. No indications of contamination.	soil: MW-9 4-6' MW-9 8-10' (archived) water: MW-9	soil: VOCs, TPH, and metals water: well dry	soil: dichloromethane trichloroethene arsenic barium chromium lead No TPH detected.	 8.8 ppb 0.9 ppb 8.27 ppm 54.2 ppm 12 ppm 8.89 ppm	SSL: 20[C], 1[D] 60[C], 3[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]

TES:

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Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Results	Comment
West	MW-10	Check for contaminants from past plating operations and current oil accumulation in sumps.	Mostly gray silty clay. No indications of contamination.	soil: MW-10 4-6' MW-10 8-10' (archived) water: MW-10	soil: VOCs, TPH, and metals water: VOCs, SVOCs, PCBs, and metals	soil: trichloroethene 1.1 ppb tetrachloroethene 1.0 ppb arsenic 4.52 ppm barium 42.7 ppm chromium 12.9 ppm lead 6.64 ppm No TPH detected. water: trichloroethene 4.6 ppb tetrachloroethene 0.6 ppb toluene 0.7 ppb barium 0.26 ppm lead 0.014 ppm No SVOCs or PCBs detected.	SSL: 60[C], 3[D] 60[C], 3[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A] MCL: 5[E] 5[E] 1,000[E] 2[E] 0.015[E]
Northwest	MW-11	Evaluate the potential impact from historical operations and plating waste storage.	Clayey silt to 12 feet bgs. Silty clay to 20 feet bgs. No contamination identified.	soil: no samples water: MW-11	water: VOCs, SVOCs, and metals	water: trichloroethene 6.2 ppb tetrachloroethene 0.6 ppb toluene 1.6 ppb phenanthrene 0.14 ppb barium 0.26 ppm lead 0.022 ppm	MCL: 5[E] 5[E] 1,000[E] 75[F] 2[E] 0.015[E]

OTES:

L: Soil Screening Levels in USEPA Guidance documents EPA540/R-96/018 July 1996. MCL: Maximum Contaminant Level of USEPA Safe Drinking Water Standards. Pathway Specific values for soil.A: Ingestion; Inhalation; Migration to Groundwater Pathway: C: Dilution and attenuation factor of 20; D: Dilution and attenuation factor of 1; E: MCL - Drinking Water; F: Michigan Groundwater Standards.

Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Soil Sample Matrix	Chemical Analysis	Results	Comment
Northwest	MW-12	Evaluate the potential impact from historical operations and plating waste storage.	Clayey silt to 12 feet bgs. Silty clay to 25 feet bgs. No contamination identified.	soil: MW-12 10-12' water: MW-12	soil: VOCs, TPH, and metals water: VOCs, SVOCs, and metals	soil: total cyanide 88.3 ppm arsenic 6.88 ppm barium 54.9 ppm chromium 11.3 ppm lead 6.38 ppm selenium 0.3 ppm No TPH detected. water: chloromethane 2.4 ppb trichloroethene 7.1 ppb tetrachloroethene 0.7 ppb toluene 1.2 ppb barium 0.27 ppm No SVOCs detected.	SSL: 40[C], 2[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A] 5[C], 0.3[D] MCL: 270[F] 5[E] 5[E] 1,000[E] 2[E]
Northeast	MW-13	Evaluate the potential impact from former hazardous waste drum storage area.	Clayey silt to 6 feet bgs. No contamination identified. No further soil samples.	soil: MW-13 4-6' (archived) water: MW-13	soil: archived water: VOCs and PCBs	soil: dichloromethane 66.7 ppb 1,1-dichloroethane 33.8 ppb 1,1,1-trichloroethane 10.4 ppb water: bromomethane 6.7 ppb 1,1,1-Trichloroethane 0.7ppb trichloroethene 8.4 ppb toluene 1.1 ppb No PCBs detected.	SSL: 20[C] 1[D] 23,000[C], 1,000[D] 2,000[C], 100[D] MCL: 11[F] 200[E] 5[E] 1,000[E]

TES:

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Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Results	Comment
orth	MW-14	Evaluate the potential impact from former hazardous waste drum storage area.	Mostly silty clay with some gravel. No contamination identified.	soil: MW-14 3-5' water: MW-14	soil: VOCs water: VOCs	soil: dichloromethane 11.4 ppb 1,1-dichloroethane 1.7 ppb trans-1,2-dichloroethene 4.7 ppb trichloroethene 2,210 ppb tetrachloroethene 1.3 ppb toluene 1.0 ppb water: trichloroethene 21.3 ppb tetrachloroethene 1.1 ppb toluene 1.3 ppb	SSL: 20[C],1[D] 23,000[C], 1,000[D] 700[C], 30[D] 60[C], 3[D] 60[C], 3[D] 12,000[C], 600[D] MCL: 5[E] 5[E] 1,000[E]
rtheast	SB-2	Evaluate the potential impact from an uncovered substation area with PCB-containing transformers.	Mostly silty clay with gravel and fill-type material. No contamination indicated.	soil: SB-2 0-2'	soil: PCBs	soil: PCB 1260 150 ppb	SSL: 1,000[A]
st	SB-6	Check for hydrocarbon contamination in an area used to store discarded machinery and plating equipment (the "bone yard").	Mostly silty clay with little sand and gravel. No contamination identified.	soil: SB-6 1-3'	soil: PCBs and TPH	soil: TPH 384 ppm No PCBs detected.	SSL: 100[F]
t	SB-7	Check for hydrocarbon contamination in an area used to store discarded machinery and plating equipment (the "bone yard").	Brown silty sand to 1 foot bgs. Brown hard clay to 3 foot bgs. No contamination identified.	soil: SB-7 1-3'	soil: PCBs and TPH	soil: TPH 556 ppm No PCBs detected.	SSL: 100[F]
t	SB-8	Check for hydrocarbon contamination in an area used to store discarded machinery and plating equipment (the "bone yard").	Brown silty sand to 1 foot bgs. Brown hard clay to 3 foot bgs. No contamination identified.	soil: SB-8 1-3'	soil: PCBs and TPH	soil: No TPH or PCBs detected.	

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Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Results	Comment
East	SB-9	potential impact from former USTs	Sandy silt (some gravel) over clay, slightly silty medium to dark gray. Possibility of petroleum odor.	soil: SB-9 3-5'	soil: VOCs and PNA	soil: dichloromethane 83.1 ppb toluene 2.9 ppb benzo(a)anthracene 11 ppb benzo(b)fluoranthene 14 ppb	SSL: 20[C], 1[D] 12,000[C], 600[D] 2,000[C], 80[D] 5,000[C], 200[D]
North	SB-14	Evaluate the potential impact from former hazardous waste drum storage area.	Brown and gray clay with trace sand. No contamination identified.	soil: SB-14 1-3'	soil: VOCs	soil: toluene 2.7 ppb	SSL: 12,000[C], 600[D]
North	SB-15	Evaluate the potential impact from former hazardous waste drum storage area.	Brown and gray clay with trace sand and gravel. No contamination identified.	soil: SB-15 1-3'	soil: VOCs	soil: trichloroethene 86.3 ppb tetrachloroethene 1.6 ppb toluene 1.1 ppb xylenes 1.0 ppb	SSL: 60[C], 3[D] 60[C], 3[D] 12,000[C], 600[D] 600,000[C], 29,000[D]
East	SB-17	Check for hydrocarbon contamination in an area used to store discarded machinery and plating equipment (the "bone yard").	Brown clay with trace sand. No contamination identified.	soil: SB-17 1-3'	soil: PCBs and TPH	soil: TPH 308 ppm No PCBs detected.	SSL: 100[F]
Northwest	HD-1	Assess potential impact from historic wastewater discharge through Hughes Drain	sediment	soil: HD-1	soil: TPH and metals	soils: TPH 978 ppm arsenic 3.63 ppm barium 20.1 ppm chromium 25.2 ppm lead 175 ppm	SSL: 100[F] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]
Northwest	WWT-1	Evaluate the potential impact from former decontamination tanks.	Brown clayey silt with some sand. Very wet beneath concrete holding tank.	soil: WWT-1	soil: VOCs, cyanide, and metals	soil: arsenic 5.37 ppm barium 66.6 ppm chromium 19.8 ppm lead 6.4 ppm No VOCs detected	SSL: 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]

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Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample / Matrix	Chemical Analysis	Results	Comment
Northwest	WWT-2	Evaluate the potential impact from former decontamination tanks.	Brown clayey silt with some sand. Very wet beneath concrete holding tank.	soil: WWT-2	soil: VOCs, cyanide, and metals	soil: chloroform 1.1 ppb tetrachloroethene 3.5 ppb arsenic 6.16 ppm barium 45.2 ppm chromium 20.9 ppm	SSL: 400[C], 20[D] 60[C], 3[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D]
Northwest	WWT-3	Evaluate the potential impact from former decontamination tanks.	Brown clayey silt with some sand. Very wet beneath concrete holding tank.	soil: WWT-3	soil: VOCs, cyanide, and metals	soil: trichloroethene 139 ppb tetrachloroethene 1.7 ppb arsenic 6.53 ppm barium 56 ppm chromium 14.5 ppm lead 4.1 ppm	SSL: 60[C], 3[D] 60[C], 3[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]
Northwest	WWT-4	Evaluate the potential impact from former decontamination tanks.	Brown clayey silt with some sand. Very wet beneath concrete holding tank.	soil: WWT-4	soil: VOCs, cyanide, and metals	soil: 1,1-dichloroethene 0.97 ppb 1,1-dichloroethane 36 ppb 1,1,1-trichloroethane 1.57 ppb tetrachloroethene 2.1 ppb arsenic 6.95 ppm barium 44.4 ppm chromium 13.4 ppm	SSL: 60[C], 3[D] 23,000[C], 1,000[D] 2,000[C], 100[D] 60[C], 3[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D]
Northwest	WWB	Evaluation of the contents within the wastewater treatment system.	Black-brown soil/sludge, highly organic.	soil: WWB	soil: PNAs and PCBs	soil: No TPH, PNA, or PCB detections.	
Northwest	SPL	Evaluate the potential impact from a former wastewater spill area.	Gray silty clay with little sand. No contamination identified.	soil: SPL	soil: VOCs and metals	soil: dichloromethane 55 ppb arsenic 6.03 ppm barium 60.6 ppm chromium 13.9 ppm lead 6.04 ppm	SSL: 20[C], 1[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]

NOTES:

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Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Results	Comment
In main building	K-2	Evaluate the potential impact from an inactive Zinc Barrel area.	Brown to gray hard clay, trace sand, trace gravel.	soil: K-2	soil: cyanide and metals	soil: arsenic 5.19 ppm barium 57.7 ppm chromium 12.5 ppm lead 7 ppm No cyanide detected.	SSL: 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]
In main building	K-33	Evaluate the potential impact from former chrome plating operations.	Brown sand, trace gravel.	soil: K-33	soil: metals	soil: arsenic 3.06 ppm barium 10.3 ppm chromium 9.72 ppm	SSL: 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D]
In main building	K-32	Evaluate the potential impact from former chrome plating operations.	Brown to black sand. 1/2" of asphaltic material. 1/2" of greenish sand.	soil: K-32	soil: cyanide and metals	soil: arsenic 2.95 ppm barium 10.4 ppm chromium 42.8 ppm lead 5.03 ppm No cyanide detected.	SSL: 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]
In main building	Q-33	Check for contaminants from past die casting operations and oil accumulation in sumps.	Brown clay with traces of sand and gravel.	soil: Q-33	soil: PCBs, PNAs, and TPH	soil: TPH 480 ppm No PNA, PCB detected.	SSL: 100[F]
In main building	F-34	Evaluate the potential impact from former chrome plating operations.	Brown to gray clay, little sand, little gravel.	soil: F-34	soil: cyanide and metals	soil: arsenic 3.36 ppm barium 33.1 ppm chromium 11.2 ppm lead 4.99 ppm No cyanide detected.	SSL: 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]
In main building	P-28	Check for contaminants from past die casting operations and oil accumulation in sumps.	Gray sandy fill-like material.	soil: P-28	soil: PCBs, PNAs, and TPH	soil: TPH 505 ppm No PNA, PCB detected.	SSL: 100[F]

OTES:

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Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Results	Comment
In main building	Q-32	Check for contaminants from past die casting operations and oil accumulation in sumps.	Gray clay soft to medium soft with trace sand.	soil: Q-32	soil: PCBs, PNAs, and TPH	soil: TPH 576 ppm No PNA, PCB detected.	SSL: 100[F]
	K-35	Evaluate the potential impact from former chrome plating operations.	Brown sand, fill-like material.	soil: K-35	soil: metals	soil: arsenic 10.7 ppm; barium 325 ppm; cadmium 6.05 ppm; chromium 1160 ppm; lead 1280 ppm; mercury 0.0904 ppm; selenium 0.649 ppm; silver 2.97 ppm	SSL: 0.4[A], 29[C], 1[D]; 1,600[C], 82[D]; 8,000[C], 400[D]; 38[C], 2[D]; 400[A]; 2[C], 0.1[D]; 5[C], 0.3[D]; 34[C], 2[D]
In main building	Q-34	Check for contaminants from past die casting operations and oil accumulation in sumps.	Brown sand, fine fill-like material. Slight odor (non-petroleum).	soil: Q-34	soil: PCBs and PNAs	soil: benzo(a)anthracene 32.6 ppb; benzo(a)pyrene 26.1 ppb; benzo(b)fluoranthene 40.6 ppb; benzo(k)fluoranthene 13.1 ppb; PCB 1248 and 1254 279 ppb	SSL: 900[A], 2,000[C], 80[D]; 90[A], 8,000[C] 400[D]; 900[A], 5,000[C], 200[D]; 9,000[A], 49,000[C], 2,000[E]; 1,000[A]
In main building	Q-12	Evaluate the potential impact from current die casting operations and oil sumps.	Hard gray clay, some silt, no odor, no water.	soil: Q-12	soil: VOCs and metals	soil: dichloromethane 12.3 ppb; trichloroethene 0.8 ppb; tetrachloroethene 0.8 ppb; arsenic 5.98 ppm; barium 44.1 ppm; chromium 11.6 ppm; lead 7.20 ppm	SSL: 20[C], 1[D]; 60[C], 3[D]; 60[C], 3[D]; 0.4[A], 29[C], 1[D]; 1,600[C], 82[D]; 38[C], 2[D]; 400[A]

NOTES:

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Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Results	Comment
main ilding	M-1	Evaluate the potential impact from current die casting operations and oil sumps.	M-1 6-8' : Brown silty clay, no odor, no water. M-1 8-10' : Brown silty clay, no odor, no water.	soil: M-1 6-8' M-1 8-10'	soil: VOCs and metals	soil: M-1 (6-8) dichloromethane 19.3 ppb ethylbenzene 1.3 ppb xylenes 14.0 ppb arsenic 6.81 ppm barium 72.6 ppm chromium 13.7 ppm lead 8.07 ppm soil: M-1 (8-10) arsenic 4.30 ppm barium 43.4 ppm chromium 12.8 ppm lead 8.98 ppm No VOC's detected.	SSL: 20[C], 1[D] 13,000[C], 700[D] 600,000[C], 29,000[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A] SSL: 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]
main lding	F-30	Check for contaminants from a previous AST area.	Tan silty to fine sand, dry to slightly moist, no odor, no water.	soil: F-30 0-2'	soil: cyanide, TPH, and metals	soil: cyanide 31.8 ppm arsenic 3.25 ppm barium 9.42 ppm chromium 5.47 ppm No TPH detected.	SSL: 40[C],2[D] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D]
ding 63	BLD63-24	Evaluate the potential impact from historical and current sump operations.	Gray clay, trace sand, trace gravel. Slight odor at 10', no discoloring.	soil: BLD63-24	soil: VOCs, PCBs, TPH, and metals	soil: TPH 471 ppm arsenic 5.15 ppm barium 47.3 ppm chromium 10.8 ppm lead 5.48 ppm No VOC, PCB detected.	SSL: 100[F] 0.4[A], 29[C], 1[D] 1,600[C], 82[D] 38[C], 2[D] 400[A]

S:

oil Screening Levels in USEPA Guidance documents EPA540/R-96/018 July 1996. MCL: Maximum Contaminant Level of USEPA Safe Drinking Water Standards. Pathway Specific values for soil.A: Ingestion; ılation; Migration to Groundwater Pathway: C: Dilution and attenuation factor of 20; D: Dilution and attenuation factor of 1; E: MCL - Drinking Water; F: Michigan Groundwater Standards.

Location	Boring/Well	Potential Concern/Purpose	Field Evaluation	Sample Matrix	Chemical Analysis	Results	Comment
Building 63	BLD63-25	Evaluate the potential impact from historical and current sump operations.	Grayish brown clay, trace sand, trace gravel. Odor (petroleum or other) at 9' BGS, no discoloration.	soil: BLD63-25	soil: VOCs, PCBs, TPH, and metals	soil: TPH 945 ppm arsenic 5.28 ppm barium 35.6 ppm chromium 9.30 ppm lead 4.50 ppm No VOC, PCB detected.	SSL: 100[F] 0.4[A], 29[C], 1[E] 1,600[C], 82[D] 38[C], 2[D] 400[A]
Interior of Main Building	27 PCB wipe sample locations within the facility	Check for residual PCBs from PCB containing equipment and/or wood block flooring.	N/A	surface wipe samples	wipes: PCBs	wipes: Q-1 PCB 1.82 µg/100cm² All other wipes did not yield detectable PCBs.	wipes: 10 µg/100cm² [G]

OTES:

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APPENDIX D

SUMMARY OF ANALYTICAL RESULTS – STUDY 3 (11/96)

Confidential under FOIA
Alex Rothchild
LFR
Sep 30, 2009 08:55

TABLE D.1

STUDY 3 (11/96) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Infinite Source Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Locations (depth ft. bgs) / Sample Date / AOI #					
							F-34 11/14/96 AOI # 9	M-1 (8-10) 11/6/96 AOI # 7	MW-10 (4-6) 11/5/96 AOI # 15	MW-12 (10-12) 11/6/96 None	SB-2 (0-2) 11/7/96 AOI # 17	WWB (0.75-2.75) 11/5/96 None
General Chemistry (ug/Kg)												
Cyanide (total)	-	4000	250000	-	-	250000	ND (200)	NA	NA	NA	NA	NA
Total Solids (%)	-	-	-	-	-	-	88.8	NA	87.6	89	NA	87.1
Petroleum hydrocarbons	-	-	-	-	-	-	NA	NA	56,000	ND (40000)	NA	NA
Metals (ug/Kg)												
Arsenic	5800	23000	100000	-	-	910000	4200	6800	16000	5700	NA	NA
Barium	75000	1300000	320000000	-	-	150000000	36000	100000	34000	58000	NA	NA
Cadmium	1200	6000	4500000	-	-	2200000	110	170	110	92	NA	NA
Chromium	18000	30000	22000000	-	-	-	11000	9300	7200	8300	NA	NA
Copper	32000	160000000	170000000	-	-	59000000	13000	21000	18000	22000	NA	NA
Lead	21000	1000	900000	-	-	44000000	7200	11000	12000	13000	NA	NA
Mercury	130	1700	1400000	-	-	-	ND (100)	ND (100)	ND (100)	ND (100)	NA	NA
Selenium	410	4000	23000000	-	-	59000000	520	540	560	590	NA	NA
Silver	1000	13000	21000000	-	-	2900000	ND (500)	ND (500)	ND (500)	ND (500)	NA	NA
Zinc	47000	5000000	1000000000	-	-	-	40000	41000	30000	26000	NA	NA
PCBs (ug/Kg)												
Aroclor-1016	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	ND (330)
Aroclor-1221	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	ND (330)
Aroclor-1232	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	ND (330)
Aroclor-1242	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	ND (330)
Aroclor-1248	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	ND (330)
Aroclor-1254	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	ND (330)
Aroclor-1260	-	-	9900	-	-	-	NA	NA	NA	NA	ND (330)	ND (330)
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	NA	ND (330)	ND (330)
Semi - Volatiles (ug/Kg)												
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	NA	NA	ND (330)
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	NA	NA	ND (330)
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	NA	NA	ND (330)
Benzo(a)anthracene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Benzo(a)pyrene	-	-	21000	-	-	1900000	NA	NA	NA	NA	NA	ND (330)
Benzo(b)fluoranthene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Benzo(g,h,i)perylene	-	-	16000000	-	-	350000000	NA	NA	NA	NA	NA	ND (330)
Benzo(k)fluoranthene	-	-	2100000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Chrysene	-	-	21000000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Dibenzo(a,h)anthracene	-		21000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	NA	NA	ND (330)
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	NA	NA	ND (330)
Indeno(1,2,3-cd)pyrene	-	-	210000	-	-	-	NA	NA	NA	NA	NA	ND (330)
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	NA	NA	ND (330)
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	NA	NA	ND (330)
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	NA	NA	ND (330)

TABLE D.1

STUDY 3 (11/96) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Infinite Source Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Locations (depth ft. bgs) / Sample Date / AOI # F-34 11/14/96 AOI # 9	M-1 (8-10) 11/6/96 AOI # 7	MW-10 (4-6) 11/5/96 AOI # 15	MW-12 (10-12) 11/6/96 None	SB-2 (0-2) 11/7/96 AOI # 17	WWB (0.75-2.75) 11/5/96 None
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
1,1-Dichloroethene	-	140	580000	330	3700	78000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
1,3-Dichlorobenzene	-	18000	200000	-	-	-	NA	ND (10)	ND (10)	ND (10)	NA	NA
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
2-Butanone	-	760000	27000000	27000000	35000000	29000000000	NA	ND (100)	ND (100)	ND (100)	NA	NA
2-Hexanone	-	58000	2500000	1800000	-	1200000000	NA	ND (100)	ND (100)	ND (100)	NA	NA
4-Methyl-2-pentanone	-	100000	2700000	2700000	53000000	60000000000	NA	ND (100)	ND (100)	ND (100)	NA	NA
Acetone	-	42000	74000000	110000000	160000000	170000000000	NA	ND (100)	ND (100)	ND (100)	NA	NA
Benzene	-	100	400000	8400	45000	470000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Bromodichloromethane	-	2000	400000	6400	31000	110000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Bromoform	-	2000	870000	770000	3100000	3600000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Bromomethane	-	580	1000000	1600	13000	150000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Carbon disulfide	-	46000	280000	140000	1600000	21000000000	NA	ND (100)	ND (100)	ND (100)	NA	NA
Carbon tetrachloride	-	100	190000	990	12000	170000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Chlorobenzene	-	2000	260000	220000	920000	2100000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Chloroethane	-	18000	970000	970000	36000000	290000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Chloroform	-	2000	1500000	38000	150000	1600000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Chloromethane	-	5400	1100000	12000	140000	6100000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
cis-1,3-Dichloropropene	-	-	-	-	-	-	NA	ND (10)	ND (10)	ND (10)	NA	NA
Dibromochloromethane	-	2000	300000	21000	80000	160000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Methylene chloride	-	100	2300000	240000	700000	8300000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Styrene	-	2700	520000	520000	3200000	6600000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Tetrachloroethene	-	100	88000	60000	600000	6800000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Toluene	-	16000	250000	250000	3300000	12000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
trans-1,3-Dichloropropene	-	-	-	-	-	-	NA	ND (10)	ND (10)	ND (10)	NA	NA
Trichloroethene	-	100	500000	37000	260000	2300000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Vinyl chloride	-	40	11000	150	1500	47000000	NA	ND (10)	ND (10)	ND (10)	NA	NA
Xylene (total)	-	5600	150000	150000	54000000	130000000000	NA	ND (30)	ND (30)	ND (30)	NA	NA

Notes:

_____ Industrial Drinking Water Protection Criteria exceeded.

[ ] Industrial Direct Contact Criteria exceeded.

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE D.2

STUDY 3 (11/96) WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #							
				MW-1 11/14/96 AOI # 14	MW-10 11/13/96 AOI # 15	MW-13 11/14/96 AOI # 2	MW-14 11/14/96 AOI # 1	MW-2 11/14/96 AOI # 14	MW-3 11/14/96 AOI # 18	MW-4 11/14/96 AOI # 15	MW-6 11/13/96 None
Metals (ug/L)											
Arsenic (Dissolved)	4700	50	None	NA	ND (5.0)	NA	NA	ND (5)	NA	NA	NA
Arsenic	4700	50	None	NA	NA	NA	NA	NA	13	16	NA
Barium (Dissolved)	15000000	2000	None	NA	ND (200)	NA	NA	ND (200)	NA	NA	NA
Barium	15000000	2000	None	NA	NA	NA	NA	NA	ND (200)	240	NA
Cadmium (Dissolved)	210000	5	None	NA	ND (0.50)	NA	NA	ND (0.50)	NA	NA	NA
Cadmium	210000	5	None	NA	NA	NA	NA	NA	ND (0.50)	ND (0.50)	NA
Chromium (Dissolved)	1000000	30000	None	NA	ND (50)	NA	NA	ND (50)	NA	NA	NA
Chromium	1000000	30000	None	NA	NA	NA	NA	NA	ND (50)	ND (50)	NA
Copper (Dissolved)	8100000	1000	None	NA	ND (25)	NA	NA	ND (25)	NA	NA	NA
Copper	8100000	1000	None	NA	NA	NA	NA	NA	32	27	NA
Lead (Dissolved)	-	4	None	NA	ND (3.0)	NA	NA	ND (3)	NA	NA	NA
Lead	-	4	None	NA	NA	NA	NA	NA	12	26	NA
Mercury (Dissolved)	56	2	NLV	NA	ND (0.20)	NA	NA	ND (0.20)	NA	NA	NA
Mercury	56	2	NLV	NA	NA	NA	NA	NA	ND (0.20)	ND (0.20)	NA
Selenium (Dissolved)	1100000	50	None	NA	5.4	NA	NA	9.5	NA	NA	NA
Selenium	1100000	50	None	NA	NA	NA	NA	NA	10	12	NA
Silver (Dissolved)	1000000	98	None	NA	ND (0.50)	NA	NA	ND (0.50)	NA	NA	NA
Silver	1000000	98	None	NA	NA	NA	NA	NA	ND (0.50)	ND (0.50)	NA
Zinc (Dissolved)	70000000	5000	NLV	NA	ND (20)	NA	NA	ND (20)	NA	NA	NA
Zinc	70000000	5000	NLV	NA	NA	NA	NA	NA	110	20	NA
PCBs (ug/L)											
Aroclor-1016	-	-	None	ND (0.20)	NA	ND (0.20)	NA	NA	ND (0.20)	NA	ND (0.20)
Aroclor-1221	-	-	None	ND (0.20)	NA	ND (0.20)	NA	NA	ND (0.20)	NA	ND (0.20)
Aroclor-1232	-	-	None	ND (0.40)	NA	ND (0.40)	NA	NA	ND (0.40)	NA	ND (0.40)
Aroclor-1242	-	-	None	ND (0.20)	NA	ND (0.20)	NA	NA	ND (0.20)	NA	ND (0.20)
Aroclor-1248	-	-	None	ND (0.20)	NA	ND (0.20)	NA	NA	ND (0.20)	NA	ND (0.20)
Aroclor-1254	-	-	None	ND (0.20)	NA	ND (0.20)	NA	NA	ND (0.20)	NA	ND (0.20)
Aroclor-1260	-	-	None	ND (0.20)	NA	ND (0.20)	NA	NA	ND (0.20)	NA	ND (0.20)
Total PCBs	2.3	0.5	45	ND (.2)	ND (.2)	NA	NA	NA	ND (.2)	NA	ND (.2)
Semi - Volatiles (ug/L)											
1,2,4-Trichlorobenzene	15000	70	300000	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
2,4,5-Trichlorophenol	130000	2100	None	NA	NA	NA	NA	ND (50)	NA	NA	ND (50)
2,4,6-Trichlorophenol	5500	320	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)

TABLE D.2

STUDY 3 (11/96) WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # MW-1 11/14/96 AOI # 14	MW-10 11/13/96 AOI # 15	MW-13 11/14/96 AOI # 2	MW-14 11/14/96 AOI # 1	MW-2 11/14/96 AOI # 14	MW-3 11/14/96 AOI # 18	MW-4 11/14/96 AOI # 15	MW-6 11/13/96 None
2,4-Dichlorophenol	40000	210	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
2,4-Dimethylphenol	440000	1000	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
2,4-Dinitrophenol	-	-	None	NA	NA	NA	NA	ND (20)	NA	NA	ND (20)
2,4-Dinitrotoluene	1300	5	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
2,6-Dinitrotoluene	-	-	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
2-Chloronaphthalene	6700	5200	ID	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
2-Chlorophenol	82000	130	ID	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
2-Methyl naphthalene	32000	750	ID	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
2-Methylphenol	710000	1000	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
2-Nitroaniline	-	-	None	NA	NA	NA	NA	ND (20)	NA	NA	ND (20)
2-Nitrophenol	72000	58	NLV	NA	NA	NA	NA	ND (5)	NA	NA	ND (5)
3,3-Dichlorobenzidine	270	8	None	NA	NA	NA	NA	ND (20)	NA	NA	ND (20)
3-Nitroaniline	-	-	None	NA	NA	NA	NA	ND (20)	NA	NA	ND (20)
4,6-Dinitro-2-methylphenol	8800	20	NLV	NA	NA	NA	NA	ND (20)	NA	NA	ND (20)
4-Bromophenyl phenyl ether	-	-	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
4-Chloro-3-methylphenol	62000	420	NLV	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
4-Chloroaniline	-	-	None	NA	NA	NA	NA	ND (20)	NA	NA	ND (20)
4-Chlorophenyl phenyl ether	-	-	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
4-Methylphenol	75000	100	NLV	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
4-Nitroaniline	-	-	None	NA	NA	NA	NA	ND (20)	NA	NA	ND (20)
4-Nitrophenol	-	-	None	NA	NA	NA	NA	ND (20)	NA	NA	ND (20)
Acenaphthene	4200	3800	4200	NA	NA	NA	NA	ND (5)	NA	NA	ND (5)
Acenaphthylene	3900	75	3900	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Anthracene	43	43	43	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Benzo(a)anthracene	5	5	NLV	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Benzo(a)pyrene	5	5	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Benzo(b)fluoranthene	5	5	ID	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Benzo(g,h,i)perylene	5	5	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Benzo(k)fluoranthene	5	5	NLV	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
bis(2-Chloroethoxy)methane	-	-	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
bis(2-Chloroethyl)ether	2100	5	210000	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
bis(2-Chloroisopropyl)ether	-	-	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
bis(2-Ethylhexyl)phthalate	47	6	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Butyl benzylphthalate	2700	2700	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Carbazole	2900	170	NLV	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Chrysene	5	5	ID	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)

TABLE D.2

STUDY 3 (11/96) WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #							
				MW-1 11/14/96 AOI # 14	MW-10 11/13/96 AOI # 15	MW-13 11/14/96 AOI # 2	MW-14 11/14/96 AOI # 1	MW-2 11/14/96 AOI # 14	MW-3 11/14/96 AOI # 18	MW-4 11/14/96 AOI # 15	MW-6 11/13/96 None
Dibenzo(a,h)anthracene	5	5	NLV	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Dibenzofuran	-	-	ID	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Diethyl phthalate	1100000	16000	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Dimethyl phthalate	4200000	210000	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Di-n-butylphthalate	11000	2500	None	NA	NA	NA	NA	ND (5)	NA	NA	ND (5)
Di-n-octyl phthalate	250	380	NLV	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Fluoranthene	210	210	210	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Fluorene	2000	2000	2000	NA	NA	NA	NA	ND (5)	NA	NA	ND (5)
Hexachlorobenzene	2	1	3000	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Hexachlorobutadiene	200	45	3200	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Hexachlorocyclopentadiene	1400	50	ID	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Hexachloroethane	1500	250	50000	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Indeno(1,2,3-cd)pyrene	5	5	NLV	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Isophorone	1100000	3700	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Naphthalene	31000	750	31000	NA	NA	NA	NA	ND (5)	NA	NA	ND (5)
Nitrobenzene	9600	10	2100000	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
N-Nitrosodi-n-propylamine	220	5	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
N-Nitrosodiphenylamine	30000	710	NLV	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Pentachlorophenol	85	1	None	NA	NA	NA	NA	ND (20)	NA	NA	ND (20)
Phenanthrene	1000	75	1000	NA	NA	NA	NA	ND (5)	NA	NA	ND (5)
Phenol	28000000	13000	None	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Pyrene	140	140	140	NA	NA	NA	NA	ND (5.0)	NA	NA	ND (5.0)
Volatiles (ug/L)											
1,1,1-Trichloroethane	220000	200	1300000	ND (1)	ND (1.0)	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1,2,2-Tetrachloroethane	2100	17	77000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1,2-Trichloroethane	9500	5	110000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethane	2100000	2500	5100000	ND (1)	ND (1.0)	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1-Dichloroethene	9000	7	1300	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichlorobenzene	160000	600	160000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane	11000	5	59000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloropropane	7500	5	36000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,3-Dichlorobenzene	110000	600	ID	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,4-Dichlorobenzene	2800	75	74000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
2-Butanone	240000000	38000	240000000	ND (50)	ND (50)	NA	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
2-Hexanone	4800000	2900	8800000	ND (50)	ND (50)	NA	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)

TABLE D.2

STUDY 3 (11/96) WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria (2)	Industrial Drinking Water Criteria (2)	Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #							
				MW-1 11/14/96 AOI # 14	MW-10 11/13/96 AOI # 15	MW-13 11/14/96 AOI # 2	MW-14 11/14/96 AOI # 1	MW-2 11/14/96 AOI # 14	MW-3 11/14/96 AOI # 18	MW-4 11/14/96 AOI # 15	MW-6 11/13/96 None
4-Methyl-2-pentanone	12000000	5200	20000000	ND (50)	ND (50)	NA	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
Acetone	31000000	2100	1000000000	ND (100)	ND (100)	NA	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Benzene	9400	5	36000	ND (5.0)	ND (5.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Bromodichloromethane	11000	100	38000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Bromoform	100000	100	3100000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Bromomethane	65000	29	9000	ND (1)	ND (1.0)	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Carbon disulfide	1100000	2300	550000	ND (50)	ND (50)	NA	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
Carbon tetrachloride	1600	5	2400	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chlorobenzene	68000	100	470000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chloroethane	200000	910	5700000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chloroform	96000	100	180000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chloromethane	110000	270	52000	ND (1)	ND (1.0)	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
cis-1,2-Dichloroethene	170000	70	3500000	5	ND (1.0)	NA	4	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
cis-1,3-Dichloropropene	-	-	None	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Dibromochloromethane	9500	100	110000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Ethylbenzene	170000	74	170000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Methylene chloride	110000	5	1400000	ND (5.0)	ND (5.0)	NA	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Styrene	3200	100	310000	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Tetrachloroethene	5100	5	170000	ND (1)	ND (1.0)	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Toluene	530000	790	530000	ND (1)	ND (1.0)	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
trans-1,2-Dichloroethene	190000	100	6300000	ND (1)	ND (1.0)	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
trans-1,3-Dichloropropene	-	-	None	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Trichloroethene	11000	5	97000	ND (1)	ND (1.0)	NA	6	ND (1)	ND (1)	ND (1)	ND (1)
Vinyl chloride	290	2	690	ND (1.0)	ND (1.0)	NA	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Xylene (total)	190000	280	190000	ND (3.0)	ND (3.0)	NA	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)

Notes:

[ ] Groundwater Contact Criteria exceeded.

_____ Industrial Drinking Water Criteria exceeded.

None - No standard.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NLV - Chemical is not likely to volatilize wider most conditions.

(2) - MDEQ/ERD Operational Memorandum No. 14.

TABLE

12

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location						
			MW-1 (2-4)	MW-2 (8-10)	MW-3 (2-4)	MW-4 (6-8)	MW-5 (3-5)	MW-5 (8-10)	MW-6 (3-5)
VOCs (µg/kg)									
Chloroform	4.10 E+06	1.94 E+06	ND	ND	NA	ND	ND	ND	ND
1,1-dichloroethane	8.90 E+07	4.20 E+07	ND	ND	NA	ND	ND	ND	ND
1,1-dichloroethene	7.40 E+05	1.98 E+05	ND	ND	NA	ND	ND	ND	ND
trans-1,2 dichloroethene	1.30 E+07	4.00 E+06	ND	ND	NA	ND	ND	ND	ND
Dichloromethane	3.30 E+06	2.20 E+06	14.3	ND	NA	ND	ND	ND	ND
Ethylbenzene	7.20 E+07	3.40 E+06	1.3	ND	NA	ND	ND	ND	ND
Tetrachloroethene	4.90 E+05	1.00 E+05	ND	ND	NA	ND	ND	ND	ND
Toluene	1.60 E+08	1.06 E+07	4.6	ND	NA	1.6	ND	ND	ND
1,1,1-trichloroethane	2.10 E+07	7.60 E+06	ND	ND	NA	ND	ND	ND	ND
Trichloroethene	1.60 E+06	2.20 E+05	ND	ND	NA	ND	ND	ND	ND
Xylenes	1.00 E+09	3.80 E+06	8.1	ND	NA	ND	ND	ND	ND
PNAs (µg/kg)									
Benzo(a)anthracene	2.10 E+05	80	NA	NA	ND	NA	NA	NA	NA
Benzo(b)fluoranthene	2.10 E+05	40	NA	NA	ND	NA	NA	NA	NA
Benzo(k)fluoranthene	2.10 E+06	20	NA	NA	ND	NA	NA	NA	NA
Benzo(a)pyrene	2.10 E+04	4.8	NA	NA	ND	NA	NA	NA	NA
PCBs (µg/kg)									
PCB 1248	2.10 E+04	48	NA	NA	ND	NA	NA	NA	NA
PCB 1254	2.10 E+04	48	NA	NA	ND	NA	NA	NA	NA
PCB 1260	2.10 E+04	48	NA	NA	ND	NA	NA	NA	NA

TABLE *

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location MW-1 (2-4)	MW-2 (8-10)	MW-3 (2-4)	MW-4 (6-8)	MW-5 (3-5)	MW-5 (8-10)	MW-6 (3-5)
Inorganics (mg/kg)									
Arsenic	83	94	NA	NA	NA	NA	7.12	5.34	5.37
Barium	3.20E+05	3.00E+05	NA	NA	NA	NA	52.2	38.4	49.5
Cadmium	2300	2200	NA	NA	NA	NA	ND	ND	ND
Chromium	2.20E+04	2.00E+04	NA	NA	NA	NA	11.7	12.0	11.2
Copper	1.70E+05	1.62E+05	NA	NA	NA	NA	NA	NA	NA
Cyanide	9.90E+04	1.30E+04	NA	NA	NA	NA	NA	NA	NA
Lead	400	ID	NA	NA	NA	NA	3.72	6.92	ND
Mercury	1400	1.12	NA	NA	NA	NA	ND	ND	0.03
Selenium	2.30E+04	2.20E+04	NA	NA	NA	NA	0.26	ND	ND
Silver	2.10E+04	3.40E+04	NA	NA	NA	NA	ND	ND	ND
Zinc	1.00E+06	2.40E+06	NA	NA	NA	NA	NA	NA	NA
TPH (mg/kg)	—	—	336	NA	396	NA	ND	ND	ND

Notes:

(1) Michigan Department of Natural Resources - Environmental Response Division (MDNR-ERD) Interim Operational Memorandum #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
(2) Part 201 Generic Groundwater Contact Criteria (October 9, 1996) times 20(GCCx20). Addendum to MDNR-ERD Interim Operational Memorandum #8, Revision 4 (June 5, 1996), Revisions January 26, 1996 and #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
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VOCs - Volatile Organic Compounds
PNAs - Polynuclear Aromatics
PCBs - Polychlorinated Biphenyls
TPH - Total Petroleum Hydrocarbons
Split sample analytical results reported as follows: Study 2 concentration value / Study 3 concentration value.
ND - Parameter not detected in Study 2 sample (quantitation limit not reported).
ND ( ) - Parameter not detected above quantitation limit in Study 3 sample quantitation limit stated in parentheses).
NA - Parameter not analyzed.
☐ - Value exceeds MDNR-ERD Soil Cleanup Value (1) and/or (2).
* - HD-1 is sediment sample collected from Hughes Drain northwest of plant.

TABLE

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location						
			MW-6 (8-10)	MW-7 (4-6)	MW-8 (4-6)	MW-8 (8-10)	MW-9 (4-6)	MW-10 (4-6)	MW-12 (10-12)
VOCs (µg/kg)									
Chloroform	4.10 E+06	1.94 E+06	ND	ND	ND	ND	ND	ND / ND(10)	ND / ND(10)
1,1-dichloroethane	8.90 E+07	4.20 E+07	ND	ND	ND	ND	ND	ND / ND(10)	ND / ND(10)
1,1-dichloroethene	7.40 E+05	1.98 E+05	ND	ND	ND	ND	ND	ND / ND(10)	ND / ND(10)
trans-1,2 dichloroethene	1.30 E+07	4.00 E+06	ND	ND	ND	ND	ND	ND / ND(10)	ND / ND(10)
Dichloromethane	3.30 E+06	2.20 E+06	37.1	15.2	54.1	11.7	8.8	ND / ND(10)	ND / ND(10)
Ethylbenzene	7.20 E+07	3.40 E+06	ND	ND	ND	5.8	ND	ND / ND(10)	ND / ND(10)
Tetrachloroethene	4.90 E+05	1.00 E+05	ND	ND	4.4	ND	ND	1.0 / ND(10)	ND / ND(10)
Toluene	1.60 E+08	1.06 E+07	ND	0.9	ND	ND	ND	ND / ND(10)	ND / ND(10)
1,1,1-trichloroethane	2.10 E+07	7.60 E+06	ND	ND	ND	ND	ND	ND / ND(10)	ND / ND(10)
Trichloroethene	1.60 E+06	2.20 E+05	ND	1.6	ND	ND	0.9	1.1 / ND(10)	ND / ND(10)
Xylenes	1.00 E+09	3.80 E+06	ND	ND	ND	30.5	ND	ND / ND(30)	ND / ND(30)
PNAs (µg/kg)									
Benzo(a)anthracene	2.10 E+05	80	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	2.10 E+05	40	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2.10 E+06	20	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	2.10 E+04	4.8	NA	NA	NA	NA	NA	NA	NA
PCBs (µg/kg)									
PCB 1248	2.10 E+04	48	NA	NA	NA	NA	NA	NA	NA
PCB 1254	2.10 E+04	48	NA	NA	NA	NA	NA	NA	NA
PCB 1260	2.10 E+04	48	NA	NA	NA	NA	NA	NA	NA

TABLE 2

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location						
			MW-6 (8-10)	MW-7 (4-6)	MW-8 (4-6)	MW-8 (8-10)	MW-9 (4-6)	MW-10 (4-6)	MW-12 (10-12)
Inorganics (mg/kg)									
Arsenic	83	94	4.65	6.4	4.19	6.33	8.27	4.52 / 16	6.88 / 5.7
Barium	3.20E+05	3.00E+05	41	68	41.7	39.4	54.2	42.7 / 34	54.9 / 58
Cadmium	2300	2200	ND	ND	ND	ND	ND	ND / 0.11	ND / 0.92
Chromium	2.20E+04	2.00E+04	12.4	12.9	11.8	12	12	12.9 / 7.2	11.3 / 8.3
Copper	1.70E+05	1.62E+05	NA	NA	NA	NA	NA	NA / 18	NA / 22
Cyanide	9.90E+04	1.30E+04	NA	NA	NA	NA	NA	NA / NA	88.3 / NA
Lead	400	ID	3.8	5.61	103	7.45	8.89	6.64 / 12	6.38 / 13
Mercury	1400	1.12	ND	ND	ND	ND	ND	ND / ND(0.1)	ND / ND(0.1)
Selenium	2.30E+04	2.20E+04	ND	ND	0.37	ND	ND	ND / 0.56	0.3 / 0.59
Silver	2.10E+04	3.40E+04	ND	ND	ND	ND	ND	ND / ND(0.5)	ND / ND(0.5)
Zinc	1.00E+06	2.40E+06	NA	NA	NA	NA	NA	NA / 30	NA / 26
TPH (mg/kg)	—	—	313	360	419	ND	ND	ND / 56	ND / ND(40)

Notes:

(1) Michigan Department of Natural Resources - Environmental Response Division (MDNR-ERD) Interim Operational Memorandum #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
(2) Part 201 Generic Groundwater Contact Criteria (October 9, 1996) times 20(GCCx20). Addendum to MDNR-ERD Interim Operational Memorandum #8, Revision 4 (June 5, 1996), Revisions January 26, 1996 and #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
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PNAs - Polynuclear Aromatics
PCBs - Polychlorinated Biphenyls
TPH - Total Petroleum Hydrocarbons
Split sample analytical results reported as follows: Study 2 concentration value/Study 3 concentration value.
ND - Parameter not detected in Study 2 sample (quantitation limit not reported).
ND ( ) - Parameter not detected above quantitation limit in Study sample quantitation limit stated in parentheses).
NA - Parameter not analyzed.
☐ - Value exceeds MDNR-ERD Soil Cleanup Value (1) and/or (2).
* - HD-1 is sediment sample collected from Hughes Drain northwest of plant.

TABLE 2

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location							
			MW-13 (4-6)	MW-14 (3-5)	SB-2 (0-2)	SB-6 (1-3)	SB-7 (1-3)	SB-8 (1-3)	SB-9 (3-5)	SB-14 (1-3)
VOCs (µg/kg)										
Chloroform	4.10 E+06	1.94 E+06	ND	ND	NA	NA	NA	NA	ND	ND
1,1-dichloroethane	8.90 E+07	4.20 E+07	33.8	1.7	NA	NA	NA	NA	ND	ND
1,1-dichloroethene	7.40 E+05	1.98 E+05	ND	ND	NA	NA	NA	NA	ND	ND
trans-1,2 dichloroethene	1.30 E+07	4.00 E+06	ND	4.7	NA	NA	NA	NA	ND	ND
Dichloromethane	3.30 E+06	2.20 E+06	66.7	11.4	NA	NA	NA	NA	83.1	ND
Ethylbenzene	7.20 E+07	3.40 E+06	ND	ND	NA	NA	NA	NA	ND	ND
Tetrachloroethene	4.90 E+05	1.00 E+05	ND	1.3	NA	NA	NA	NA	ND	ND
Toluene	1.60 E+08	1.06 E+07	ND	1.0	NA	NA	NA	NA	ND	ND
1,1,1-trichloroethane	2.10 E+07	7.60 E+06	10.4	ND	NA	NA	NA	NA	2.9	2.7
Trichloroethene	1.60 E+06	2.20 E+05	ND	2210	NA	NA	NA	NA	ND	ND
Xylenes	1.00 E+09	3.80 E+06	ND	ND	NA	NA	NA	NA	ND	ND
PNAs (µg/kg)										
Benzo(a)anthracene	2.10 E+05	80	NA	NA	NA	NA	NA	NA	15	NA
Benzo(b)fluoranthene	2.10 E+05	40	NA	NA	NA	NA	NA	NA	14	NA
Benzo(k)fluoranthene	2.10 E+06	20	NA	NA	NA	NA	NA	NA	ND	NA
Benzo(a)pyrene	2.10 E+04	4.8	NA	NA	NA	NA	NA	NA	ND	NA
PCBs (µg/kg)										
PCB 1248	2.10 E+04	48	NA	NA	ND / ND(330)	ND	ND	ND	NA	NA
PCB 1254	2.10 E+04	48	NA	NA	ND / ND(330)	ND	ND	ND	NA	NA
PCB 1260	2.10 E+04	48	NA	NA	150 / ND(330)	ND	ND	ND	NA	NA

TABLE 2

SOIL SAMPLE ANA[illegible]AL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location: MW-13 (4-6)	MW-14 (3-5)	SB-2 (0-2)	SB-6 (1-3)	SB-7 (1-3)	SB-8 (1-3)	SB-9 (3-5)	SB-14 (1-3)
Inorganics (mg/kg)										
Arsenic	83	94	NA	NA	NA	NA	NA	NA	NA	NA
Barium	3.20E+05	3.00E+05	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	2300	2200	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	2.20E+04	2.00E+04	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.70E+05	1.62E+05	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	9.90E+04	1.30E+04	NA	NA	NA	NA	NA	NA	NA	NA
Lead	400	ID	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	1400	1.12	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	2.30E+04	2.20E+04	NA	NA	NA	NA	NA	NA	NA	NA
Silver	2.10E+04	3.40E+04	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	1.00E+06	2.40E+06	NA	NA	NA	NA	NA	NA	NA	NA
TPH (mg/kg)	—	—	NA	NA	NA	384	556	ND	NA	NA

Notes:

(1) Michigan Department of Natural Resources - Environmental Response Division (MDNR-ERD) Interim Operational Memorandum #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.

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NA - Parameter not analyzed.
☐ - Value exceeds MDNR-ERD Soil Cleanup Value (1) and/or (2).
* - HD-1 is sediment sample collected from Hughes Drain northwest of plant.

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Alex Rothchild
LFR
Sep 30, 2009 08:55

TABLE

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location							
			SB-15 (1-3)	SB-17 (1-3)	HD-1 *	WWT-1	WWT-2	WWT-3	WWT-4	WWB
VOCs (µg/kg)										
Chloroform	4.10 E+06	1.94 E+06	ND	NA	NA	ND	1.1	ND	ND	NA
1,1-dichloroethane	8.90 E+07	4.20 E+07	ND	NA	NA	ND	ND	ND	36	NA
1,1-dichloroethene	7.40 E+05	1.98 E+05	ND	NA	NA	ND	ND	ND	0.97	NA
trans-1,2 dichloroethene	1.30 E+07	4.00 E+06	ND	NA	NA	ND	ND	ND	ND	NA
Dichloromethane	3.30 E+06	2.20 E+06	ND	NA	NA	ND	ND	ND	ND	NA
Ethylbenzene	7.20 E+07	3.40 E+06	ND	NA	NA	ND	ND	ND	ND	NA
Tetrachloroethene	4.90 E+05	1.00 E+05	1.6	NA	NA	ND	3.5	1.7	2.1	NA
Toluene	1.60 E+08	1.06 E+07	1.1	NA	NA	ND	ND	ND	ND	NA
1,1,1-trichloroethane	2.10 E+07	7.60 E+06	ND	NA	NA	ND	ND	ND	1.57	NA
Trichloroethene	1.60 E+06	2.20 E+05	86.3	NA	NA	ND	ND	139	ND	NA
Xylenes	1.00 E+09	3.80 E+06	1.0	NA	NA	ND	ND	ND	ND	NA
PNAs (µg/kg)										
Benzo(a)anthracene	2.10 E+05	80	NA	NA	NA	NA	NA	NA	NA	ND / ND(330)
Benzo(b)fluoranthene	2.10 E+05	40	NA	NA	NA	NA	NA	NA	NA	ND / ND(330)
Benzo(k)fluoranthene	2.10 E+06	20	NA	NA	NA	NA	NA	NA	NA	ND / ND(330)
Benzo(a)pyrene	2.10 E+04	4.8	NA	NA	NA	NA	NA	NA	NA	ND / ND(330)
PCBs (µg/kg)										
PCB 1248	2.10 E+04	48	NA	ND	NA	NA	NA	NA	NA	ND / ND(330)
PCB 1254	2.10 E+04	48	NA	ND	NA	NA	NA	NA	NA	ND / ND(330)
PCB 1260	2.10 E+04	48	NA	ND	NA	NA	NA	NA	NA	ND / ND(330)

TABLE 2

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location: SB-15 (1-3)	SB-17 (1-3)	HD-1 *	WWT-1	WWT-2	WWT-3	WWT-4	WWB
Inorganics (mg/kg)										
Arsenic	83	94	NA	NA	3.63	5.37	6.16	6.53	6.95	NA
Barium	3.20E+05	3.00E+05	NA	NA	20.1	66.6	45.2	56	44.4	NA
Cadmium	2300	2200	NA	NA	ND	ND	ND	ND	ND	NA
Chromium	2.20E+04	2.00E+04	NA	NA	25.2	19.8	20.9	14.5	13.4	NA
Copper	1.70E+05	1.62E+05	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	9.90E+04	1.30E+04	NA	NA	NA	ND	ND	ND	ND	NA
Lead	400	ID	NA	NA	175	6.4	ND	4.1	ND	NA
Mercury	1400	1.12	NA	NA	ND	ND	ND	ND	ND	NA
Selenium	2.30E+04	2.20E+04	NA	NA	ND	ND	ND	ND	ND	NA
Silver	2.10E+04	3.40E+04	NA	NA	ND	ND	ND	ND	ND	NA
Zinc	1.00E+06	2.40E+06	NA	NA	NA	NA	NA	NA	NA	NA
TPH (mg/kg)	—	—	NA	308	978	NA	NA	NA	NA	ND / 76

Notes:

(1) Michigan Department of Natural Resources - Environmental Response Division (MDNR-ERD) Interim Operational Memorandum #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
(2) Part 201 Generic Groundwater Contact Criteria (October 9, 1996) times 20(GCCx20). Addendum to MDNR-ERD Interim Operational Memorandum #8, Revision 4 (June 5, 1996), Revisions January 26, 1996 and #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
ID - Criterion not currently developed by Michigan Department of Environmental Quality.
VOCs - Volatile Organic Compounds
PNAs - Polynuclear Aromatics
PCBs - Polychlorinated Biphenyls
TPH - Total Petroleum Hydrocarbons
Split sample analytical results reported as follows: Study 2 concentration value/Study 3 concentration value.
ND - Parameter not detected in Study 2 sample (quantitation limit not reported).
ND ( ) - Parameter not detected above quantitation limit in Study 3 sample quantitation limit stated in parentheses).
NA - Parameter not analyzed.
☐ - Value exceeds MDNR-ERD Soil Cleanup Value (1) and/or (2).
* - HD-1 is sediment sample collected from Hughes Drain northwest of plant.

TABLE

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location							
			SPL	F-30 (0-2)	F-34	K-2	K-32	K-33	K-35	M-1 (6-8)
VOCs (µg/kg)										
Chloroform	4.10 E+06	1.94 E+06	ND	NA	NA	NA	NA	NA	NA	ND
1,1-dichloroethane	8.90 E+07	4.20 E+07	ND	NA	NA	NA	NA	NA	NA	ND
1,1-dichloroethene	7.40 E+05	1.98 E+05	ND	NA	NA	NA	NA	NA	NA	ND
trans-1,2 dichloroethene	1.30 E+07	4.00 E+06	ND	NA	NA	NA	NA	NA	NA	ND
Dichloromethane	3.30 E+06	2.20 E+06	55	NA	NA	NA	NA	NA	NA	19.3
Ethylbenzene	7.20 E+07	3.40 E+06	ND	NA	NA	NA	NA	NA	NA	1.3
Tetrachloroethene	4.90 E+05	1.00 E+05	ND	NA	NA	NA	NA	NA	NA	ND
Toluene	1.60 E+08	1.06 E+07	ND	NA	NA	NA	NA	NA	NA	ND
1,1,1-trichloroethane	2.10 E+07	7.60 E+06	ND	NA	NA	NA	NA	NA	NA	ND
Trichloroethene	1.60 E+06	2.20 E+05	ND	NA	NA	NA	NA	NA	NA	ND
Xylenes	1.00 E+09	3.80 E+06	ND	NA	NA	NA	NA	NA	NA	14.0
PNAs (µg/kg)										
Benzo(a)anthracene	2.10 E+05	80	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	2.10 E+05	40	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2.10 E+06	20	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	2.10 E+04	4.8	NA	NA	NA	NA	NA	NA	NA	NA
PCBs (µg/kg)										
PCB 1248	2.10 E+04	48	NA	NA	NA	NA	NA	NA	NA	NA
PCB 1254	2.10 E+04	48	NA	NA	NA	NA	NA	NA	NA	NA
PCB 1260	2.10 E+04	48	NA	NA	NA	NA	NA	NA	NA	NA

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	*Michigan Generic Industrial Direct Contact Value (1)*	*Michigan 20 X Generic Groundwater Contact Value (2)*	*Sample Location*							
			SPL	*F-30 (0-2)*	*F-34*	*K-2*	*K-32*	*K-33*	*K-35*	*M-1 (6-8)*
Inorganics (mg/kg)										
Arsenic	83	94	6.03	3.25	3.36/4.2	5.19	2.95	3.06	10.7	6.81
Barium	3.20E+05	3.00E+05	60.6	9.42	33.1/36	57.7	10.4	10.3	325	72.6
Cadmium	2300	2200	ND	ND	ND/0.11	ND	ND	ND	6.05	ND
Chromium	2.20E+04	2.00E+04	13.9	5.47	11.2/11	12.5	42.8	9.72	1160	13.7
Copper	1.70E+05	1.62E+05	NA	NA	NA/13	NA	NA	NA	NA	NA
Cyanide	9.90E+04	1.30E+04	NA	31.8	ND/ND(0.2)	ND	ND	NA	NA	NA
Lead	400	ID	6.04	ND	4.99/7.2	7	5.03	ND	1280	8.07
Mercury	1400	1.12	ND	ND	ND/ND(0.1)	ND	ND	ND	0.0904	ND
Selenium	2.30E+04	2.20E+04	ND	ND	ND/0.52	ND	ND	ND	0.649	ND
Silver	2.10E+04	3.40E+04	ND	ND	ND/ND(0.5)	ND	ND	ND	2.97	ND
Zinc	1.00E+06	2.40E+06	NA	NA	NA/40	NA	NA	NA	NA	NA
TPH (mg/kg)	—	—	NA	ND	NA	NA	NA	NA	NA	NA

Notes:

(1) Michigan Department of Natural Resources - Environmental Response Division (MDNR-ERD) Interim Operational Memorandum #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
(2) Part 201 Generic Groundwater Contact Criteria (October 9, 1996) times 20(GCCx20). Addendum to MDNR-ERD Interim Operational Memorandum #8, Revision 4 (June 5, 1996), Revisions January 26, 1996 and #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
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PNAs - Polynuclear Aromatics
PCBs - Polychlorinated Biphenyls
TPH - Total Petroleum Hydrocarbons
Split sample analytical results reported as follows: Study 2 concentration value/Study 3 concentration value.
ND - Parameter not detected in Study 2 sample (quantitation limit not reported).
ND ( ) - Parameter not detected above quantitation limit in Study 3 sample (quantitation limit stated in parentheses).
NA - Parameter not analyzed.
☐ - Value exceeds MDNR-ERD Soil Cleanup Value (1) and/or (2).
* - HD-1 is sediment sample collected from Hughes Drain northwest of plant.

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location							
			M-1 (8-10)	P-28	Q-12	Q-32	Q-33	Q-34	BLD 63-24	BLD 63-25
VOCs (µg/kg)										
Chloroform	4.10 E+06	1.94 E+06	ND / ND(10)	NA	ND	NA	NA	NA	ND	ND
1,1-dichloroethane	8.90 E+07	4.20 E+07	ND / ND(10)	NA	ND	NA	NA	NA	ND	ND
1,1-dichloroethene	7.40 E+05	1.98 E+05	ND / ND(10)	NA	ND	NA	NA	NA	ND	ND
trans-1,2 dichloroethene	1.30 E+07	4.00 E+06	ND / ND(10)	NA	ND	NA	NA	NA	ND	ND
Dichloromethane	3.30 E+06	2.20 E+06	ND / ND(10)	NA	12.3	NA	NA	NA	ND	ND
Ethylbenzene	7.20 E+07	3.40 E+06	ND / ND(10)	NA	ND	NA	NA	NA	ND	ND
Tetrachloroethene	4.90 E+05	1.00 E+05	ND / ND(10)	NA	0.8	NA	NA	NA	ND	ND
Toluene	1.60 E+08	1.06 E+07	ND / ND(10)	NA	ND	NA	NA	NA	ND	ND
1,1,1-trichloroethane	2.10 E+07	7.60 E+06	ND / ND(10)	NA	ND	NA	NA	NA	ND	ND
Trichloroethene	1.60 E+06	2.20 E+05	ND / ND(10)	NA	0.8	NA	NA	NA	ND	ND
Xylenes	1.00 E+09	3.80 E+06	ND / ND(30)	NA	ND	NA	NA	NA	ND	ND
PNAs (µg/kg)										
Benzo(a)anthracene	2.10 E+05	80	NA	ND	NA	ND	ND	32.6	NA	NA
Benzo(b)fluoranthene	2.10 E+05	40	NA	ND	NA	ND	ND	40.6	NA	NA
Benzo(k)fluoranthene	2.10 E+06	20	NA	ND	NA	ND	ND	13.1	NA	NA
Benzo(a)pyrene	2.10 E+04	4.8	NA	ND	NA	ND	ND	26.1	NA	NA
PCBs (µg/kg)										
PCB 1248	2.10 E+04	48	NA	ND	NA	ND	ND	279	ND	ND
PCB 1254	2.10 E+04	48	NA	ND	NA	ND	ND	279	ND	ND
PCB 1260	2.10 E+04	48	NA	ND	NA	ND	ND	ND	ND	ND

TABLE 2

SOIL SAMPLE ANALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPHI INTERIOR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Industrial Direct Contact Value (1)	Michigan 20 X Generic Groundwater Contact Value (2)	Sample Location: M-1 (8-10)	P-28	Q-12	Q-32	Q-33	Q-34	BLD 63-24	BLD 63-25
Inorganics (mg/kg)										
Arsenic	83	94	4.30 / 6.8	NA	6.98	NA	NA	NA	5.15	5.28
Barium	3.20E+05	3.00E+05	43.4 / 100	NA	44.1	NA	NA	NA	47.3	35.6
Cadmium	2300	2200	ND / 0.17	NA	ND	NA	NA	NA	ND	ND
Chromium	2.20E+04	2.00E+04	12.8 / 9.3	NA	11.6	NA	NA	NA	10.8	9.30
Copper	1.70E+05	1.62E+05	NA / 21	NA	NA	NA	NA	NA	NA	NA
Cyanide	9.90E+04	1.30E+04	NA / NA	NA	NA	NA	NA	NA	NA	NA
Lead	400	ID	8.98 / 11	NA	7.2	NA	NA	NA	5.48	4.50
Mercury	1400	1.12	ND / ND(0.1)	NA	ND	NA	NA	NA	ND	ND
Selenium	2.30E+04	2.20E+04	ND / 0.54	NA	ND	NA	NA	NA	ND	ND
Silver	2.10E+04	3.40E+04	ND / ND(0.5)	NA	ND	NA	NA	NA	ND	ND
Zinc	1.00E+06	2.40E+06	NA / 41	NA	NA	NA	NA	NA	NA	NA
TPH (mg/kg)	—	—	NA	505	NA	576	480	NA	471	945

Notes:

(1) Michigan Department of Natural Resources - Environmental Response Division (MDNR-ERD) Interim Operational Memorandum #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
(2) Part 201 Generic Groundwater Contact Criteria (October 9, 1996) times 20(GCCx20). Addendum to MDNR-ERD Interim Operational Memorandum #8, Revision 4 (June 5, 1996), Revisions January 26, 1996 and #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
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PNAs - Polynuclear Aromatics
PCBs - Polychlorinated Biphenyls
TPH - Total Petroleum Hydrocarbons
Split sample analytical results reported as follows: Study 2 concentration value/Study 3 concentration value.
ND - Parameter not detected in Study 2 sample (quantitation limit not reported).
ND ( ) - Parameter not detected above quantitation limit in Study 3 sample quantitation limit stated in parentheses).
NA - Parameter not analyzed.
☐ - Value exceeds MDNR-ERD Soil Cleanup Value (1) and/or (2).
* - HD-1 is sediment sample collected from Hughes Drain northwest of plant.

TABLE
MONITORING WELL WATER S/ ALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELF OR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	Michigan Generic Groundwater Contact Criteria (1)	Michigan Generic Industrial Health-Based Drinking Water Value (2)	Sample Location MW-1	MW-2	MW-3	MW-4	MW-6	MW-8
VOCs (µg/L)								
Bromomethane	6.40E+04	29	ND / ND(1)	ND / ND(1)	8.8 / ND(1)	ND / ND(1)	ND / ND(1)	ND
Chloromethane	1.10E+05	270	ND / ND(1)	ND / ND(1)	ND / ND(1)	ND / ND(1)	ND / ND(1)	ND
1,1-Dichloroethane	2.10E+06	2,500	1 / ND(1)	ND / ND(1)	ND / ND(1)	ND / ND(1)	ND / ND(1)	ND
trans-1,2 dichloroethene	2.00E+05	100	1.7 / ND(1)	ND / ND(1)	ND / ND(1)	ND / ND(1)	ND / ND(1)	ND
Tetrachloroethene	5000	5	ND / ND(1)	0.5 / ND(1)	ND / ND(1)	0.7 / ND(1)	0.6 / ND(1)	ND
Toluene	5.30E+05	1,000	0.6 / ND(1)	0.7 / ND(1)	0.5 / ND(1)	0.8 / ND(1)	0.7 / ND(1)	1.4
1,1,1-trichloroethane	3.80E+05	200	ND / ND(1)	ND / ND(1)	ND / ND(1)	ND / ND(1)	ND / ND(1)	ND
Trichloroethene	1.10E+04	5	4.8 / ND(1)	4.4 / ND(1)	3.8 / ND(1)	5.3 / ND(1)	4.9 / ND(1)	4.7
SVOCs (µg/L)								
Acenaphthene	4240	3,800	ND	0.16 / ND(5)	NA	NA	ND / ND(5)	NA
di-n-butyl phthalate	11.20E+04	2,500	ND	0.7 / ND(5)	NA	NA	ND / ND(5)	NA
Fluorene	1980	2,500	ND	0.14 / ND(5)	NA	NA	ND / ND(5)	NA
Naphthalene	3.10E+04	750	ND	0.17 / ND(5)	NA	NA	ND / ND(5)	NA
2-nitrophenol	7.50E+04	58	ND	1.8 / ND(5)	NA	NA	ND / ND(5)	NA
Phenanthrene	1000	75	ND	0.6 / ND(5)	NA	NA	ND / ND(5)	NA
PCBs (µg/L)	2.4	–	NA / ND(0.2)	NA	ND / ND(0.2)	NA	ND / ND(0.2)	NA
Metals (µg/L) Total or Dissolved			T	T / D	T / T	T / T	T	
Arsenic	4700	50	ND	ND / ND(5)	ND / 13	ND / 16	ND	NA
Barium	1.50E+07	2000	ND	540 / ND(200)	270 / ND(200)	390 / 240	340	NA
Copper	8.10E+06	4000	NA	NA / ND(25)	NA / 32	NA / 27	NA	NA
Lead	ID	4	ND	ND / ND(3)	ND / 12	ND / 26	ND	NA
Selenium	1.10E+06	50	ND	ND / 9.5	ND / 10	ND / 12	ND	NA
Zinc	1.20E+08	6900	ND	NA / ND(20)	NA / 110	NA / 20	NA	NA

Notes:

(1) - Part 201 Generic Groundwater Contact Criteria (October 9, 1996): Addendum to Michigan Department of Natural Resources, Environmental Response Division (MDNR-ERD) Interim Operational Memorandum #8, Revision 4 (June 5, 1996), Revisions January 26, 1996 and #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
(2) - MDNR - ERD Interim Operational Memorandum #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
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Split sample analytical results reported as follows: Study 2 concentration value / Study concentration value.
ND - Parameter not detected in Study 2 sample (quantitation limit not reported).
ND ( ) - Parameter not detected above quantitation limit in Study 2 sample (quantitation limit stated in parentheses).
NA - Parameter not analyzed.
T - Sample analyzed for total metals.
D - Sample analyzed for dissolved metals.
☐ - Value exceeds MDNR-ERD Groundwater Cleanup Value (1) and/or (2).

TABLE 3
MONITORING WELL WATER SA' ALYTICAL RESULTS
GENERAL MOTORS CORPORATION - DELPI OR LIGHTING SYSTEMS PLANT
FLINT, MICHIGAN

Parameter	*Michigan Generic Groundwater Contact Criteria (1)*	*Michigan Generic Industrial Health-Based Drinking Water Value (2)*	*MW-10*	*MW-11*	*MW-12*	*MW-13*	*MW-14*
VOCs (µg/L)							
Bromomethane	6.40E+04	29	ND / ND(1)	ND	ND	6.7	ND / ND(1)
Chloromethane	1.10E+05	270	ND / ND(1)	ND	2.4	ND	ND / ND(1)
1,1-Dichloroethane	2.10E+06	2,500	ND / ND(1)	ND	ND	ND	ND / ND(1)
trans-1,2 dichloroethene	2.00E+05	100	ND / ND(1)	ND	ND	ND	ND / ND(1)
Tetrachloroethene	5000	5	0.6 / ND(1)	0.6	0.7	ND	1.1 / ND(1)
Toluene	5.30E+05	1,000	0.7 / ND(1)	1.6	1.2	1.1	1.3 / ND(1)
1,1,1-trichloroethane	3.80E+05	200	ND / ND(1)	ND	ND	0.7	ND / ND(1)
Trichloroethene	1.10E+04	5	4.6 / ND(1)	6.2	7.1	8.4	21.2 / 6
SVOCs (µg/L)							
Acenaphthene	4240	3,800	ND	ND	ND	NA	NA
di-n-butyl phthalate	11.20E+04	2,500	ND	ND	ND	NA	NA
Fluorene	1980	2,500	ND	ND	ND	NA	NA
Naphthalene	3.10E+04	750	ND	ND	ND	NA	NA
2-nitrophenol	7.50E+04	58	ND	ND	ND	NA	NA
Phenanthrene	1000	75	ND	0.14	ND	NA	NA
PCBs (µg/L)	2.4	–	ND	NA	NA	ND / ND(0.2)	NA
Metals (µg/L)							
Total or Dissolved			T / D	T	T		
Arsenic	4700	50	ND / ND(5)	ND	ND	NA	NA
Barium	1.50E+07	2000	260 / ND(200)	260	270	NA	NA
Copper	8.10E+06	4000	NA / ND(25)	NA	NA	NA	NA
Lead	ID	4	14 / ND(3)	22	ND	NA	NA
Selenium	1.10E+06	50	ND / 5.4	ND	ND	NA	NA
Zinc	1.20E+08	6900	NA / ND(20)	NA	NA	NA	NA

Notes:

(1) - Part 201 Generic Groundwater Contact Criteria (October 9, 1996): Addendum to Michigan Department of Natural Resources, Environmental Response Division (MDNR-ERD) Interim Operational Memorandum #8, Revision 4 (June 5, 1996), Revisions January 26, 1996 and #14, Revision 2 (June 6, 1995), Revisions January 25, 1996.
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ND - Parameter not detected in Study 2 sample (quantitation limit not reported).
ND ( ) - Parameter not detected above quantitation limit in Study 3 sample (quantitation limit stated in parentheses).
NA - Parameter not analyzed.
T - Sample analyzed for total metals.
D - Sample analyzed for dissolved metals.
☐ - Value exceeds MDNR-ERD Groundwater Cleanup Value (1) and/or (2).

APPENDIX E

SUMMARY OF ANALYTICAL RESULTS – STUDY 4 (03,04/97)

Confidential under FOIA
Alex Rothchild
LFR
Sep 30, 2009 08:55

TABLE E.1

STUDY 4 (03, 04/97) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							PFB-13 2.9-3.5 3/24/97 AOI # 7	PFB-14 4.7-5.4 3/25/97 AOI # 7	PFB-15 11-11.5 3/24/97 AOI # 8	PFB-16 3.3-3.9 3/25/97 AOI # 9	PFB-17 5.2-6.0 3/25/97 AOI # 9	PFB-18 1.4-2.0 3/26/97 AOI # 9
General Chemistry (%)												
Total Solids	-	-	-	None	None	None	81.5	87.46	87.24	90.11	95.06	90.1
Metals (ug/Kg)												
Arsenic	5800	23000	100000	None	None	910000	10000	10000	9000	6000	6000	8000
Barium	75000	1300000	320000000	None	None	150000000	110000	55000	75000	44000	36000	54000
Cadmium	1200	6000	4500000	None	None	2200000	670	860	820	810	860	830
Chromium	18000	30000	22000000	None	None	None	24000	17000	20000	15000	10000	18000
Copper	32000	160000000	170000000	None	None	59000000	14000	17000	15000	17000	11000	14000
Lead	21000	1000	900000	None	None	44000000	17000	18000	18000	16000	17000	17000
Mercury	130	1700	1400000	NLV	NLV	ID	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Selenium	410	4000	23000000	None	None	59000000	ND (500)	ND (500)	ND (500)	ND (500)	ND (500)	ND (500)
Silver	1000	13000	21000000	None	None	2900000	ND (500)	1000	2800	600	900	800
Zinc	47000	5000000	1000000000	NLV	NLV	ID	58000	52000	43000	41000	49000	42000
PCBs (ug/Kg)												
Total PCBs	-	-	9900	16000000	820000	6500000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Semi - Volatiles (ug/Kg)												
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Benzo(a)anthracene	-	-	210000	NLV	NLV	ID	ND (330)	400	ND (330)	ND (330)	ND (330)	ND (330)
Benzo(a)pyrene	-	-	21000	None	None	1900000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Benzo(b)fluoranthene	-	-	210000	ID	ID	ID	ND (330)	450	ND (330)	ND (330)	ND (330)	ND (330)
Benzo(g,h,i)perylene	-	-	16000000	None	None	350000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Benzo(k)fluoranthene	-	-	2100000	NLV	NLV	ID	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Chrysene	-	-	21000000	ID	ID	ID	ND (330)	460	ND (330)	ND (330)	ND (330)	ND (330)
Dibenzo(a,h)anthracene	-		21000	NLV	NLV	ID	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	ND (330)	1300	ND (330)	ND (330)	ND (330)	ND (330)
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Indeno(1,2,3-cd)pyrene	-	-	210000	NLV	NLV	ID	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)	ND (330)
Phenanthrene	-	34000	16000000	28000000	150000	59000000	ND (330)	1300	ND (330)	ND (330)	ND (330)	ND (330)
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	ND (330)	1400	ND (330)	ND (330)	ND (330)	ND (330)
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)

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Sep 30, 2009 08:55

TABLE E.1

STUDY 4 (03, 04/97) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							PFB-13 2.9-3.5 3/24/97 AOI # 7	PFB-14 4.7-5.4 3/25/97 AOI # 7	PFB-15 11-11.5 3/24/97 AOI # 8	PFB-16 3.3-3.9 3/25/97 AOI # 9	PFB-17 5.2-6.0 3/25/97 AOI # 9	PFB-18 1.4-2.0 3/26/97 AOI # 9
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,3-Dichlorobenzene	-	18000	200000	ID	ID	ID	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
2-Chloroethyl vinyl ether	-	-	-	ID	ID	ID	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Benzene	-	100	400000	8400	45000	470000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Bromomethane	-	580	1000000	1600	13000	150000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chloroethane	-	18000	970000	970000	36000000	290000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chloroform	-	2000	1500000	38000	150000	1600000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
cis-1,3-Dichloropropene	-	-	-	None	None	None	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
m&p-Xylene	-	-	-	None	None	None	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
o-Xylene	-	-	-	None	None	None	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Toluene	-	16000	250000	250000	3300000	12000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
trans-1,3-Dichloropropene	-	-	-	None	None	None	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Trichloroethene	-	100	500000	37000	260000	2300000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Vinyl chloride	-	40	11000	150	1500	47000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)

Notes:

Industrial Drinking Water Protection Criteria exceeded.

Industrial Direct Contact Criteria exceeded.

None - No standard.

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ID - Criterion not currently developed by MDEQ.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE E.1

STUDY 4 (03, 04/97) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							PFB-19 1.0-1.6 3/26/97 AOI # 9	PFB-20 1.6-2.3 3/26/97 AOI # 9	PFB-21 0-0.9 4/24/97 AOI # 21	PFB-23 5.8-7 4/24/97 AOI # 11	PFB-24 1.2-2.5 4/24/97 AOI # 11	PFB-25 6.3-7.8 4/24/97 AOI # 1
General Chemistry (%)												
Total Solids	-	-	-	None	None	None	88.77	90.21	87.04	87.13	89.88	88.87
Metals (ug/Kg)												
Arsenic	5800	23000	100000	None	None	910000	7000	9000	NA	12000	11000	NA
Barium	75000	1300000	320000000	None	None	150000000	74000	88000	NA	85000	64000	NA
Cadmium	1200	6000	4500000	None	None	2200000	860	900	NA	1100	1900	NA
Chromium	18000	30000	22000000	None	None	None	20000	18000	NA	23000	19000	NA
Copper	32000	160000000	170000000	None	None	59000000	15000	17000	NA	16000	14000	NA
Lead	21000	1000	900000	None	None	44000000	19000	17000	NA	16000	19000	NA
Mercury	130	1700	1400000	NLV	NLV	ID	ND (100)	ND (100)	NA	ND (100)	ND (100)	NA
Selenium	410	4000	23000000	None	None	59000000	ND (500)	ND (500)	NA	ND (500)	ND (500)	NA
Silver	1000	13000	21000000	None	None	2900000	900	800	NA	ND (500)	1200	NA
Zinc	47000	5000000	1000000000	NLV	NLV	ID	43000	56000	NA	58000	45000	NA
PCBs (ug/Kg)												
Total PCBs	-	-	9900	16000000	820000	6500000	ND (330)	ND (330)	NA	NA	NA	NA
Semi - Volatiles (ug/Kg)												
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	ND (330)	ND (330)	ND (540)	ND (330)	ND (330)	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	ND (330)	ND (330)	ND (2200)	ND (330)	ND (330)	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	ND (330)	ND (330)	ND (2000)	ND (330)	ND (330)	NA
Benzo(a)anthracene	-	-	210000	NLV	NLV	ID	ND (330)	ND (330)	ND (850)	ND (330)	2200	NA
Benzo(a)pyrene	-	-	21000	None	None	1900000	ND (330)	ND (330)	ND (3400)	ND (330)	ND (330)	NA
Benzo(b)fluoranthene	-	-	210000	ID	ID	ID	ND (330)	ND (330)	ND (3600)	ND (330)	ND (330)	NA
Benzo(g,h,i)perylene	-	-	16000000	None	None	350000000	ND (330)	ND (330)	ND (1200)	ND (330)	ND (330)	NA
Benzo(k)fluoranthene	-	-	2100000	NLV	NLV	ID	ND (330)	ND (330)	ND (1600)	ND (330)	ND (330)	NA
Chrysene	-	-	21000000	ID	ID	ID	ND (330)	ND (330)	23000	ND (330)	4800	NA
Dibenzo(a,h)anthracene	-		21000	NLV	NLV	ID	ND (330)	ND (330)	ND (2900)	ND (330)	ND (330)	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	ND (330)	ND (330)	ND (1400)	ND (330)	9600	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	ND (330)	ND (330)	ND (3300)	ND (330)	2600	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	NLV	NLV	ID	ND (330)	ND (330)	ND (3000)	ND (330)	ND (330)	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	ND (330)	ND (330)	ND (930)	ND (330)	1900	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	ND (330)	ND (330)	ND (1100)	ND (330)	ND (330)	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	ND (330)	ND (330)	ND (870)	ND (330)	27000	NA
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)

TABLE E.1

STUDY 4 (03, 04/97) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #					
							PFB-19 1.0-1.6 3/26/97 AOI # 9	PFB-20 1.6-2.3 3/26/97 AOI # 9	PFB-21 0-0.9 4/24/97 AOI # 21	PFB-23 5.8-7 4/24/97 AOI # 11	PFB-24 1.2-2.5 4/24/97 AOI # 11	PFB-25 6.3-7.8 4/24/97 AOI # 1
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
1,3-Dichlorobenzene	-	18000	200000	ID	ID	ID	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
2-Chloroethyl vinyl ether	-	-	-	ID	ID	ID	ND (100)	ND (100)	ND (100)	NA	NA	ND (100)
Benzene	-	100	400000	8400	45000	470000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Bromomethane	-	580	1000000	1600	13000	150000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Chloroethane	-	18000	970000	970000	36000000	290000000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Chloroform	-	2000	1500000	38000	150000	1600000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
cis-1,3-Dichloropropene	-	-	-	None	None	None	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
m&p-Xylene	-	-	-	None	None	None	ND (30)	ND (30)	95	NA	NA	ND (30)
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
o-Xylene	-	-	-	None	None	None	ND (30)	ND (30)	210	NA	NA	ND (30)
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Toluene	-	16000	250000	250000	3300000	12000000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
trans-1,3-Dichloropropene	-	-	-	None	None	None	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Trichloroethene	-	100	500000	37000	260000	2300000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)
Vinyl chloride	-	40	11000	150	1500	47000000	ND (10)	ND (10)	ND (10)	NA	NA	ND (10)

Notes:

Industrial Drinking Water Protection Criteria exceeded.

Industrial Direct Contact Criteria exceeded.

None - No standard.
PCBs - Polychlorinated Biphenyls.
TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.
ID - Criterion not currently developed by MDEQ.
ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.
NA - Parameter not analyzed.
(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE E.1

STUDY 4 (03, 04/97) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # PFB-25 8-10 4/24/97 AOI # 1	PFB-26 10-12 4/25/97 AOI # 1	PFB-26 8-10 4/25/97 AOI # 1	PFB-7 8-10 3/18/97 AOI # 8	PFW-10 2.1-2.7 3/20/97 AOI # 7	PFW-11 0.5-1.5 3/20/97 AOI # 3
General Chemistry (%)												
Total Solids	-	-	-	None	None	None	88.47	91.05	97.77	87.7	84.84	86.44
Metals (ug/Kg)												
Arsenic	5800	23000	100000	None	None	910000	NA	NA	NA	32000	4400	10000
Barium	75000	1300000	320000000	None	None	150000000	NA	NA	NA	72000	37000	74000
Cadmium	1200	6000	4500000	None	None	2200000	NA	NA	NA	620	ND (50)	810
Chromium	18000	30000	22000000	None	None	None	NA	NA	NA	14000	11000	20000
Copper	32000	160000000	170000000	None	None	59000000	NA	NA	NA	11000	6300	16000
Lead	21000	1000	900000	None	None	44000000	NA	NA	NA	15000	11000	18000
Mercury	130	1700	1400000	NLV	NLV	ID	NA	NA	NA	ND (100)	ND (100)	ND (100)
Selenium	410	4000	23000000	None	None	59000000	NA	NA	NA	ND (500)	ND (500)	ND (500)
Silver	1000	13000	21000000	None	None	2900000	NA	NA	NA	500	ND (500)	900
Zinc	47000	5000000	1000000000	NLV	NLV	ID	NA	NA	NA	37000	31000	52000
PCBs (ug/Kg)												
Total PCBs	-	-	9900	16000000	820000	6500000	NA	NA	NA	ND (330)	ND (330)	NA
Semi - Volatiles (ug/Kg)												
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	NA	NA	NA	ND (330)	ND (330)	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	NA	NA	NA	ND (330)	ND (330)	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	NA	NA	NA	ND (330)	ND (330)	NA
Benzo(a)anthracene	-	-	210000	NLV	NLV	ID	NA	NA	NA	ND (330)	ND (330)	NA
Benzo(a)pyrene	-	-	21000	None	None	1900000	NA	NA	NA	ND (330)	ND (330)	NA
Benzo(b)fluoranthene	-	-	210000	ID	ID	ID	NA	NA	NA	ND (330)	ND (330)	NA
Benzo(g,h,i)perylene	-	-	16000000	None	None	350000000	NA	NA	NA	ND (330)	ND (330)	NA
Benzo(k)fluoranthene	-	-	2100000	NLV	NLV	ID	NA	NA	NA	ND (330)	ND (330)	NA
Chrysene	-	-	21000000	ID	ID	ID	NA	NA	NA	ND (330)	ND (330)	NA
Dibenzo(a,h)anthracene	-		21000	NLV	NLV	ID	NA	NA	NA	ND (330)	ND (330)	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	NA	NA	NA	ND (330)	ND (330)	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	NA	NA	NA	ND (330)	ND (330)	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	NLV	NLV	ID	NA	NA	NA	ND (330)	ND (330)	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	NA	NA	NA	ND (330)	ND (330)	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	NA	NA	NA	ND (330)	ND (330)	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	NA	NA	NA	ND (330)	ND (330)	NA
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)

TABLE E.1

STUDY 4 (03, 04/97) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI # PFB-25 8-10 4/24/97 AOI # 1	PFB-26 10-12 4/25/97 AOI # 1	PFB-26 8-10 4/25/97 AOI # 1	PFB-7 8-10 3/18/97 AOI # 8	PFW-10 2.1-2.7 3/20/97 AOI # 7	PFW-11 0.5-1.5 3/20/97 AOI # 3
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,3-Dichlorobenzene	-	18000	200000	ID	ID	ID	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
2-Chloroethyl vinyl ether	-	-	-	ID	ID	ID	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Benzene	-	100	400000	8400	45000	470000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Bromomethane	-	580	1000000	1600	13000	150000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chloroethane	-	18000	970000	970000	36000000	290000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chloroform	-	2000	1500000	38000	150000	1600000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
cis-1,3-Dichloropropene	-	-	-	None	None	None	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
m&p-Xylene	-	-	-	None	None	None	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
o-Xylene	-	-	-	None	None	None	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Toluene	-	16000	250000	250000	3300000	12000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
trans-1,3-Dichloropropene	-	-	-	None	None	None	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Trichloroethene	-	100	500000	37000	260000	2300000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Vinyl chloride	-	40	11000	150	1500	47000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)

Notes:

Industrial Drinking Water Protection Criteria exceeded.

Industrial Direct Contact Criteria exceeded.

None - No standard.

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ID - Criterion not currently developed by MDEQ.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE E.1

STUDY 4 (03, 04/97) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	*Statewide Default Background Levels* [2]	*Industrial Drinking Water Protection Criteria* [2]	*Industrial Direct Contact Criteria* [2]	*Soil Volatilization to Indoor Air Inhalation Criteria* [2]	*Volatile Soil Inhalation Criteria* [2]	*Particulate Soil Inhalation Criteria* [2]	*Sample Location (depth ft. bgs) / Sample Date / AOI #* PFW-12 0.8-1.3 3/21/97 AOI # 9	PFW-12 6.2-6.7 3/21/97 AOI # 9	PFW-2 0-1.5 3/14/97 AOI # 14	PFW-3 0.8-1.5 3/17/97 AOI # 8	PFW-4 1.5-3 3/17/97 AOI # 18	PFW-5 0-1.7 3/18/97 AOI # 15
General Chemistry (%)												
Total Solids	-	-	-	None	None	None	86.83	88.64	89.88	88.15	86.13	88.91
Metals (ug/Kg)												
Arsenic	5800	23000	100000	None	None	910000	9000	12000	18000	10000	8000	5000
Barium	75000	1300000	320000000	None	None	150000000	81000	100000	54000	61000	51000	22000
Cadmium	1200	6000	4500000	None	None	2200000	670	820	570	640	670	490
Chromium	18000	30000	22000000	None	None	None	25000	20000	15000	17000	17000	9100
Copper	32000	160000000	170000000	None	None	59000000	16000	16000	13000	18000	13000	8100
Lead	21000	1000	900000	None	None	44000000	18000	19000	14000	13000	17000	11000
Mercury	130	1700	1400000	NLV	NLV	ID	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Selenium	410	4000	23000000	None	None	59000000	ND (500)	ND (500)	ND (500)	ND (500)	ND (500)	ND (500)
Silver	1000	13000	21000000	None	None	2900000	800	1000	ND (500)	ND (500)	ND (500)	ND (500)
Zinc	47000	5000000	1000000000	NLV	NLV	ID	45000	48000	42000	150000	38000	30000
PCBs (ug/Kg)												
Total PCBs	-	-	9900	16000000	820000	6500000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Semi - Volatiles (ug/Kg)												
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Benzo(a)anthracene	-	-	210000	NLV	NLV	ID	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Benzo(a)pyrene	-	-	21000	None	None	1900000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Benzo(b)fluoranthene	-	-	210000	ID	ID	ID	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Benzo(g,h,i)perylene	-	-	16000000	None	None	350000000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Benzo(k)fluoranthene	-	-	2100000	NLV	NLV	ID	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Chrysene	-	-	21000000	ID	ID	ID	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Dibenzo(a,h)anthracene	-		21000	NLV	NLV	ID	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	NLV	NLV	ID	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	ND (330)	ND (330)	ND (330)	NA	ND (330)	NA
Volatiles (ug/Kg)												
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	420	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)

TABLE E.1

STUDY 4 (03, 04/97) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels [2]	Industrial Drinking Water Protection Criteria [2]	Industrial Direct Contact Criteria [2]	Soil Volatilization to Indoor Air Inhalation Criteria [2]	Volatile Soil Inhalation Criteria [2]	Particulate Soil Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # PFW-12 0.8-1.3 3/21/97 AOI # 9	PFW-12 6.2-6.7 3/21/97 AOI # 9	PFW-2 0-1.5 3/14/97 AOI # 14	PFW-3 0.8-1.5 3/17/97 AOI # 8	PFW-4 1.5-3 3/17/97 AOI # 18	PFW-5 0-1.7 3/18/97 AOI # 15
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	97	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,1-Dichloroethene	-	140	580000	330	3700	78000000	11	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	44000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,3-Dichlorobenzene	-	18000	200000	ID	ID	ID	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
2-Chloroethyl vinyl ether	-	-	-	ID	ID	ID	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
Benzene	-	100	400000	8400	45000	470000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Bromomethane	-	580	1000000	1600	13000	150000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chloroethane	-	18000	970000	970000	36000000	290000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chloroform	-	2000	1500000	38000	150000	1600000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
cis-1,3-Dichloropropene	-	-	-	None	None	None	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
m&p-Xylene	-	-	-	None	None	None	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
o-Xylene	-	-	-	None	None	None	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Toluene	-	16000	250000	250000	3300000	12000000000	17	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
trans-1,3-Dichloropropene	-	-	-	None	None	None	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Trichloroethene	-	100	500000	37000	260000	2300000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Vinyl chloride	-	40	11000	150	1500	47000000	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)

Notes:

Industrial Drinking Water Protection Criteria exceeded.

Industrial Direct Contact Criteria exceeded.

None - No standard.

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ID - Criterion not currently developed by MDEQ.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE E.1

STUDY 4 (03, 04/97) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	*Statewide Default Background Levels* [2]	*Industrial Drinking Water Protection Criteria* [2]	*Industrial Direct Contact Criteria* [2]	*Soil Volatilization to Indoor Air Inhalation Criteria* [2]	*Volatile Soil Inhalation Criteria* [2]	*Particulate Soil Inhalation Criteria* [2]	*Sample Location (depth ft. bgs)* / *Sample Date* / *AOI #* PFW-6 3-5 3/18/97 AOI # 1	PFW-8 0-2 3/19/97 None	PFW-8 6-7.8 3/19/97 None	PFW-9 0-2 3/19/97 AOI # 16
General Chemistry (%)										
Total Solids	-	-	-	None	None	None	87.17	87.9	88.03	86.04
Metals (ug/Kg)										
Arsenic	5800	23000	100000	None	None	910000	6000	6000	NA	9000
Barium	75000	1300000	320000000	None	None	150000000	49000	61000	NA	57000
Cadmium	1200	6000	4500000	None	None	2200000	700	680	NA	590
Chromium	18000	30000	22000000	None	None	None	15000	15000	NA	16000
Copper	32000	160000000	170000000	None	None	59000000	12000	11000	NA	13000
Lead	21000	1000	900000	None	None	44000000	16000	15000	NA	16000
Mercury	130	1700	1400000	NLV	NLV	ID	ND (100)	ND (100)	NA	ND (100)
Selenium	410	4000	23000000	None	None	59000000	ND (500)	ND (500)	NA	ND (500)
Silver	1000	13000	21000000	None	None	2900000	ND (500)	600	NA	ND (500)
Zinc	47000	5000000	1000000000	NLV	NLV	ID	40000	37000	NA	80000
PCBs (ug/Kg)										
Total PCBs	-	-	9900	16000000	820000	6500000	ND (330)	ND (330)	NA	NA
Semi - Volatiles (ug/Kg)										
Acenaphthene	-	870000	810000000	350000000	97000000	6200000000	ND (330)	ND (330)	NA	NA
Acenaphthylene	-	8500	16000000	3000000	2700000	1000000000	ND (330)	ND (330)	NA	NA
Anthracene	-	41000	1000000000	1000000000	1600000000	29000000000	ND (330)	ND (330)	NA	NA
Benzo(a)anthracene	-	-	210000	NLV	NLV	ID	ND (330)	ND (330)	NA	NA
Benzo(a)pyrene	-	-	21000	None	None	1900000	ND (330)	ND (330)	NA	NA
Benzo(b)fluoranthene	-	-	210000	ID	ID	ID	ND (330)	ND (330)	NA	NA
Benzo(g,h,i)perylene	-	-	16000000	None	None	350000000	ND (330)	ND (330)	NA	NA
Benzo(k)fluoranthene	-	-	2100000	NLV	NLV	ID	ND (330)	ND (330)	NA	NA
Chrysene	-	-	21000000	ID	ID	ID	ND (330)	ND (330)	NA	NA
Dibenzo(a,h)anthracene	-		21000	NLV	NLV	ID	ND (330)	ND (330)	NA	NA
Fluoranthene	-	720000	540000000	1000000000	880000000	4100000000	ND (330)	ND (330)	NA	NA
Fluorene	-	890000	540000000	1000000000	150000000	4100000000	ND (330)	ND (330)	NA	NA
Indeno(1,2,3-cd)pyrene	-	-	210000	NLV	NLV	ID	ND (330)	ND (330)	NA	NA
Naphthalene	-	50000	160000000	77000000	59000000	15000000000	ND (330)	ND (330)	NA	NA
Phenanthrene	-	34000	16000000	28000000	150000	59000000	ND (330)	ND (330)	NA	NA
Pyrene	-	470000	340000000	1000000000	770000000	2900000000	ND (330)	ND (330)	NA	NA
Volatiles (ug/Kg)										
1,1,1-Trichloroethane	-	4000	460000	460000	4500000	29000000000	ND (24)	NA	ND (10)	ND (10)
1,1,2,2-Tetrachloroethane	-	340	120000	23000	34000	68000000	ND (29)	NA	ND (10)	ND (10)
1,1,2-Trichloroethane	-	100	440000	24000	57000	250000000	ND (6.3)	NA	ND (10)	ND (10)

TABLE E.1

STUDY 4 (03, 04/97) SOIL ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Statewide Default Background Levels (2)	Industrial Drinking Water Protection Criteria (2)	Industrial Direct Contact Criteria (2)	Soil Volatilization to Indoor Air Inhalation Criteria (2)	Volatile Soil Inhalation Criteria (2)	Particulate Soil Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI # PFW-6 3-5 3/18/97 AOI # 1	PFW-8 0-2 3/19/97 None	PFW-8 6-7.8 3/19/97 None	PFW-9 0-2 3/19/97 AOI # 16
1,1-Dichloroethane	-	50000	790000	790000	36000000	240000000000	ND (14)	NA	ND (10)	ND (10)
1,1-Dichloroethene	-	140	580000	330	3700	78000000	ND (13)	NA	ND (10)	ND (10)
1,2-Dichlorobenzene	-	13000	210000	210000	46000000	440000000000	ND (12)	NA	ND (10)	ND (10)
1,2-Dichloroethane	-	100	270000	11000	21000	150000000	ND (12)	NA	ND (10)	ND (10)
1,2-Dichloropropane	-	100	360000	7400	30000	120000000	ND (10)	NA	ND (10)	ND (10)
1,3-Dichlorobenzene	-	18000	200000	ID	ID	ID	ND (21)	NA	ND (10)	ND (10)
1,4-Dichlorobenzene	-	1700	1000000	100000	260000	570000000	ND (19)	NA	ND (10)	ND (10)
2-Chloroethyl vinyl ether	-	-	-	ID	ID	ID	ND (25)	NA	ND (100)	ND (100)
Benzene	-	100	400000	8400	45000	470000000	ND (10)	NA	ND (10)	ND (10)
Bromodichloromethane	-	2000	400000	6400	31000	110000000	ND (17)	NA	ND (10)	ND (10)
Bromoform	-	2000	870000	770000	3100000	3600000000	ND (18)	NA	ND (10)	ND (10)
Bromomethane	-	580	1000000	1600	13000	150000000	ND (25)	NA	ND (10)	ND (10)
Carbon tetrachloride	-	100	190000	990	12000	170000000	ND (12)	NA	ND (10)	ND (10)
Chlorobenzene	-	2000	260000	220000	920000	2100000000	ND (30)	NA	ND (10)	ND (10)
Chloroethane	-	18000	970000	970000	36000000	290000000000	ND (25)	NA	ND (10)	ND (10)
Chloroform	-	2000	1500000	38000	150000	1600000000	ND (7.8)	NA	ND (10)	ND (10)
Chloromethane	-	5400	1100000	12000	140000	6100000000	ND (25)	NA	ND (10)	ND (10)
cis-1,2-Dichloroethene	-	1400	640000	640000	47000000	230000000000	110	NA	ND (10)	ND (10)
cis-1,3-Dichloropropene	-	-	-	None	None	None	ND (9.1)	NA	ND (10)	ND (10)
Dibromochloromethane	-	2000	300000	21000	80000	160000000	ND (25)	NA	ND (10)	ND (10)
Dichlorodifluoromethane (CFC-12)	-	270000	1000000	1000000	63000000	1500000000000	ND (25)	NA	ND (10)	ND (10)
Ethylbenzene	-	1500	140000	140000	11000000	29000000000	150	NA	ND (10)	ND (10)
m&p-Xylene	-	-	-	None	None	None	ND (30)	NA	ND (30)	ND (30)
Methylene chloride	-	100	2300000	240000	700000	8300000000	ND (19)	NA	ND (10)	ND (10)
o-Xylene	-	-	-	None	None	None	ND (30)	NA	ND (30)	ND (30)
Tetrachloroethene	-	100	88000	60000	600000	6800000000	ND (17)	NA	ND (10)	ND (10)
Toluene	-	16000	250000	250000	3300000	12000000000	ND (9)	NA	ND (10)	ND (10)
trans-1,2-Dichloroethene	-	2000	1400000	1400000	37000000	230000000000	5.2	NA	ND (10)	ND (10)
trans-1,3-Dichloropropene	-	-	-	None	None	None	ND (6.3)	NA	ND (10)	ND (10)
Trichloroethene	-	100	500000	37000	260000	2300000000	1600	NA	ND (10)	ND (10)
Trichlorofluoromethane (CFC-11)	-	150000	560000	560000	110000000	1700000000000	ND (13)	NA	ND (10)	ND (10)
Vinyl chloride	-	40	11000	150	1500	47000000	ND (25)	NA	ND (10)	ND (10)

Notes:

_____ Industrial Drinking Water Protection Criteria exceeded.

[ ] Industrial Direct Contact Criteria exceeded.

None - No standard.

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ID - Criterion not currently developed by MDEQ.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE E.2

STUDY 4 (03, 04/97) WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria [2]	Industrial Drinking Water Criteria [2]	Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria [2]	Sample Location (depth ft. bgs) / Sample Date / AOI # — MW-10 4/1/97 AOI # 15	PFB-21 4/25/97 AOI # 21	PFW-1 4/1/97 None	PFW-10 3/31/97 AOI # 7	PFW-11 4/1/97 AOI # 3	PFW-12 3/31/97 AOI # 9	PFW-2 4/1/97 AOI # 14	PFW-2D 4/1/97 AOI # 14	PFW-4 4/1/97 AOI # 18	PFW-5 3/31/97 AOI # 15	PFW-6 3/31/97 AOI # 1	PFW-9 4/1/97 AOI # 16
Metals (ug/L)															
Arsenic	4700	50	-	ND (5)	NA	40	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
Barium	15000000	2000	-	1600	NA	550	2600	1100	1200	610	610	1600	450	1300	970
Cadmium	210000	5	-	ND (0.5)	NA	ND (0.5)	ND (0.5)	0.6	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	1.4	ND (0.5)	ND (0.5)
Chromium	1000000	30000	-	ND (50)	NA	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
Copper	8100000	1000	-	ND (25)	NA	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)
Lead	-	4	-	ND (3)	NA	ND (3)	4	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	2
Mercury	56	2	-	ND (0.2)	NA	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Selenium	1100000	50	-	ND (5)	NA	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
Silver	1000000	98	-	ND (0.5)	NA	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Zinc	70000000	5000	-	ND (20)	NA	ND (20)	50	ND (20)	ND (20)	ND (20)	ND (20)	20	ND (20)	ND (20)	ND (20)
Semi - Volatiles (ug/L)															
Acenaphthene	4200	3800	4200	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Acenaphthylene	3900	75	3900	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Anthracene	43	43	43	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Benzo(a)anthracene	5	5	-	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Benzo(a)pyrene	5	5	-	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	5	5	-	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	5	5	-	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	5	5	-	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Chrysene	5	5	-	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	5	5	-	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Fluoranthene	210	210	210	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Fluorene	2000	2000	2000	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	5	5	-	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Naphthalene	31000	750	31000	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Phenanthrene	1000	75	1000	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Pyrene	140	140	140	NA	ND (5)	NA	NA	NA	NA	ND (5)	NA	NA	NA	NA	NA
Volatiles (ug/L)															
1,1,1-Trichloroethane	220000	200	1300000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	9	ND (1)
1,1,2,2-Tetrachloroethane	2100	17	77000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1,2-Trichloroethane	9500	5	110000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1-Dichloroethane	2100000	2500	5100000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	4	ND (1)
1,1-Dichloroethene	9000	7	1300	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dichlorobenzene	160000	600	160000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dichloroethane	11000	5	59000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dichloropropane	7500	5	36000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)

TABLE E.2

STUDY 4 (03, 04/97) WATER ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Groundwater Contact Criteria (2)	Industrial Drinking Water Criteria (2)	Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria (2)	Sample Location (depth ft. bgs) / Sample Date / AOI #											
				MW-10 4/1/97 AOI # 15	PFB-21 4/25/97 AOI # 21	PFW-1 4/1/97 None	PFW-10 3/31/97 AOI # 7	PFW-11 4/1/97 AOI # 3	PFW-12 3/31/97 AOI # 9	PFW-2 4/1/97 AOI # 14	PFW-2D 4/1/97 AOI # 14	PFW-4 4/1/97 AOI # 18	PFW-5 3/31/97 AOI # 15	PFW-6 3/31/97 AOI # 1	PFW-9 4/1/97 AOI # 16
1,3-Dichlorobenzene	110000	600	-	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,4-Dichlorobenzene	2800	75	74000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
2-Chloroethyl vinyl ether	-	-	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Benzene	9400	5	36000	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
Bromodichloromethane	11000	100	38000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Bromoform	100000	100	3100000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Bromomethane	65000	29	9000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Carbon tetrachloride	1600	5	2400	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chlorobenzene	68000	100	470000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloroethane	200000	910	5700000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloroform	96000	100	180000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloromethane	110000	270	52000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
cis-1,2-Dichloroethene	170000	70	3500000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
cis-1,3-Dichloropropene	-	-	-	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Dibromochloromethane	9500	100	110000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Dichlorodifluoromethane (CFC-12)	300000	4800	300000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Ethylbenzene	170000	74	170000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
m&p-Xylene	-	-	-	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)
Methylene chloride	110000	5	1400000	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
o-Xylene	-	-	-	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)
Tetrachloroethene	5100	5	170000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Toluene	530000	790	530000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
trans-1,2-Dichloroethene	190000	100	6300000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
trans-1,3-Dichloropropene	-	-	-	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Trichloroethene	11000	5	97000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Trichlorofluoromethane (CFC-11)	1100000	7300	1100000	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Vinyl chloride	290	2	690	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)

Notes:

Industrial Drinking Water Protection Criteria exceeded.

Industrial Direct Contact Criteria exceeded.

PCBs - Polychlorinated Biphenyls.

TPH - Total Petroleum Hydrocarbons Diesel Range Organics (DRO) EPA Method 8015 modified.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14

TABLE E.3

STUDY 4 (03, 04/97) TCLP ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Parameter	Regulatory Levels [1]	Sample Location (depth ft. bgs) / Sample Date / AOI #										
		AST No.6 4/25/97 AOI # 13	Overhead Waste Pipe 1 4/4/97 AOI # 10	Overhead Waste Pipe 2 4/4/97 AOI # 10	Overhead Waste Pipe 3 4/4/97 AOI # 10	Overhead Waste Pipe 4 4/4/97 AOI # 10	Overhead Waste Pipe 5 4/4/97 AOI # 10	Plater: South Box Tank 4/4/97 AOI # 9	Plater: Tank 22 Vent Box 4/4/97 AOI # 9	Plater: Tanks 19/20 Grate 4/4/97 AOI # 9	Plater: South AST 4/4/97 AOI # 9	Tool Room Air Wash Unit 4/7/97 None
Metals (ug/L)												
Arsenic	5000	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	11
Barium	100000	ND (600)	ND (600)	1200	ND (600)	ND (600)	ND (600)	ND (600)	700	ND (600)	ND (600)	1200
Cadmium	1000	10	130	40	10	30	30	ND (10)	370	ND (10)	ND (10)	150
Chromium	5000	60	100	1400	ND (0.02)	40	ND (0.02)	1200	2000	60	730	8800
Copper	-	ND (20)	750	1700	60	50	10	1600	30000	60	350	11000
Lead	5000	ND (80)	ND (80)	130	ND (80)	ND (80)	130	650	3900	ND (80)	590	6100
Mercury	200	ND (2)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	2	ND (1)	ND (1)	ND (1)
Selenium	1000	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
Silver	5000	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	40	130	ND (20)	30	ND (20)
Zinc	-	100	23000	270000	850000	3200000	2500	4800000	620000	6800000	5100000	12000
Volatiles (ug/L)												
1,1-Dichloroethene	700	ND (2000)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	500	ND (200)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	7500	ND (500)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	-	ND (1000)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	500	79000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	500	ND (200)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100000	ND (500)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	6000	ND (200)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	700	ND (300)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	500	ND (500)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	200	ND (300)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

_____ TCLP Criteria exceeded.

Metals - Michigan 10 Metals list

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(1) - Resource Conservation and Recovery Act (RCRA) (40 CFR 261.21-24).

TABLE E.4

STUDY 4 (03, 04/97) PCB ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

			Sample Location (depth ft. bgs)				
			Sample Date				
			AOI #				
Parameter	*Regulatory Limits*	*Galbestos 4/4/97*	*Wood Floor Blocks D-3 4/4/97*	*Wood Floor Blocks F-2 4/4/97*	*Wood Floor Blocks H-19_2 4/4/97*	*Wood Floor Blocks HJ-11_7 4/4/97*	*Wood Floor Blocks ML-1_5 4/4/97*
		None	*None*	*None*	*AOI # 20*	*None*	*AOI # 19*
Total PCBs (ug/100cm2)	50000 (3)	1,300	NA	NA	NA	NA	NA
Total PCBs (ug/Kg)	9900 (2)	NA	ND (1000)	ND (1000)	ND (1000)	ND (1000)	ND (1000)

Confidential under FOIA
Alex Rothchild
LFR
Sep 30, 2009 08:55

Confidential under FOIA
Alex Rothchild
LFR
Sep 30, 2009 08:55

Notes:

_____ Regulatory Limits exceeded.

PCBs - Polychlorinated Biphenyls.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

NA - Parameter not analyzed.

(2) - MDEQ/ERD Operational Memorandum No. 14.

(3) - Toxic Substances Control Act (40 CFR 761.60).

TABLE E.5

STUDY 4 (03, 04/97) WIPE ANALYTICAL RESULTS
FORMER PEREGRINE (US) INC.
COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

		Sample Location (depth ft. bgs)						
		Sample Date						
		AOI #						
Parameter	*Regulatory Limits* [4]	*BeneathTransformer 1A Wipe 4A 4/4/97*	*BeneathTransformer 1A Wipe 4B 4/4/97*	*BeneathTransformer 9 Wipe 3A 4/4/97*	*BeneathTransformer 9 Wipe 3B 4/4/97*	*Pl Floor near C7spill Wipe 2A 4/4/97*	*Pl Floor near C7spill Wipe 2B 4/4/97*	*Pl Floor near C7spill Wipe 2C 4/4/97*
		None	*None*	*None*	*None*	*None*	*None*	*None*
Total PCBs (ug/100cm2)	10	5.5	11	20	ND (5)	ND (5)	ND (5)	ND (5)

Notes:

Regulatory Limits exceeded.

PCBs - Polychlorinated Biphenyls.

ND ( ) - Parameter not detected above quantitation limit in CRA sample quantitation limit stated in parentheses.

(4) - Toxic Substances Control Act (40 CFR 761.125).

Table 1

Groundwater Elevations

Peregrine, Incorporated - Flint Operations

MONITOR WELL	NORTHING	EASTING	GROUND ELEVATION	CASING ELEVATION	DEPTH TO WATER (FEET BELOW CASING)		GROUNDWATER ELEVATION (RELATIVE TO LOCAL DATUM)	
					3/31/97	4/28/97	3/31/97	4/28/97
PFW-1	3692.30	5514.95	99.6	101.44	80.58	80.07	20.86	21.37
PFW-2	5568.56	5399.09	98.5	101.01	6.74	8.70	94.27	92.31
PFW-3	4650.90	4977.25	100.3	99.79	Dry	Dry	---	---
PFW-4	4781.16	5193.23	99.8	99.33	5.52	5.06	93.81	94.27
PFW-5	5052.80	4794.08	98.9	101.29	5.77	6.08	95.52	95.21
PFW-6	5341.62	4313.59	98.6	98.29	1.05	2.02	97.24	96.27
PFW-8	4375.18	4026.67	101.1	100.79	Dry	Dry	---	---
PFW-9	5237.54	5489.96	98.8	101.05	8.53	9.40	92.52	91.65
PFW-10	3607.69	4640.67	100.5	100.09	11.67	11.73	88.42	88.36
PFW-11	4116.12	4825.64	101.3	100.98	1.57	2.07	99.41	98.91
PFW-12	3692.87	4509.72	101.7	101.28	15.21	15.07	86.07	86.21
MW-1	5526.88	5364.27	98.0	97.71	2.93	3.72	94.78	93.99
MW-2	5105.12	5389.64	98.8	98.52	13.10	4.87	85.42	93.65
MW-3	4906.11	5172.23	99.6	99.24	2.61	2.43	96.63	96.81
MW-4	4991.99	4804.76	98.0	97.58	5.25	4.13	92.33	93.45
MW-6	4979.92	4043.85	100.9	100.50	19.43	18.91	81.07	81.59
MW-8	4376.84	4040.84	101.1	100.73	26.18	26.53	74.55	74.20
MW-9	4055.75	4043.10	100.6	100.33	23.61	24.27	76.72	76.06
MW-10	3839.69	4044.64	99.5	99.04	3.65	5.96	95.39	93.08
MW-14	5333.54	4314.00	98.6	98.24	18.58	10.44	79.66	87.80

Note: Northing, Easting, and Elevations are based on assumed site datums.

Shade indicates that screened interval is within the upper 18 feet of the perched drift zone.

TABLE 2
SOIL ANALYTICAL RESULTS (µg/kg)
PEREGRINE, INC. - FLINT OPERATIONS

[illegible]	Part 201 Action Levels: Direct Contact	Background	Sample Locations and Depths [illegible]													
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Volatile Organics																
1,1-Dichloroethene	7.4E+5	Not Applicable	NA	-	-	-	-	-	-	-	-	-	-	11	-	-
1,1-Dichloroethane	8.9E+7			-	-	-	-	-	-	-	-	-	-	97	-	-
1,1,1-Trichloroethane	2.1E+7			-	-	-	-	-	-	-	-	-	-	420	-	-
Toluene	1.6E+8			-	-	-	-	-	-	-	-	-	-	17	-	-
Ethylbenzene	7.2E+7			-	-	-	-	150	-	-	-	-	-	-	-	-
Xylenes	1.0E+9			-	-	-	-	-	-	-	-	-	-	-	-	-
t-1,2-Dichloroethene	1.3E+7			-	-	-	-	5.2	-	-	-	-	-	-	-	-
c-1,2-Dichloroethene	8.2E+6			-	-	-	-	110	-	-	-	-	-	-	-	-
Trichloroethene	1.6E+5			-	-	-	-	1,600	-	-	-	-	-	-	-	-
Polynuclear Aromatics																
Naphthalene	1.6E+8	Not Applicable	NA	-	NA	-	NA	NA	-	-	NA	-	NA	-	-	-
Fluorene	5.4E+8			-		-			-	-		-		-	-	-
Phenanthrene	1.6E+7			-		-			-	-		-		-	-	-
Fluoranthene	5.4E+8			-		-			-	-		-		-	-	-
Pyrene	3.4E+8			-		-			-	-		-		-	-	-
Benzo(a)anthracene	2.1E+5			-		-			-	-		-		-	-	-
Chrysene	2.1E+7			-		-			-	-		-		-	-	-
Benzo(b)fluoranthene	2.1E+5			-		-			-	-		-		-	-	-
Michigan 10 Metals																
Arsenic	1.0E+5	5,800	NA	18,000	10,000	8,000	5,000	6,000	32,000	6,000	9,000	4,400	10,000	9,000	12,000	10,000
Barium	3.2E+8	75,000		54,000	61,000	51,000	22,000	49,000	72,000	61,000	57,000	37,000	74,000	81,000	100,000	110,000
Cadmium	2.3E+6	1,200		570	640	670	490	700	620	680	590	-	810	670	820	670
Chromium	1.0E+9	18,000		15,000	17,000	17,000	9,100	15,000	14,000	15,000	16,000	11,000	20,000	25,000	20,000	24,000
Copper	1.7E+8	32,000		13,000	18,000	13,000	8,100	12,000	11,000	11,000	13,000	6,300	16,000	16,000	16,000	14,000
Lead	4.0E+5	21,000		14,000	13,000	17,000	11,000	16,000	15,000	15,000	16,000	11,000	18,000	18,000	19,000	17,000
Mercury	1.9E+6	130		-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	2.3E+7	410		-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	2.1E+7	1,000		-	-	-	-	-	500	600	-	-	900	800	1,000	-
Zinc	1.0E+9	47,000		42,000	150,000	38,000	30,000	40,000	37,000	37,000	80,000	31,000	52,000	45,000	48,000	58,000
PCBs (Total) [illegible]	2.1E+4	Not Applicable	NA	-	NA	-	NA	NA	-	-	NA	-	NA	-	-	-

Notes:

[1] Results are shown only for those constituents that were detected in at least one sample.

Dash (-) indicates that constituent was not detected at or near the Target Method Detection Limits contained in MDEQ/ERD Op. Memo. 6.

NA = Not analyzed

TABLE 2
SOIL ANALYTICAL RESULTS (µg/kg)
PEREGRINE, INC. - FLINT OPERATIONS

Constituent	Part 201 Action Levels		Sample Location and Depth (feet bgs)													
	Direct Contact	Groundwater Protection														
Volatile Organics																
1,1-Dichloroethene	7.4E+5	Not Applicable	-	-	-	-	-	-	-	-	Not Analyzed	-	-	-	-	-
1,1-Dichloroethane	8.9E+7		-	-	-	-	-	-	-	-		-	-	-	-	-
1,1,1-Trichloroethane	2.1E+7		-	-	-	-	-	-	-	-		-	-	-	-	-
Toluene	1.6E+8		-	-	-	-	-	-	-	-		-	-	-	-	-
Ethylbenzene	7.2E+7		-	-	-	-	-	-	-	-		-	-	-	-	-
Xylenes	1.0E+9		-	-	-	-	-	-	-	-		-	-	-	-	-
t-1,2-Dichloroethene	1.3E+7		-	-	-	-	-	-	-	305		-	-	-	-	-
c-1,2-Dichloroethene	8.2E+6		-	-	-	-	-	-	-	-		-	-	-	-	-
Trichloroethene	1.6E+5		-	-	-	-	-	-	-	-		-	-	-	-	-
Polynuclear Aromatics																
Naphthalene	1.6E+8	Not Applicable	-	-	-	-	-	-	-	<930	-	1,900	Not Analyzed			
Fluorene	5.4E+8		-	-	-	-	-	-	-	<3,300	-	2,600				
Phenanthrene	1.6E+7		1,300	-	-	-	-	-	-	<1,100	-	-				
Fluoranthene	5.4E+8		1,300	-	-	-	-	-	-	<1,400	-	9,600				
Pyrene	3.4E+8		1,400	-	-	-	-	-	-	<870	-	27,000				
Benzo(a)anthracene	2.1E+5		400	-	-	-	-	-	-	<850	-	2,200				
Chrysene	2.1E+7		460	-	-	-	-	-	-	23,000	-	4,800				
Benzo(b)fluoranthene	2.1E+5		450	-	-	-	-	-	-	<3,600	-	-				
Michigan 10 Metals																
Arsenic	1.0E+5	5,800	10,000	9,000	6,000	6,000	8,000	7,000	9,000	NA	12,000	11,000	Not Analyzed			
Barium	3.2E+8	75,000	55,000	75,000	44,000	36,000	54,000	74,000	88,000		85,000	64,000				
Cadmium	2.3E+6	1,200	860	820	810	860	830	860	900		1,100	1,900				
Chromium	1.0E+9	18,000	17,000	20,000	15,000	10,000	18,000	20,000	18,000		23,000	19,000				
Copper	1.7E+8	32,000	17,000	15,000	17,000	11,000	14,000	15,000	17,000		16,000	14,000				
Lead	4.0E+5	21,000	18,000	18,000	16,000	17,000	17,000	19,000	17,000		16,000	19,000				
Mercury	1.9E+6	130	-	-	-	-	-	-	-		-	-				
Selenium	2.3E+7	410	-	-	-	-	-	-	-		-	-				
Silver	2.1E+7	1,000	1,000	2,800	600	900	800	900	800		-	1,200				
Zinc	1.0E+9	47,000	52,000	43,000	41,000	49,000	42,000	43,000	56,000		58,000	45,000				
PCBs (Total)	2.1E+4	Not Applicable	-	-	-	-	-	-	-	Not Analyzed						

Notes:
[1] Results are shown only for those constitutents that were detected in at least one sample.
Dash (-) indicates that constitutent was not detected at or near the Target Method Detection Limits contained in MDEQ/ERD Op. Memo. 6.
NA = Not analyzed

Table 3
Groundwater Analytical Results (µg/L)
Peregrine, Incorporated - Flint Operations

Constitutent	Part 201 Industrial Drinking Water Limit	Sample Location												
		PFW-1	PFW-2	PFW-3	PFW-4	PFW-5	PFW-6	PFW-8	PFW-9	PFW-10	PFW-11	PFW-12	MW-10	PFB-21
Volatile Organics[1]														
1,1-Dichloroethene	7	-	-	Dry Well	-	-	-	Dry Well	-	-	-	-	-	-
1,1-Dichloroethane	880	-	-		-	-	4		-	-	-	-	-	-
1,1,1-Trichloroethane	200	-	-		-	-	9		-	-	-	-	-	-
Toluene	790	-	-		-	-	-		-	-	-	-	-	-
Ethylbenzene	74	-	-		-	-	-		-	-	-	-	-	-
t-1,2-Dichloroethene	100	-	-		-	-	-		-	-	-	-	-	-
c-1,2-Dichloroethene	70	-	-		-	-	-		-	-	-	-	-	-
Trichloroethene	5	-	-		-	-	-		-	-	-	-	-	-
Polynuclear Aromatics[1] (PNAs)														
Naphthalene	260	NA	-	Dry Well	NA			Dry Well	NA					-
Fluorene	880		-											-
·nanthrene	26		-											-
.nracene	7,300		-											-
uoranthene	880		-											-
Pyrene	550		-											-
Benzo(a)anthracene	1.2		-											-
Chrysene	120		-											-
Benzo(b)fluoranthene	1.2		-											-
Benzo(k)fluoranthene	12		-											-
Benzo(a)pyrene	0.2		-											-
Michigan 10 Metals														
Arsenic	50	-	-	Dry Well	-	-	-	Dry Well	-	-	-	-	-	NA
Barium	2,000	610	610		1,600	450	1,300		970	2,600	1,100	1,200	1,600	
Cadmium	5	-	-		-	1.40	-		-	-	0.06	-	-	
Chromium	100	-	-		-	-	-		-	-	-	-	-	
Copper	1,400	-	-		-	-	-		-	-	-	-	-	
Lead	4	-	-		-	-	-		9	4	-	-	-	
Mercury	2	-	-		-	-	-		-	-	-	-	-	
Selenium	50	-	-		-	-	-		-	-	-	-	-	
Silver	34	-	-		-	-	-		-	-	-	-	-	
Zinc	2,400	-	-		20	-	-		-	50	-	-	-	

Notes:

[1] Results are shown only for those constitutents that were detected in at least one soil sample, during the March 1997 Phase II investigation.

Not Analyzed for indicated constituent(s).

(-) indicates that constitutent was not detected at or near the Target Method Detection Limits contained in MDEQ/ERD Op. Memo. 6.

ted cell indicated that Industrial drinking water threshold was exceeded.

Table 4
TCLP Analytical Results (April 1997)
Peregrine, Incorporated - Flint Operations

Parameter	Regulatory Level [a]	AST No. 6 (Adhesive)	Tool Room Air Wash	Plater: Tank 22 Vent Box	Plater: South AST	Plater: South Box Tank	Plater: Tanks 19/20 Grate	Pipe 1	Pipe 2	Pipe 3	Pipe 4	Pipe 5
Units [b]:	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
TCLP Metals												
Arsenic	5	<0.005	0.011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium	100	<0.6	1.2	0.7	<0.6	<0.6	<0.6	<0.6	1.2	<0.6	<0.6	<0.6
Cadmium	1	0.01	0.15	0.37	<0.01	<0.01	<0.01	0.13	0.04	0.01	0.03	0.03
Chromium	5	0.06	8.8	2	0.73	1.2	0.06	0.1	1.4	<0.02	0.04	<0.02
Copper	100	<0.02	11	30	0.35	1.6	0.06	0.75	1.7	0.06	0.05	0.1
Lead	5	<0.08	6.1	3.9	0.59	0.65	<0.08	<0.08	0.13	<0.08	<0.08	0.13
Mercury	0.2	<0.002	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver	5	<0.02	<0.02	0.13	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc	500	0.1	12	620	5100	4800	6800	23	270	850	3200	2.5
TCLP Volatiles												
Benzene	0.5	79	Not Analyzed									
All Others	Variable	All ND										
Ignitability - Reactivity - Corrosivity												
Ignitability (Flash Pt.)	140 °F	< 78 °F	Not Analyzed									
Reactivity	See 40 CFR 261.22	Cyanide <0.2 (mg/kg) Sulfide <2.0										
Corrosivity	See 40 CFR 261.23	pH 4. 12										

Notes: Shaded areas are in excess of the regulatory limit

a - Resource Conservation and Recovery Act (RCRA) (40 CFR 261. 21 - 24)

b - Units are in milligrams per liter (mg/l) unless specified otherwise.

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Table 5
PCB Analytical Results:
In-Plant Materials and Former Spill Areas
Peregrine, Incorporated - Flint Operations

Area or Matrix of Concern		Sample Location	Regulatory Limit	Result
In-Plant Construction Materials	Wood Floor Blocks	Block H-19.2	21 mg/kg [(a)]	All < 1 mg/kg
		Block D-32		
		Block F-2		
		Block ML-1.5		
		Block HJ-11.7		
	Plant Exterior Siding (Felt/Paint Exterior Coat)	Galbestos Siding	50 mg/kg [(b)]	1.3 mg/kg
Past Oil Spill Areas	Plant Floor Adjacent to 1981 Spill Near C7	Wipe 2A	10 ug/100 cm2 [(c)]	All < 5 ug/100 cm²
		Wipe 2B		
		Wipe 2C		
	Plant Floor/Containment Beneath Transformer 9	Wipe 3a	10 ug/100 cm2 [(c)]	All < 5 ug/100 cm²
		Wipe 3b		
	Secondary Containment Beneath Transformer 1A	Wipe 4a	10 ug/100 cm2 [(c)]	All < 5 ug/100 cm²
		Wipe 4b		

Regulatory Limits References:

a - MDEQ/ERD Operational Memorandum No. 14 - Industrial Direct Contact Limit
b - Toxic Substances Control Act (40 CFR 761.60)
c - Toxic Substances Control Act (40 CFR 761.125)

Table 6
Site Condition Summary List

POTENTIAL SITE CONDITIONS	SAMPLING LOCATIONS-RMT	SAMPLING LOCATIONS-GAIATECH	RESULTS
Former Drum Storage Area Along North Side of Main Plant	PFW-6; PFB-25,26,27	MW-14; SB-14,15	Groundwater sample from MW-14 contained TCE (21.3 ug/l) in excess of IDWV (5 ug/l); All other analyses <IDWV and IDCLs
Potential Chronic Leakage from Stamping Presses	PFW-10,11; PFB-13		Groundwater sample from PWF-10 contained dissolved barium (2,600 ug/l) in excess of IDWV (2000 ug/l); all other analyses < IDWV and IDCLs
Past Practices in Basement Plating ASTs	PFB-17, 18, 19, 20		All analyses < IDCLs
Abandoned Plating Waste Pipes	Pipe 1, 2, 3, 4, 5		Zinc concentration in TCLP samples from Pipes 3 & 4 (850 & 3200 mg/l) in excess of Federal Waste disposal limit of 500 mg/kg
Former Nickel and Chrome Platers Near North End of the Building	PFB-16		All analyses < IDCLs
IER Yard East of Building 63	PFW-4		All analyses < IDWV and IDCLs
Scrap Metal Storage Bins in Building 63	PFB-7, PFB-15		All analyses < IDCLs
Transformers 1A and 9	Wipes 4A, 4B; Wipes 2A, 2B, 2C		All analyses < federal hazardous waste disposal limit (50 mg/kg)
Reported Former 8000 gal Storage Tank Near Truck Bay	PFW-5	MW-4; SB-9	Groundwater sample from MW-4 contained TCE (5.3 ug/l) in excess of IDWV (5 ug/l); All other analyses < IDWV and IDCLs

Table 6 (continued)
Site Condition Summary List

POTENTIAL SITE CONDITIONS	SAMPLING LOCATIONS-RMT	SAMPLING LOCATIONS-GAIATECH	RESULTS
Former Nickel Barrel Plater Along West Edge of Press Room	PFB-12; Tank 22 Vent; Tanks 19/20 Grate; South AST, South Box Tank		Zinc concentrations in the Tank 22 Vent Box (620 mg/l), the South AST (5100 mg/l), the South Box Tank (4,800 mg/l) and Tanks 19/20 Grate (6,800 mg/l) were in excess of the federal hazardous waste disposal limit of 500 mg/l. Chromium and lead concentration in the Tool Room Air Wash are above the federal hazardous waste disposal limit of 5 mg/l.
Former Incinerator and Reported UST farm Near Powerhouse	PFW-2; PFW-9	MW-1	Lead concentration in PFW-9 (9 ug/l) is above the IDWL. All other < IDWV and IDCLs
Coal Storage Area North of Powerhouse	PFB-23, 24		All analyses < IDCLs
AST Farm Near Powerhouse	PFB-21,22		All analyses < IDCLs
No.5 and 6 Adhesive ASTs along East Side of Plant	TCLP Sample		Flash point in TCLP sample (<78°) is below 140° and benzene concentration is in excess of federal hazardous waste disposal limit of 0.5 mg/l
Wood Block Samples	D32, F2, H19.2, HJ11.7,ML-1.5		All analytical results are below the PCB federal hazardous waste disposal limit of 50 mg/kg