

J0076-22-04
April 23, 2010

Prepared For:

Springfield Redevelopment Authority
c/o Law Department
City Hall, 36 Court Street
Springfield, Massachusetts 01103
Attention: Attorney Robert Warren

**Environmental Site Assessment
Indian Orchard Business Park
Former Chapman Valve Site
Pinevale Street Property
Indian Orchard, MA
RTN: 1470**

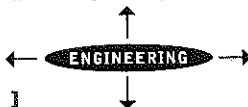
Prepared By:

O'Reilly, Talbot & Okun Associates, Inc.
293 Bridge Street, Suite 500
Springfield, MA 01103

Environmental Safety Health Geotechnical

O'Reilly, Talbot & Okun

[A S S O C I A T E S]



293 Bridge Street

Suite 500

Springfield, MA 01103

Tel 413 788 6222

Fax 413 788 8830

www.oto-env.com

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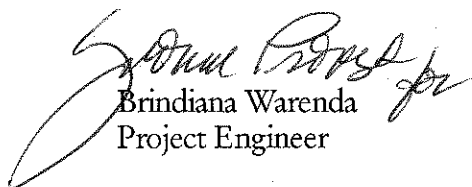
Re: Environmental Site Assessment
Indian Orchard Business Park
Former Chapman Valve Site
Pinevale Street Property
Springfield, Massachusetts

Dear Mr. Warren:


O'Reilly, Talbot & Okun Associates, Inc. (OTO) is pleased to present this Environmental Site Assessment report for the Main Factory portion of the former Crane Company (Chapman Valve) facility, located on the east side of Pinevale Street in the Indian Orchard section of Springfield. It is anticipated that this parcel will be included in the planned Indian Orchard Business Park.

If you have any questions or comments about this document, please do not hesitate to call. We appreciate the opportunity to assist you in this matter.


Very truly yours,
O'Reilly, Talbot & Okun Associates, Inc.



Brindiana Warena
Project Engineer



Michael J. Talbot, P.E.
Principal



Valerie D. Tillinghast, LSP
Project Manager

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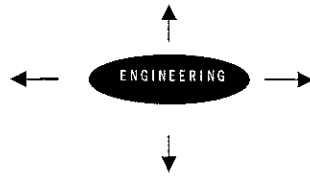
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1.0 INTRODUCTION

This report has been prepared by O'Reilly, Talbot & Okun Associates, Inc. (OTO) and presents the results of environmental investigations assessing the nature and extent of oil and/or hazardous materials in soil and groundwater at a portion of the former Chapman Valve/Crane Manufacturing site, located in the Indian Orchard section of Springfield, Massachusetts. The specific property which is the subject of this assessment is the parcel presently owned by Goodwin Realty LLC. It is located to the north of Goodwin Street and is bounded by Pinevale Street on the west and by Moxon Street on the east. A Site Locus is provided as Figure 1, while a Site Plan is provided as Figure 2. This report is subject to the Limitations attached in Appendix A.

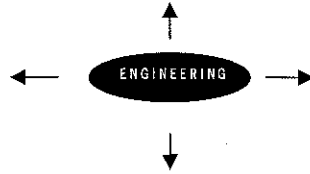
For discussion purposes, we have subdivided the property into six areas, referred to as Area Nos. 1 through 6, shown on Figure 2. These designations are strictly arbitrary and are intended to aid in the discussion of data collected during this and previous studies and to assist future property developers in focusing on information applicable to specific portions of the property. As of the date of this report, planning and future site configuration has not been established. The six parcels are approximately equal in size and are laid out in a north to south and east to west direction, with Area No. 1 being located in the northeast corner of the Site and Area No. 6 being located in the southwest corner.

1.1 SITE DESCRIPTION

The former Chapman Valve/Crane Company factory site consists of 15.95 acres of land bounded by Pinevale Street on the west, Goodwin Street on the south, Moxon Street to the east, and by land owned by OK Pet Supply and the City of Springfield on the north. Surrounding land use is primarily residential. Elevation of the property ranges from approximately 200 to 230 feet (National Geodetic Vertical Datum (NGVD) of 1929). The property is currently vacant. The former Chapman Valve buildings have been demolished. Portions of foundations and other subsurface structures remain in places. The Site is overgrown, with piles of debris and imported fill in some areas.

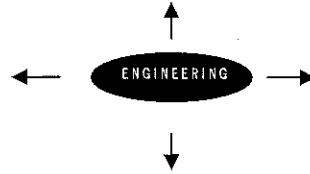
For the purposes of this report, the Site has been divided into the following six sub-areas, shown on Figure 2:

1. Area 1 is located in the northeast corner of the Site. It is bounded by Moxon Street on the east and by land owned by OK Pet Supply on the north. It is relatively flat at approximately elevation 207 feet NGVD. It is presently overgrown with small trees and brush. Approximately half the area was formerly covered by the Iron Foundry Building. The floor slabs and foundations for this building remain in place.
2. Area 2 is located in the northwest portion of the Site. It is bounded by Pinevale Street on the west. This portion of the Site is relatively flat at approximately elevation 206 feet. A large concrete slab is present where the former Spindle Room



building was located in the east central portion of the Site. Four underground storage tanks, which were used to store heating oil for the facility power house, were located in the southeast portion of this area. The former building at 121 Pinevale Street, which is owned by the City of Springfield, is not considered part of the Site. Concrete slabs for the former maintenance shop and an office building cover much of the southern part of this area.

3. Area 3 is located in the east central portion of the Site. It is bounded by Moxon Street on the east. It is relatively flat at approximately elevation 208 feet and is presently overgrown with small trees and brush. Most of this area was formerly covered by Crane Manufacturing buildings, the Iron Foundry Building to the north, and a Machine Shop to the south. The floor slabs and foundations for these buildings remain in place.
4. Area 4 is located in the west central portion of the Site. It is bounded by Pinevale Street on the west. It formerly was relatively flat at approximately elevation 207 feet. However, substantial amounts of fill were recently imported to the Site, and large fill mounds are located in the southern portion of this area. These fill mounds are approximately 20 feet high and appear to consist primarily of sandy fill, containing wood, brick, concrete, metal, and materials. Portions of Area 4 are presently overgrown with small trees and brush. Several manufacturing buildings were formerly located within this portion of the Site, including the Power House, the Pattern Shop, the Hospital, two Brass Foundry Buildings, and two Machine Shop Buildings. The floor slabs and foundations for this building remain in place. Two underground storage tanks (UST Nos. 6 and 7) were formerly located in the northwestern portion of this area.
5. Area 5 is located in the southeast portion of the Site. It is bounded by Moxon Street on the east and Goodwin Street on the south. A topographic change occurs in this area, where the elevation rises from the north to the south, from approximately elevation 210 feet at the northern edge of the area to approximately elevation 218 in the center. The southern part of this area is approximately flat at elevation 225 feet. This area formerly contained the Crane Steel Foundry and Welding Shop and the Steel Machine Shop. Two USTs (Nos. 10 and 11) were formerly located in the eastern part of this area, and six USTs (Nos. 12-17) were located in the southeastern corner.
6. Area 6 is located in the southwest corner of the Site. It is bounded by Pinevale Street on the west and by Goodwin Street on the south. A topographic change occurs in the northern part of this area, where the elevation rises from the north to the south, from approximately elevation 207 feet at the northern edge of the area to approximately elevation 218 in the center. The southern part of this area is approximately flat at elevation 220 feet. This area formerly contained the western part of the Crane Steel Foundry and Welding Shop and the Steel Machine Shop.



1.2 SITE SETTING

The Site is located in the Chicopee River drainage basin and is characterized by Zone X of the Flood Insurance Rate Map (indicating that the land would not generally be subject to flooding), as an area outside of the 500 year flood plain. Based on topography, regional groundwater flow direction would be expected to be to the north and northwest towards the Chicopee River Site. Subsurface investigations at the Site generally indicate a north/northeasterly groundwater flow below the Site (Section 4.0). No surface water bodies or wetlands are located at the Site. The nearest surface water is the Chicopee River, located approximately 1,400 feet north of the Site. Long Pond is located approximately 1,500 feet west of the Site.

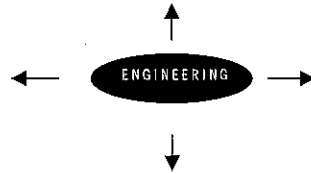
According to the on-line GIS Map for Springfield, Massachusetts (available on-line at http://maps.massgis.state.ma.us/massgis_viewer/index.htm), the Site is not located in a mapped potentially productive aquifer, a potential drinking water source area, an Interim Wellhead Protection Area (IWPA), a Zone A, or a Zone II of a public water supply well. A copy of the MassGIS priority resources map is attached as Figure 3. Officials at the Springfield Health Department indicated they have no records of groundwater supply wells on the Site or on abutting properties. Therefore, based on criteria outlined in the Massachusetts Contingency Plan 310 CMR 40.0000, the Site groundwater reporting classification is RCGW-2. The Site soil classification would be RCS-1 for release reporting, due to the presence of residential properties within 500 feet of the Site.

The GIS mapping indicates there is no Protected Open Space or rare species habitat at or abutting the Site.

2.0 SITE HISTORY

Information on historical use of the Site and vicinity was obtained from a review of historic maps and city directories available at the Connecticut Valley Historic Museum (CVHM) in Springfield, Massachusetts; from information available at the City of Springfield Assessor's Office; from prior Site reports; and from discussions with the present Site owner, Ms. Judith Bergdoll and her representative, Marlene Fleming of Michelman & Bricker P.C. A summary of information from these sources is provided below.

The Site formerly contained approximately 12 factory buildings used by Chapman Valve/Crane. Chapman Valve was a fully integrated mill which produced brass, iron, and steel valves and hydrants for the water supply industry and for other uses. In general, metal ingots of the various metals were received at the Site; these metals were then melted in furnaces and poured in molten form into molds to form the rough metal part. These parts were then machined, assembled, and finished into the final product. The foundry was fueled



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by coal and coke during the entire period of operation. Manufacturing operations started on the Site in approximately 1874 and continued until 1986.

The Site was owned by Chapman Valve Manufacturing Co. until 1959, when the entire company was acquired by Crane Company. The Site buildings contained a wide range of manufacturing operations associated with the manufacture of valves, including foundry operations, machine shops, assembly of valves, maintenance, and support services.

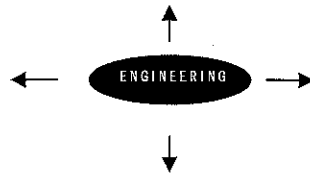
In 1948 and 1949, radioactive materials were managed in a portion of the property, within Building 23 (shown on Figure 2). According to one report (SCA, 2007) uranium rods were shipped to the Site, where they were cut and machined. A study of residual uranium contamination was conducted under the Formerly Utilized Site Remedial Action Program (FUSRAP) in the early 1990s. Elevated levels of radiation were identified in dust and building materials, and a cleanup of the area was conducted in 1994-1995 by U.S. Department of Energy (DOE) contractors. The DOE report concluded that residual radiological impacts in soil did not exceed background levels. The DOE issued a final certification docket (DOE, 2003) which concluded that the property was in compliance with radiological guidelines in effect at the time, and that future use of the Site would not produce significant radiological hazard. Based on the cleanup under a federal program, OTO did not conduct additional radiological assessment.

The locations and uses of former Site buildings are shown on Figure 2. As can be seen on Figure 2, the buildings formerly covered approximately 400,000 square feet, or about 55 percent of the Site. An underground utility tunnel traversed the Site in a north-south orientation between Buildings 25 and 48. The tunnel was reportedly approximately eight feet by ten feet in cross-section, approximately 190 feet long, and contained asbestos-insulated steam lines.

The former Site buildings were constructed starting in the mid-1800s and were present until they were demolished in 2000. Demolition involved the removal of above ground portions of the buildings only. The building floor slabs, foundations, buried utility tunnels, and at least one basement area remain. The ground surface is presently covered by building slabs or roadways, and overgrown areas of brush and small trees. During the past 10 years, construction debris has been imported onto the Site.

At least 19 underground storage tanks were formerly located on the Site. These tanks were reportedly removed at the time of facility shutdown in the 1980s. The reported size and contents of each tank are summarized in Table 1. The approximate location of the former USTs are shown on Figure 2. Information from prior environmental studies at the Site is provided in Section 4.0.

In April 1988, MassDEP listed the property on the Massachusetts Confirmed Disposal Sites List due to the presence of petroleum impacts at multiple locations on Site. Section 4.0



provides information on assessment and remediation activities previously conducted at the Site.

2.1 INFORMATION FROM OWNER

The Site is currently owned by Goodwin Realty LLC. The Secretary of the Commonwealth lists Judy Bergdoll as the resident agent and manager of that company. Ms. Bergdoll indicated at the time of the purchase of the Site by Goodwin Realty LLC, the Site buildings had been demolished and the Site was generally open and covered with pavement or concrete slabs. A previous Site owner, Crane Company, had demolished the Site buildings. Ms. Bergdoll indicated she did not know the source of the fill materials that have been deposited on the Site during recent years.

Ms. Bergdoll has not used the land for any identified purpose since she acquired the property. Her purchase was made with the intent of resale for industrial purposes.

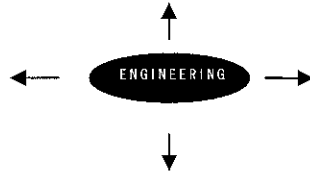
2.2 ASSESSOR'S INFORMATION

We reviewed field cards for the Site available from the City of Springfield Assessor's on-line database. The assessor's records indicate the Site includes 694,113 square feet (approximately 15.9 acres) of land identified as parcel 09755-0086. There are currently no buildings on the property, which is zoned as an industrial park. The property is listed as currently owned by Goodwin Realty LLC, which acquired the property in 2005 from Indian Orchard Property Consultants, LLC. According to Secretary of State information, the manager and resident agent of both of those companies is Judy Bergdoll of Wilbraham, Massachusetts. The Assessor's card indicates Indian Orchard Property Consultants, LLC acquired the property in 1989 from Harry Friedberg.

2.3 HISTORICAL MAP REVIEW

We reviewed historic Sanborn Fire Insurance maps for the years 1911, 1932, and 1950. No coverage of the Site was available in the 1893 Sanborn maps. Copies of relevant sections of the available maps are provided in Appendix B. Note that some of the street names changed between 1911 and 1932. For example, Pinevale and Moxon Streets were previously known as Pine and East Streets, respectively.

The Site was occupied by the Chapman Valve Manufacturing Company on each of the available maps (1911 through 1950). Properties to the east and west of the Site were residential on each date. An office building and a series of garages used by Chapman Valve/Crane were formerly located across Pinevale Street to the west of the Site. The 1932 and 1950 maps show that the Chapman Valve facility expanded to the south over time. By 1950, a Chapman Valve steel foundry building was located south of Goodwin Street, on property that had been previously undeveloped except for railroad tracks. Property to the



north of the Site was occupied by two schools, as well as by a coal yard (1911 and 1932) and later an automotive repair garage (1950).

The 1911 Sanborn map of the Site shows two buildings labeled "Foundry" on the east side of the property, one building labeled "Brass Foundry" in the center of the property, a boiler house, machine shops on the south and west, and a "Japan Room" attached to the machine shop. Japanning was a popular metal coating used during that period and involved the use of asphaltic material dissolved in naphtha or turpentine.

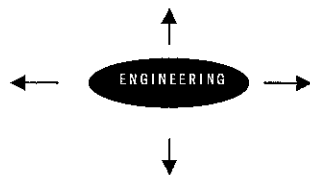
The 1932 Sanborn maps indicate the southern machine shop had been converted to a steel foundry, and additional buildings including a steel machine shop had been added to the south. The locations of coke ovens within the main foundry building were shown. A grinding room and a Babbit room had been added to the southern machine shops. Babbit metals are soft alloys typically comprised of tin, lead, copper and/or antimony. A room labeled "Wash R'm; Oil R'm 1st" had been added to the foundry building, in the central part of the property. A building formerly labeled Casting Ware House had been converted to another machine shop.

The 1950 maps indicate additions had been made to multiple buildings. The main foundry continued to be located on the eastern side of the property (Areas 1 and 3). A steel foundry spanned the southern portion of the Site (crossing Areas 5 and 6). The southernmost building on the Site was the steel machine shop. Six underground fuel oil storage tanks are shown in the southeastern corner of the property, near the intersection of Goodwin and Moxon Streets. A hardening room was identified on the western machine shop, near the intersection of Pinevale and Hampshire Streets.

In summary, the Sanborn maps show the property has been used as a foundry and metal machining facility since at least 1911. The locations of certain historic USTs and processes on the property were identified.

2.4 HISTORICAL CITY DIRECTORY REVIEW

We reviewed historic city directories at the Connecticut Valley Historic Museum. The directories were reviewed for the Site from 1871 through 1986, in approximately 5-year increments. The directories list Chapman Valve under various addresses representing the property between 1877 and 1986. The street address changed from Pine Street (now known as Pinevale Street) to Hampshire Street over time. Listings for surrounding properties were primarily residential until 1950, at which point other commercial listings were present. Between 1950 and 1986, property use in the area included building and heating supply companies, a credit union, a trailer repair facility, and a modular home company.



2.5 UNDERGROUND STORAGE TANK INFORMATION

We reviewed storage tank records for the Site and Site vicinity at the City of Springfield Fire Department. The City records include tank volume and installation or removal date, recorded by property address. Information on the locations of tanks within the property is not recorded. Installation and removal dates are not coupled; therefore, for larger properties, it is often not clear if installation and removal dates refer to the same tank. Fire Department records included the following listings:

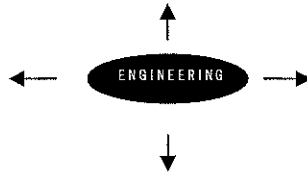
Address	Tank Volume(s)	Date	Action
165 Pinevale St.	2 x 15,000 gallon	Unidentified	Installed
225 Goodwin St.	2 x 3,000 gallon	Feb. 1987	Removed
"	1 x 6,000 gallon	"	"
"	12 x 20,000 gallon	"	"
"	4 x 25,000 gallon	"	"
"	1 x 8,000 gallon	"	"
"	2 x 15,000 gallon No. 2 oil	"	"
"	4 x 15,000 gallon No. 6 oil	"	"

We noted the 225 Goodwin Street address was historically applied to Chapman Valve properties both north and south of Goodwin Street. We believe some of the USTs in the above listing are for tanks associated with the land south of Goodwin Street, which is not part of the Site.

In 1987, ERT identified 19 out-of-service USTs at the Site (ERT, 1987). These are shown on Figure 2 as UST No. 1 through UST No. 19. A copy of ERT's Table 3-1: Tank Inventory is provided in Appendix C. UST No. 5 was a 100 gallon alcohol tank. UST No. 8 contained gasoline. The remaining tanks contained # 2, # 4 or # 6 oil, or sludge. ERT, acting on behalf of Crane, engaged Clean Harbors to remove the 19 USTs in February 1987. Evidence of a release to the subsurface was identified during UST removals from three areas: Tank 1-4 Area; Tank 6-7 Area; and Tank 10-11 Area. MassDEP was notified of those conditions. Remedial investigations were performed by ERT, as described in Section 4.1.

As described in Section 2.3, the 1950 Sanborn Fire Insurance Map identified six underground fuel oil storage tanks at the southeastern corner of the property. Those tanks, later identified as UST Nos. 12 through 17, were removed in 1987 by Clean Harbors.

Ms. Bergdoll's representative, Marlene Fleming of Michelman and Bricker, stated that Ms. Bergdoll was unaware of any underground storage tanks (USTs) remaining at the Site. Known USTs were removed by Chapman Valve prior to her acquisition of the property.



2.6 SITE HISTORY SUMMARY

In summary, the Site was occupied by a large manufacturer of metal valves from the 1870s until 1986. The property has been vacant since that time. Site manufacturing operations included: the casting of iron, steel, and brass parts; machining; welding; assembly; and finishing. Manufacturing operations were discontinued in 1986, and the above ground portions of the Site buildings were demolished in 2000. Manufacturing operations used a number of different oils and other hazardous materials (including metals, solvents, paints, and coolants). Nineteen USTs were formerly located on Site and were removed in 1987.

3.0 REGULATORY INFORMATION

We reviewed selected state information available from on-line databases and MassDEP files. In addition, we contacted officials at the City of Springfield Fire Department and Health Departments for information relevant to conditions at the Site.

3.1 LOCAL INFORMATION

We contacted the City of Springfield Health Department regarding records for the Site and Site vicinity. The records indicate that the Site and vicinity are serviced by public water and sewer service, and there are no private drinking wells within 500 feet of the Site.

The City of Springfield Fire Department had record of 26 underground storage tanks removed from the Site. The locations of USTs within the property are not identified, and some of the USTs may have been located on Crane property south of Goodwin Street. As indicated in Section 2.5, all known USTs were removed from the Site in 1987. The Site owner is not aware of current USTs at the Site.

3.2 STATE FILE INFORMATION

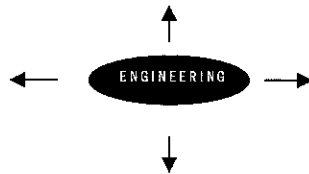
State information we reviewed included Massachusetts Geographic Information System (MassGIS) mapping of the area and MassDEP files.

3.2.1 MassGIS Mapping

We reviewed information obtained from the Massachusetts Geographic Information System (MassGIS), which is available on-line¹. We conducted an on-line review of the Massachusetts Department of Environmental Protection (MassDEP) Priority Resource Map for the Site and Site vicinity on January 4, 2010. The Site is not located:

- Within a Zone II or Interim Wellhead Protection Area for a public water supply;

¹ http://maps.massgis.state.ma.us/massgis_viewer/index.htm



- Within the Zone A of a Class A surface water body used as a public water supply; or
- Within a Potentially Productive Aquifer (PPA) that has not been excluded as a Non-Potential Drinking Water Source Area (NPDWSA).

The Massachusetts Contingency Plan (MCP) has established reporting classifications for potential releases to soil and groundwater. Based on criteria outlined in the MCP and information presented in Section 3.1, the Site groundwater reporting classification would be RCGW-2. The Site soil classification would be RCS-1 for release reporting due to the presence of residential properties within 500 feet of the Site.

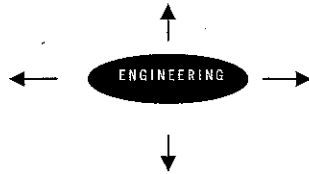
3.2.2 MassDEP Files

We reviewed the regulatory agency file present at the MassDEP office in Springfield, Massachusetts. This file includes information for the facility dating from the 1970s through 2009. Multiple environmental conditions have been identified at the Site and have been assessed under Release Tracking Number (RTN) 1-00170. The Site has been regulated under the Massachusetts Contingency Plan (MCP) since the late 1980s. Section 4.0 provides a summary of prior environmental reports for the Site.

Several statements from former employees of Crane are present in the MassDEP files and allege improper disposal of waste on the property. One employee alleged that on December 15, 1976, a release of approximately 8,000 gallons of No. 4 oil occurred while a tank was being filled. The release occurred to the ground surface near Department 40. Some of the oil reportedly entered a storm drain and discharged into the Chicopee River. The employee was allegedly directed to apply sorbent materials to the released oil, then to sweep up and dispose of release-related wastes in a concrete-sided hole where a crane had formerly been located in Department 7. The area was then reportedly covered with soil. This area was subsequently investigated (see Section 4.0). Employees also alleged that instead of performing equipment maintenance, additional oil was routinely added to leaking machines. One employee indicated that, in approximately 1975, over 350 gallons of oil per week was reportedly added to machinery in Department 7 alone. Other statements indicated that containers of waste oil would be placed on a train or truck and driven along the tracks with the spigot open, releasing the contents along the tracks.

In response to the allegations, MassDEP (then known as the Massachusetts Department of Environmental Quality Engineering) requested an assessment of the Site at the time of facility closure in 1986. Section 4.0 summarizes work performed by ERT and others in response to these conditions.

An April 27, 1999 memorandum, documenting a MassDEP reconnaissance of the Site, indicates a tunnel about eight feet high and eight feet wide contained steam pipes and ran approximately 200 feet through the center of the property. The memorandum indicates the



tunnel was to be filled with brick rubble upon completion of the remediation. Site buildings had been demolished by that time. Piles of brick, lumber, and oil-stained wood blocks (flooring) were present on site. The wooden materials were to be transported off site for disposal. Most of the monitoring wells had been destroyed during demolition activities. The Crane Company still owned the property at that time.

In response to reported petroleum releases identified during UST removals in February 1987, MassDEP issued a Notice of Responsibility to the Crane Company on March 27, 1987, and the Site was issued Release Tracking Number 1-00170. Significant environmental reports issued for the Site are listed in the references provided in Section 9 of this report.

A Completion Statement for RTN 1-00170 was received by the MassDEP on May 21, 1998. Recent information in the file (MassDEP, 2009 and EI, 2009) indicates a Response Action Outcome (RAO) is anticipated to be filed by the current owner.

4.0 SUMMARY OF PRIOR ENVIRONMENTAL INVESTIGATIONS

Prior environmental investigations have been conducted at the Site by various parties.

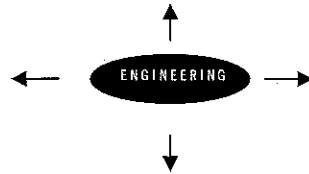
A Notice of Audit Findings/Notice of Noncompliance letter issued by MassDEP on July 1, 2003 (MassDEP, 2003) indicated the following remedial response actions had been conducted at the Site between 1986 and 1998:

- advancement of over 40 soil borings, including five locations identified as background;
- installation of 28 groundwater monitoring wells and two LNAPL recovery wells;
- collection of up to five rounds of groundwater samples from Site monitoring wells;
- analysis of soil and groundwater samples for various parameters;
- a survey of potentially PCB-containing electrical equipment remaining on Site;
- collection and off-site disposal of approximately 4,625 gallons of PCB-containing transformer oil;
- off-site disposal of over 43 tons of oil- and PCB-impacted wooden flooring;
- vacuuming and bailing an unspecified volume of LNAPL; and
- excavation and off-site disposal of approximately 2,425 cubic yards of oil-impacted soil.

A summary of information from prior reports is provided in the following sections. Selected information from prior reports, including boring logs, data tables and Site plans, are provided in Appendix C.

4.1 ERT ASSESSMENT, 1986-1988

ERT completed a Phase I Environmental Review in 1986, during which they identified transformers that could contain PCB oils and 19 out-of-service underground storage tanks



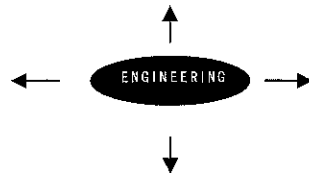
(USTs) at the Site. The UST locations are shown on Figure 2 as UST No. 1 through UST No. 19. Table 1 provides a summary of the tank locations, capacities, and contents. The 19 USTs were removed by Clean Harbors in February 1987. Petroleum releases were identified in three of the UST areas at the time of tank removal. Free product was visible on the water surface in the UST 1-4 tank grave and was removed via vacuum truck on several occasions. Oily soil was observed in the vicinity of UST 6-7 and UST 10-11.

ERT prepared a Remedial Action Plan to address the releases identified during UST removals. Their assessment included installation of 19 groundwater monitoring wells (MW-1 through MW-19), and the collection and analysis of soil and groundwater samples. Samples were analyzed for total petroleum hydrocarbons (TPH), PCBs, VOCs and/or metals. The soil samples contained TPH ranging from 231 to 4,570 mg/kg. The current S-1/GW-2,3 standard for TPH in soil is 1,000 mg/kg, which was exceeded at MW-4 (15-16.5'), MW-5 (10-11.5'), MW-7 (0-1.5'), MW-8 (1-2'), MW-9 (0.5-1.5'), MW-12 (0.5-1.5'), and MW-17 (0.5-1.5'). PCBs were not detected in the soil boring samples.

According to a MassDEP letter (MassDEP, 1988), department staff met with former Crane employees in January 1987 to discuss historic waste disposal practices at the facility. Historic practices allegedly included releasing waste oil from a 500 gallon storage tank along a length of railroad tracks on the property and in the yards of former Departments No. 7 and 48; disposal in the former location of the Dept. 7 scale of oil-soaked debris from an approximately 8,000 gallon oil spill that occurred on December 15, 1976; and release of an estimated 20,000 gallons of oil per year from leaking machinery. ERT investigated the facility grounds and did not see evidence of such widespread oil release. They did identify several locations where below-grade pits or troughs contained oil. In Building 23, an oil bath set into the floor contained approximately two feet of oil. Response actions were taken to remove the oil from the locations where it was observed.

To address the allegations of former releases along the railroad tracks, ERT installed 14 monitoring wells along the railroad alignment. Petroleum concentrations in groundwater at one well, MW-2, were elevated (24 mg/l TPH). Concentrations at the other 13 locations ranged from 2 to 10 mg/l TPH, which ERT considered typical "background" levels for industrial property. We note that the current GW-2/GW-3 standard for TPH is 5 mg/l. This was exceeded at MW-1 through MW-5 and MW-8 through MW-11 in 1987. Light nonaqueous phase liquid (LNAPL) was identified at the Site in 1986, when approximately six inches of floating product was measured in monitoring well MW-4. That well was located in Area 2, near the former UST 1-4 area.

PCBs were not detected in Site groundwater. Several metals were detected; however, those results were not confirmed by later testing and are believed to be false positives associated with the use of unfiltered samples. TPH and several petroleum-related VOCs were present in groundwater in the former UST areas.



Based on their assessment, ERT recommended installation of an oil recovery system in the UST 1-4 Area and removal of oily soil from surficial stained areas, as well as former UST areas 1-4, 6-7, and 10-11.

ENSR installed an oil recovery system in UST 1-4 Area; however, it did not function properly and was shut down shortly after installation.

4.2 CON-TEST ASSESSMENT 1991

Con-Test completed a Phase II Comprehensive Site Assessment of the Pinevale Street property in 1990-1991. Their report included: assessment of wood block flooring materials in Buildings 25 (Department 7), 40 (Department 23), and 48 (Department 48); installation of three groundwater monitoring wells (CMW-30, CMW-31S, and CMW-31D); and the collection and analysis of soil and groundwater samples. Soil samples were collected from below concrete building slabs, and from the areas of former USTs 1-4, 6-7, and 10-11.

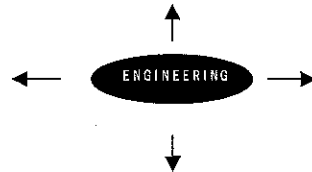
Two bedrock cores were drilled, near locations CMW-30 and CMW-31. Bedrock was identified as reddish-brown arkosic conglomerate and sandstone, and was present at a depth of approximately 20 feet below grade on the western side of the property. Boring CMW-31(S,D) is located in the northwestern corner of the property, near Pinevale Street. The depth of bedrock on the eastern side of the property was identified as five to eight feet below grade.

Con-Test collected surface soil samples from 10 foot by 10 foot grid patterns in two areas of oily staining on the property. Those areas were subsequently excavated (see Section 4.3.3); therefore, the data are not representative of current Site conditions.

Groundwater sampling by Con-Test was conducted with bailers, as was typical at the time. Samples were analyzed for VOCs by Method 624, semivolatile organic compounds (SVOCs) by Method 625, TPH, and RCRA 8 metals. Results indicated TPH was present at CMW-30 at 1.2 mg/l. Low levels of arsenic, barium and chromium were present in groundwater samples from MW-7 and MW-14. The report does not indicate these samples were filtered. Based on their age and the methodology used, groundwater analytical results from the Con-Test investigations are not considered representative of current Site conditions.

4.3 ATC ASSESSMENT 1995-1998

Between 1995 and 1998, ATC performed MCP assessment activities on behalf of Crane for the release tracked under RTN 1-00170, culminating in the submittal of a Phase II Comprehensive Site Assessment (ATC, 1998) with associated risk characterization. ATC's assessment identified seven areas of petroleum impacts to soil: ERT Area # 2; ERT Area # 3; UST 1-4 Area; UST 6-7 Area; UST 10-11 Area; and oily stained surface areas EXC-2 and EXC-3. These are discussed below.



ATC's activities were directed primarily at meeting the conditions of a waiver approval letter from MassDEP dated March 31, 1994. Release conditions that letter identified as requiring response actions included the former UST locations, the alleged disposal of waste oil along railroad tracks on the east side of the Site, and potentially large volumes of oil leaking from machinery year after year. The conditions of the waiver approval included biannual groundwater monitoring until remediation was complete and submittal of annual status reports to MassDEP. ATC prepared annual status reports for the years 1994, 1995 and 1996, and included a 1997 annual status report as part of the Phase II Comprehensive Site Assessment (ATC, 1998).

ATC's response actions included assessment and remediation activities. In September 1995, 467 tons (about 311 cubic yards) of impacted soil were removed from UST Areas 1-4, 6-7, and 10-11. An additional 1,542 tons (about 1,030 cubic yards) were removed in July 1997 and 920 tons (about 613 cubic yards) in December 1997. These activities are described in more detail in the following sections.

4.3.1 Soil Testing

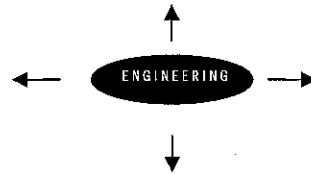
ATC performed 15 borings (B-A through B-O) across the property in October 1996. Soil samples from the borings were analyzed for VOCs, SVOCs, PCBs, and RCRA metals. Copies of ATC's data summary tables are provided in Appendix C. Samples were analyzed for VOCs, total petroleum hydrocarbons (TPH), and PCBs. No constituents were identified in soil above the applicable standards in effect at the time.

4.3.2 Groundwater Monitoring

MassDEP's waiver approval letter required biannual groundwater monitoring to be conducted, including collection and analysis of groundwater samples, as well as assessment of groundwater flow direction. ATC performed several rounds of groundwater sampling, including up to 19 site monitoring wells in each round. The samples were analyzed for VOCs, TPH, and/or PCBs. VOCs were not detected. Separate phase petroleum product was identified in three wells. Monitoring well locations were selected primarily to be downgradient of former UST areas in the southeastern and central portions of the property.

Groundwater samples were analyzed for VOCs, total petroleum hydrocarbons (TPH), and PCBs. The only constituent detected above currently applicable MCP Method 1 GW-3 groundwater standards was TPH. The current GW-3 standard for TPH is 5 mg/l; TPH was detected at 7.5 mg/l at well MW-5, located near former USTs 1-4 in Area 2.

The 1998 Phase II Report indicated contaminant concentrations in groundwater did not exceed applicable standards at that time.



ATC performed slug tests in monitoring wells MW-2, MW-13, and MW-36 to determine the hydraulic conductivity of the aquifer. Their results ranged from 0.096 to 0.336 feet per day. These values are consistent with silty to clayey sands.

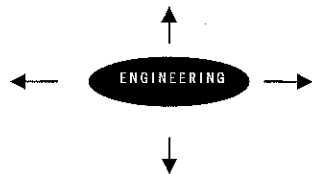
In August 1996, ATC gauged 18 site monitoring wells, using an interface probe. Based on their measurements, ATC calculated groundwater flow direction below the Site to be to the northwest or north-northwest, towards the Chicopee River. The hydraulic gradient was estimated to range from 0.03 feet per foot in the southeast portion of the property to 0.003 feet per foot near the western property line. The depth to till/bedrock below the Site was identified as approximately 21 feet.

4.3.3 UST 1-4 Area Assessment and Excavation

NAPL was detected on at least one date each in wells MW-4 and MW-5; both located near former USTs 1-4, which had previously contained No. 4 and No. 6 oil. Culvert well CW-1, in the same area, exhibited a discontinuous sheen and oily globules in October and November 1995, and January and March 1996.

In October 1996, under ATC's direction, CYN excavated test pits downgradient of the former UST area. ATC reported that black oil was observed at a depth of approximately 8.5 to 13 feet below grade, in a medium to coarse sandy material. They collected twelve soil samples, S-1 through S-12, from the perimeter of the former UST 1-4 excavation area. Three of the samples, S-1, S-3, and S-4, were analyzed for TPH and VOCs. The VOCs were analyzed by a gas chromatography method without mass spectrometry, which is not considered an acceptable analytical method by current standards due to uncertainty in compound identification. We therefore do not consider the VOC results usable for current site characterization or risk assessment. TPH results in the three samples ranged from 300 to 3,100 mg/kg, reported as No. 2 or 4 oil or diesel fuel. A detail plan prepared by ATC in January 1998 showing the locations of those samples is provided in Appendix C.

ATC installed three additional wells in the UST area in November 1996 to delineate the extent of the oil. In July 1997, CYN excavated approximately 1,540 tons (about 1,030 cubic yards) of oily soil from the UST 1-4 area and disposed of it off-site. The approximate location of this excavation is shown on Figure 2. ATC referred to this excavation as EXC-1. Soil was removed from depths of approximately 6 to 13 feet below grade. Impacts were located below the water table; therefore, dewatering was required during excavation. Separate phase product flowed into the excavation at some points. The dewatering system therefore included an oil-water separator and activated carbon canisters which the groundwater was passed through prior to discharge to the sewer. Post-excavation samples S-1 through S-6 were analyzed for TPH and PAHs. Results indicated residual TPH/PAH remained in the subsurface.



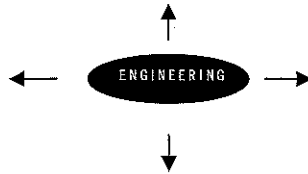
In December 1997, the excavation was extended to the south, removing 852 tons (568 cubic yards) of soil from around the concrete cistern. The final excavation was approximately 110 feet long, 60 feet wide, and 13 feet deep. The footing of the cistern on the south side of the excavation was not exposed during the excavation; therefore, petroleum impacted soil was considered unlikely to be present below that structure. Oily soil was observed in the subsurface on the east, north, and west, but further excavation could not be conducted in those directions due to the presence of structures which would have been undermined. On the west side of the excavation, visibly impacted soils remained below the utility tunnel. Footings for the tunnel were exposed at approximately ten feet below grade. Up to three vertical feet of oil-impacted soil remained below the tunnel, at locations which could not be excavated due to structural concerns. During the excavation, LNAPL was observed to be entering the excavation from beneath the tunnel. Beyond the tunnel to the west was Building 40, which has now been demolished. Petroleum may remain in soil below that building as well. ATC estimated 48 cubic yards of impacted soil may remain below structures in the UST 1-4 Area.

Following the December 1997 excavation, soil samples were collected from the excavation sidewalls and screened with a Petroflag TPH field test kit. Screening results indicated TPH remained at concentrations above 50 ppm on the southwest and east sidewalls. Confirmation samples S-7 through S-12 were analyzed for TPH analysis. EPH concentrations in soil remaining on the east sidewall exceed current S-1/GW-2,3 standards.

4.3.4 Additional Soil Excavation

Remedial soil excavation was conducted in two others areas of the Site by CYN in November 1996. Both areas had oily surficial staining confirmed by laboratory testing to contain petroleum. The excavations were performed to remove soils identified as containing greater than 500 mg/kg TPH. Approximately 100 cubic yards of oily surface soil was removed from the vicinity of an overhead crane in the northeastern corner of the Site (shown on Figure 2 as ERT Area #2). The excavation was advanced to a depth of 1.5 to 2 feet over an approximately 20 foot by 70 foot area. An additional 13 cubic yards of oily soil was removed from along the railroad tracks east of Building 10 (ERT Area #3 on Figure 2), from an approximately 18 foot by 20 foot area, one foot deep. The excavated material was transported off-site for disposal.

Additional excavations of oily soil in the southeastern portion of the property were performed by Civetti in December 1997. They removed 23 tons of soil from between a railroad spur and the scale house (EXC-2), and 45 tons of soil from outside Building 25 (EXC-3). The EXC-2 excavation measured approximately 25 feet long by 8 feet wide by 9 feet deep, and removed oil-impacted sample location B-J. EXC-3 removed soils identified as containing up to 17,500 mg/kg TPH (1988 test pit TP-3). A post-excavation soil sample from EXC-2 contained 29 mg/kg TPH. At EXC-3, a concrete vault was encountered during excavation and remains below grade in Area 5. The vault was 58 feet long, 8 feet



wide, and 5 feet deep, and was located approximately six feet below grade. The structure was scraped clean and backfilled; therefore, no confirmation samples were collected from EXC-3.

4.3.5 PCB Testing

In September 1996, ATC contracted with Standard Electric Testing Company, Inc. to conduct a survey of electric transformers and switches remaining on the property. Their work included testing oil from remaining electrical equipment for PCBs. Oil samples were collected from six transformers identified in Buildings 10 and 42, and nine pole-mounted transformers located around the property. Thirty-five samples from electrical switches in Buildings 42 and 48 were also analyzed. PCBs were reported in electrical equipment in Building 10 (Area 3 Machine Shop) and in Buildings 42 and 48 (both in Area 2). PCB concentrations of up to 80 parts per million (ppm) were reported. CYN Environmental Services removed transformers and switches, including approximately 4,625 gallons of transformer oil, from the Site in October 1996. A release of PCB oil to the floor of Building 48 was cleaned up through scarification to the regulatory level of 10 ug/100 cm².

ATC's report identified the maximum soil PCB concentration at the Site as 2.64 mg/kg in a stockpile from the UST No. 10/11 excavation at the southeastern end of the property. PCB concentrations in soil from excavations in other portions of the Site ranged from 0.03 to 0.56 mg/kg.

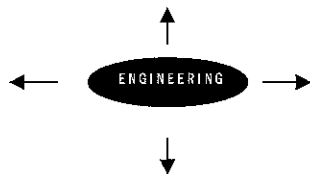
4.3.6 Hydrogeologic Setting

During a review of drainage features at the Site, ATC identified a deep drain with an oil/grease trap and a sediment trap. That feature was located near the northern limit of the Site, where the facility drain lines entered the City sewer system at reportedly 14 feet below grade (ATC, 1998).

4.3.7 Risk Assessment

ATC completed an MCP Method 3 Risk Characterization for the Site (ATC, 1998). Potential exposures evaluated included: security guard and trespasser contact with soils; construction worker contact with soil, dust, and groundwater; and residential exposure to soil, dust, and homegrown produce. That report concluded there was not an Imminent Hazard present and Site conditions posed No Significant Risk under current or foreseeable future uses.

ATC's report concluded that all identified sources of petroleum impacts to Site soil had been removed through interim measures, and the conditions of MassDEP's waiver approval letter had been met.



4.4 TETRA TECH NUS SITE INSPECTION, 2000

Tetra Tech NUS (NUS) conducted a site inspection of the property in 1999-2000 on behalf of the Region I U.S. Environmental Protection Agency (EPA). At the time of the NUS site reconnaissance, many of the Site buildings had been demolished, monitoring wells had been abandoned, and asbestos abatement was being conducted in the subsurface utility trench. Piles of oily wooden floor blocks were observed on the eastern corner of Building 25 (in Area 5), and oily staining of surface soil was noted in the north-central portion of the Site within the footprint of the former iron foundry.

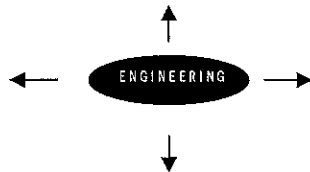
Sample collection and analysis was not conducted as part of the NUS study. Based on an assessment of prior studies by others and comparison to "background" locations, NUS identified the following constituents of concern at the Site soil: PAHs, arsenic, barium, cadmium, chromium, lead, mercury, selenium, and PCBs. The constituents of concern identified for groundwater were: methylene chloride, arsenic, cadmium, chromium, copper, lead, mercury, zinc, and PCBs. We note that ATC eliminated methylene chloride as a constituent of concern in their risk characterization due to the fact that it was also detected in the method blank. Methylene chloride is a common laboratory contaminant.

4.5 ATC AUDIT RESPONSE, 2003

MassDEP issued a Notice of Audit Findings/Notice of Noncompliance (NON) to Crane on July 1, 2003, based primarily on the 1998 Phase II report. The NON identified several areas in which MassDEP felt additional assessment was required. ATC conducted supplemental investigations in August-October 2003, and issued a Post-Audit Completion Statement and Addendum Risk Characterization (ATC, 2003b).

ATC also issued a memorandum regarding the condition of the utility tunnel (ATC, 2003a). MassDEP had identified several locations where damage to the tunnel had caused openings which posed a physical hazard. In response, ATC oversaw the backfilling of three shallow openings with rock and cement, and construction of concrete slabs over eight deep openings above the tunnel.

To characterize metals in soil conditions at the Site, ATC collected 14 shallow soil samples and had them analyzed for Priority Pollutant 13 metals. Analytical results for the samples (BF-1, BF-2, B-2 to B-18, IMS-1 and IMS-2) are provided in Appendix C on a table titled Table 2: Summary of Soil Analytical Data: Metals prepared by ATC. Elevated lead concentrations, 641 to 1,370 mg/kg, were reported at B-10, B-11, and BF-2, in the six to twelve inch depth range at each location. Other metals detected above current MCP Method 1 standards included: cadmium at B-8, B-11, and BF-2; chromium at B-10 and B-11; nickel at B-8, B-10, B-11, BF-1, and BF-2; and zinc at BF-2.



ATC collected two soil samples from an area of black surface soil staining. The samples were submitted for EPH and microscopic coal ash analysis. Results indicated several polycyclic aromatic hydrocarbons (PAHs) were present. However, the sample contained a moderate loading of anthracite coal and coal ash; therefore, ATC concluded the PAHs were exempt from reporting under the MCP.

Soil gas testing was conducted at six points (SV-1 through SV-6) to assess the potential for vapor intrusion into overlying buildings. MassDEP had indicated that historic petroleum concentrations in groundwater from monitoring wells MW-8 and MW-27 (both in current Area 2) indicated the potential for vapor intrusion. PID screening results at locations SV-1, SV-3, SV-4, and SV-6 ranged from 20 to 29 ppmv, exceeding the MassDEP screening levels. Soil gas samples from those four locations were therefore analyzed for air-phase petroleum hydrocarbons. Results (provided on Table 4 in Appendix C) were below MassDEP published levels indicative of the potential for significant vapor migration. ATC therefore concluded that the vapor migration pathway at the Site was not significant.

During a Site walkover, MassDEP had identified oily staining at the surface in soil on the eastern side of Building 10 and at several locations within the footprint of Building 23. The locations within Building 23 were assumed to be associated with historic machinery, and may be cutting oil and/or hydraulic oil. ATC oversaw removal of oily material from two locations in Building 10 and one location in Building 23. These locations are shown on a plan titled "Addendum Risk Characterization" prepared by ATC, provided in Appendix C. Following removals, the remaining concrete slabs were power-washed.

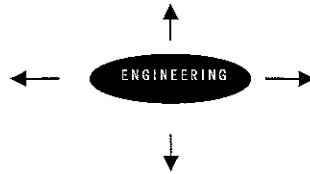
The risk characterization provided in the post-audit report concluded that petroleum hydrocarbons in the subsurface did not pose the potential for significant migration into foreseeable future buildings, and a condition of No Significant Risk had been achieved for the Site.

4.6 OTO ASSESSMENT, 2006

In July 2006, OTO observed 18 backhoe test pits performed through the building floor slabs to depths between 5 and 15 feet to evaluate potential releases of oil and/or hazardous materials beneath the buildings. The test pits were performed by BGL Corporation and were observed by an OTO engineer. Test pits locations are shown on Figure 2.

The concrete floor slabs were observed to vary between approximately 6 to 16 inches in thickness. Oil saturated wood blocks were present over the concrete slab in some limited areas. In addition, outside the former building footprints, the surface layer consists of 4 to 6 inches of asphalt over a concrete slab.

Oil impacted soils were encountered directly below the concrete slab in three test pits (TP-3, TP-12, and TP-13) in the former Machine Shop (Building 10), in the central portion of the



Site. The layer consisted of between 6 to 12 inches of black sand and gravel, which exhibited a petroleum odor. No positive photoionization detector (PID) readings were recorded in samples collected of the stained gravel or underlying soil.

Approximately 20 inches of fill, consisting of a mixture of brick, coal ash, and slag, was encountered in TP-14. This test pit was located in the east central portion of the Site within the footprint of the former machine shop.

Test pit TP-15 was located in the vicinity of two former underground storage tanks (USTs 10 and 11) in the southeast portion of the Site. The test pit contained approximately seven feet of fill underlain by a concrete pad, which is apparently associated with the former USTs. No petroleum odors, staining, or PID readings were encountered in this test pit.

At test pit TP-18, soils below a depth of eight feet exhibited a petroleum odor. The soils were stained gray and exhibited a PID screening measurement of 123 parts per million by volume (ppmv). This test pit was located in the former brass foundry, located in the west central portion of the Site.

Based upon Site observations, six soil samples were submitted to Con-Test Analytical Laboratory (Contest) for analysis. Selected samples were analyzed for extractable or volatile petroleum hydrocarbons (EPH/VPH), polychlorinated biphenyls (PCBs), and RCRA 8 metals. Laboratory data are summarized in Tables 2 and 3.

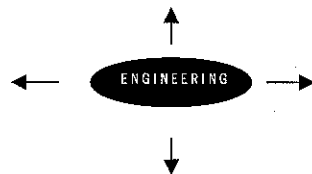
Several EPH compounds and PCBs were detected above reportable concentrations in the shallow sample from test pit TP-3. As noted above, a layer of black sand and gravel, which exhibited a petroleum odor, was observed just below the concrete floor slab in test pits TP-3, TP-12, and TP-13.

Lead and arsenic were detected above reportable concentrations in the shallow sample from test pit TP-16. This sample was collected below the concrete slab of the former Iron Foundry in the northeast portion of the Site.

Various EPH and VPH compounds were detected above reportable concentrations in the 10 to 12 foot sample from TP-18. This sample exhibited a petroleum odor and elevated PID reading.

4.7 WJF RELEASE ABATEMENT MEASURE, 2006-2009

On behalf of the current property owner, Goodwin Realty, Inc., WjF Geoconsultants, Inc. (WjF) conducted a Release Abatement Measure (RAM) and filed a RAM Completion Report in February 2009. The RAM was conducted to address the presence of lead, arsenic, PCBs, and petroleum above Reportable Concentrations at various locations on Site (see Section



4.6). MassDEP was notified of the conditions and indicated response actions should be conducted under the previously issued RTN.

In December 2006, WjF performed soil borings TPB-1 through TPB-16 to delineate the extent of the conditions, which had been identified during OTO's 2006 investigation. PCBs in the vicinity of test pit TP-3 were successfully delineated through borings TPB-11 through TPB-16. They installed five groundwater monitoring wells (MW-201 through MW-205) in the vicinity of former Buildings 4, 5, and 11. Consistent with prior consultants, WjF found the groundwater flow direction below the Site to be northeasterly. A copy of their groundwater contour plan dated May 12, 2008 is provided in Appendix C.

Test pits performed in the western portion of Building 10 found petroleum-impacted soil remains in the subsurface in the vicinity of test pits TP-3, TP-12 and TP-13, as delineated by borings TPB-12B, TPB-14 and TPB-16. The locations of these borings and test pits were removed during a RAM excavation conducted in June 2007. Additional excavation was conducted to the west in March 2008. The locations of those test pits, borings, and excavations are shown on a Site plan prepared by WjF in 2009, and provided in Appendix F. A total of 161 tons (approximately 100 cubic yards) of oil-impacted soil and concrete rubble were transported off-site for disposal.

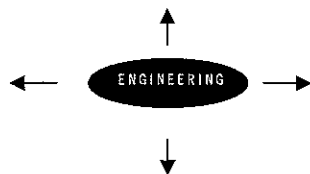
Environmental Insight (EI), on behalf of the current owner, submitted a proposed risk characterization approach to MassDEP on June 24, 2009. EI indicated they were working with WjF towards an RAO for the Site. Their proposed risk characterization approach included the use of both old and new analytical data to represent current Site conditions. A MassDEP memorandum dated August 11, 2009 indicates WjF is in the process of completing a Response Action Outcome (RAO) for this Site. In their memo, MassDEP approved the limited risk characterization approach presented by EI, with the conditions that data be reviewed for adequacy and a complete risk characterization (rather than another addendum) be completed.

5.0 SUBSURFACE INVESTIGATIONS AND TESTING

We conducted a subsurface testing program to evaluate whether oil or hazardous materials are present in Site soil or groundwater at levels of regulatory significance. Our assessment activities included collection and analysis of soil samples from borings and test pits, installation of groundwater monitoring wells, and collection and analysis of groundwater samples. These activities are described in the following sections.

5.1 SOIL BORINGS AND MONITORING WELL INSTALLATION

Between September 22 and October 28, 2009 an OTO engineer observed the advancement of 43 soil borings (CM-15 through CM-55; CM-23A and CM-40A) at the Site. Fourteen of the borings (CM-17, CM-22, CM-25, CM-34, CM-36, CM-37, CM-38, CM-39, CM-41, CM-



42, CM-43, CM-45, CM-50 and CM-53) were completed as groundwater monitoring wells. The wells were constructed with 2-inch diameter PVC well screens placed to span the groundwater table. The annular space between the well screen and borehole wall was backfilled with filter sand, and a bentonite layer was placed above the screened interval to provide a surface seal. Details of monitoring well construction and subsurface materials encountered are presented on the boring logs in Appendix D.

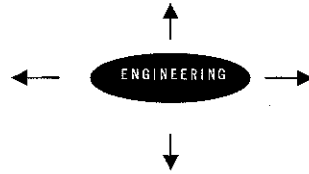
The borings were advanced by Seaboard Environmental Drilling of Chicopee, Massachusetts, using hollow-stem auger techniques. Soil samples were logged by OTO and screened for total organic vapors using a photoionization detector (PID) with a 10.6 eV lamp. The PID was calibrated to isobutylene and set to a response factor of 0.6 to read as benzene.

Borings were advanced to depths ranging from 4 to 34.5 feet below grade. In some cases, the borings penetrated remaining concrete building foundations. Groundwater was generally encountered at depths ranging from six to ten feet below grade across the Site but was deeper (17 feet below grade) in the southwestern portion of the Site (Area 6), where the grade rises steeply.

Upper materials encountered in the borings consisted primarily of two to twelve feet of sandy fill material underlain by sand and gravel. Fill included coal, ash, brick, concrete, asphalt, and wooden materials. The sand and gravel unit ranged from approximately seven to twelve feet thick and was underlain by very dense red-brown till. In some locations, such as along the eastern sides of Areas 3 and 5, the till was present at shallow depths (starting from one to four feet below grade) and was overlain by just a few feet of sandy fill. In central portions of the Site, the till unit was encountered beginning at depths of 8 to 27 feet below grade, with the deeper till located in the northern portion of the property. Auger refusal presumed to be on bedrock was encountered at depths of 7.5 feet (CM-32 in Area 3, on the east side of the property) to 34.5 feet (CM-15 in Area 1). Boring logs are included in Appendix D.

5.2 TEST PITS

On November 12, 2009, BGL Corporation of Agawam, Massachusetts excavated seven test pits (OTP-1 through OTP-7) on Site. Test pit locations are shown on Figure 2. The excavations were performed primarily to observe fill materials present in above-grade stockpiles on Site and in the subsurface utility tunnel. The stockpiled material reportedly came from an off-site source and was imported to the property in recent years. The nature of the fill was unknown. Similarly, the utility tunnel that traverses the property has been backfilled in places. Test pits in the tunnel were performed to observe the nature of the fill used and to identify asbestos insulation, if still present on the abandoned steam lines.



Test pit excavations were observed by an OTO environmental scientist. Our observations are documented on test pit logs provided in Appendix F. Large amounts of fill material were observed, including brick, concrete blocks, concrete chunks with reinforcing bar, and ash. Building slabs and other subsurface concrete structures were encountered at several locations. Six to eight inch diameter cast iron pipes were observed at several locations inside what is believed to have been the utility tunnel. Insulation was not observed on the pipes. Asbestos in Site media is the subject of a separate report.

Three additional test pits were conducted in the vicinity of a box truck located in a debris pile on the western side of the Site. The truck appears to have been abandoned on Site, then partially buried by sandy fill materials. During our investigations, the box truck contained miscellaneous debris including plywood, vinyl siding, ceramics, one empty drum, and one drum partially filled with liquid. There was a solvent odor inside the trailer. To assess the possibility of a solvent release to the surrounding soils, three soil samples were collected, one each from the east, west, and below the trailer (samples BT-E, BT-W, and BT-B, respectively). The soil samples were collected from immediately below the Building 23 concrete slab.

5.3 SOIL PILES

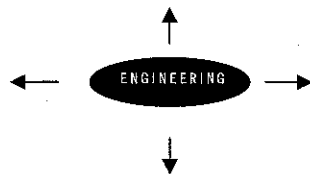
Multiple soil/debris piles are present on the Site and are reportedly imported fill brought to the property in recent years. The source of the material could not be identified. Three soil samples (DP-1 through DP-3) were collected from debris piles on the western side of the property for analysis as described in Section 5.4. The material in the piles was primarily sand, with fill materials including bricks, concrete, and other rubble.

5.4 SOIL ANALYSES

Soil samples were collected during soil borings and test pit excavations. Soil testing performed during this program included field screening with a PID and laboratory testing for parameters indicative of constituents of concern at the Site, as described in the following sections.

5.4.1 PID Screening

The soil samples were logged by an OTO environmental scientist and screened in the field for VOCs, using a TEI Model 580B PID. The PID provides a semiquantitative indication of total VOCs in a sample. The samples were collected into containers with headspace into which volatile compounds could migrate. The containers were agitated and then allowed to develop for a minimum of five minutes. The headspace was then screened with the PID, and the highest reading measured by the PID was recorded. Screening results are presented on the borings logs in Appendix D.



PID readings were nondetect in most of the samples collected from the Site. Borings in which soil samples had significant non-zero readings included: CM-22 (13-19 feet); CM-23 (7-15 feet); CM-25 (11-17 feet); CM-38 (9-15 feet); and CM-43 (10-17 feet). The highest PID readings were at CM-22, which had a headspace reading of 136 parts per million by volume (ppmv) in the 17-19 foot sample, and CM-43, which had a 131 ppmv reading for the 10 to 12 foot sample. CM-22 was performed through the slab of Building 25, in Area 6. CM-43 was performed through the slab of Building 5, in Area 4.

The three debris pile samples (DP-1 through DP-3) had PID readings of zero.

Sample BT-E, collected from the east side of the abandoned box truck, had a PID reading of 61 ppmv. Samples BT-W and BT-B had PID readings of zero.

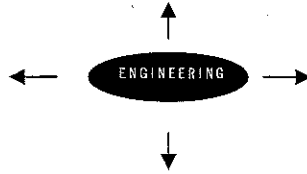
5.4.2 Laboratory Analyses

Selected soil samples from the borings and test pits were submitted under chain-of-custody to Con-Test Analytical Laboratory (Con-Test) of East Longmeadow, Massachusetts where they were analyzed for EPH, VPH, PCBs, semi-volatile organic compounds (SVOCs) by EPA Method 8270, and metals analyses. Soil analytical data are summarized in Tables 4 through 6. Analytical results are discussed below; copies of the laboratory reports are included in Appendix E.

Petroleum Hydrocarbon Fractions and Target Analytes

Two petroleum hydrocarbon fractions (VPH C9-C10 aromatics and EPH C9-C18 aliphatics) and related target analytes (acenaphthylene and/or 2-methylnaphthalene) were detected at concentrations above RCS-1 standards in three soil samples: CM-22 (15-17 feet), CM-38 (11-13 feet), and CM-43 (10-12 feet). Boring CM-22 was located in the central portion of the former Steel Machine Shop (Building 25) on the southern portion of the Site. Boring CM-38 was performed immediately downgradient of former UST No. 6-7, near Pinevale Street. Boring CM-43 was performed in the Brass Foundry, on the western side of the Site.

The constituents detected in these three samples are consistent with a No. 2 fuel oil release. These samples were collected from greater than 10 feet below grade, in sand and gravel interpreted as native. Fill materials such as ash were not observed in these soils. The EPH and VPH detections therefore appear to be associated with a petroleum release(s). Each of these samples exhibited a PID reading on the order of 100 ppmv. As shown on the boring logs, the impacts appear to be localized within the water table smear zone, based on significantly lower PID readings at deeper and shallower depths. This indicates the borings are likely not placed within the release locations, but that petroleum migrated to these locations along the water table.



A significant amount of petroleum testing has been conducted during previous environmental studies at the Site. Our EPH/VPH testing was therefore limited to those locations that may represent concentrations not consistent with prior investigations.

Of the eight test pit soil samples analyzed for EPH, one (BT-E) contained significant levels of petroleum in the EPH and VPH ranges. The EPH C9-C18 aliphatic concentration at this location was 9,800 mg/kg; the Reportable Concentration for this constituent is 1,000 mg/kg.

Five of the eight test pit soil samples contained PAHs above Reportable Concentrations, while EPH aliphatic and aromatic fractions were not present at significant concentrations in those samples. This pattern is typical of ash, rather than petroleum, as a source. The test pit logs (TP-4, TP-6, TP-8, DP-1 and DP-2) indicate a significant amount of debris was encountered at these locations.

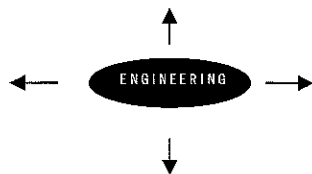
Volatile Organic Compounds

One soil samples collected from a tunnel test pit (TP-6) and three from the debris piles near the trailer (BT-B, BT-E, and BT-W) were analyzed for volatile organic compounds (VOCs). These samples were selected for analysis based on the observation of an abandoned trailer containing drums and a VOC odor inside the trailer. The VOC samples were preserved in water for low level analysis and methanol for high level analysis. VOCs were not detected in these soil samples.

Metals

In a 2003 audit letter, MassDEP indicated they considered previous assessment of metals in soil at the Site inadequate. As discussed in Section 4.5, ATC had an additional 14 soil samples from the Site analyzed for metals to address MassDEP's concern. However, given the Site's size and history, we felt this was an area requiring significant further assessment. We therefore submitted 40 soil samples from borings and seven from test pits at the Site for analysis of metals suites. Several metals were detected at the Site at concentrations exceeding applicable RCS-1 reportable concentrations, as described below.

Barium and cadmium were detected above their respective RCS-1 standards in three of the 52 samples tested: CM-40 (0-2'), CM-53 (0-2'), and CM-54 (0-2'). At locations CM-53 and CM-54, the lead concentrations also exceeded the RCS-1. These three borings are located in relatively close proximity to one another, in the vicinity of former UST Nos. 10 and 11, in Area 5. Borings CM-53, -54, and -55 were performed to delineate the impacts initially detected at CM-40. Boring logs for these locations each indicate the shallow material was primarily mulch and red brick. A remedial excavation was conducted in this area in 1995; therefore, shallow materials in the area are fill. At locations CM-53 and CM-54, samples from the 2 to 4 foot depth were also analyzed and contained barium, cadmium, and lead well



below the standards. The impacts therefore appear to be limited to the upper two feet of material and are possibly associated with mulch or brick.

Lead was present at 550 mg/kg at CM-39 (0-2') within the footprint of the Machine Shop, Building 8, in Area 4. The RCS-1 Reportable Concentration for lead in soil is 300 mg/kg. Other metals analyzed in this sample were below RCs.

Cadmium was detected above the RCS-1 at location CM-53 (1-3'), in the southern portion of Area 4.

Chromium was detected above the 30 mg/kg RCS-1 standard in two samples, with the highest concentration (550 mg/kg) reported at CM-46 (1-3 feet). The 30 mg/kg standard applies to the hexavalent form of chromium, which is typically not found naturally. A 1,000 mg/kg RCS-1 standard applies when it can be demonstrated the chromium present is not in the hexavalent form. Sample CM-46 (1-3') was therefore analyzed for hexavalent chromium. As indicated in Table 5, the hexavalent chromium concentration in that sample was 1.7 mg/kg. Four other soil samples were also analyzed for hexavalent chromium, with similar low to nondetect results. As such, we conclude that the chromium concentrations in Site soil are below reportable concentrations for trivalent and hexavalent forms.

Metals were not detected above the RCS-1 in the seven test pit soil samples.

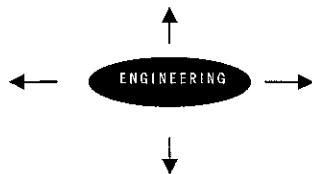
Polychlorinated Biphenyls

PCBs were not detected in the 22 soil samples analyzed for these potential contaminants.

5.5 GROUNDWATER ANALYSES

In October and November 2009, OTO collected groundwater samples from 19 monitoring wells on the Site. Fourteen of the wells were recently installed by OTO; five previously existed, including MW-35. Four of the prior wells could not be identified at the time of sample collection and were therefore labeled "Existing-1" through "Existing-4" for tracking purposes. The four unidentified wells were subsequently identified as WJF's recently installed wells MW-204, MW-205, MW-201, and MW-202, respectively. The locations of these wells are shown on Figure 2.

The samples were collected using low flow groundwater sampling techniques, which included monitoring of groundwater elevation, pH, specific conductance, temperature, dissolved oxygen (DO), and oxidation-reduction potential (ORP) while groundwater was removed with a surface peristaltic pump. Field screening measurements are summarized on Table 7 and were typical of groundwater in industrial areas. Dissolved oxygen levels were low, which may indicate microbiological activity associated with degradation of petroleum constituents in the subsurface. The water withdrawal was maintained at a rate low enough



that significant drawdown was not observed in the wells. After the monitored parameters had stabilized, samples were collected into pre-preserved sampling bottles. Groundwater sampling logs documenting the field measurements, sample bottles, and preservatives used are provided in Appendix G.

The groundwater samples were submitted to Con-Test Analytical Laboratory where they were analyzed for volatile and extractable petroleum hydrocarbons (VPH/EPH), volatile organic compounds (VOCs) by EPA Method 8260, and RCRA 8 metals. Groundwater analytical data are summarized in Table 8; laboratory reports are attached in Appendix G.

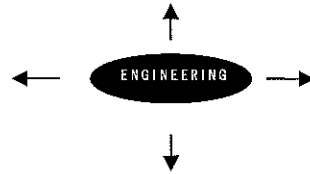
5.5.1 Petroleum Hydrocarbons and VOCs

As shown on Table 8, EPH constituents were detected above the applicable RCGW-2 Reportable Concentrations at two locations, CM-38 and CM-43. These two wells are both located in the western central portion of the Site, in Area 4. Well CM-38 is located immediately downgradient of former USTs 6 and 7, which were removed in 1987. A slight sheen was observed on that groundwater sample at the time of collection. EPH constituents were not detected at significant concentrations in wells CM-37 (adjacent to former USTs 1-4) or CM-41 and CM-53 (located near former USTs 10 and 11). VPH constituents, which are typically indicative of gasoline or fresh fuel oil releases, were not detected at concentrations of regulatory significance in Site groundwater. The VOCs detected in Site groundwater were not present at significant levels and were primarily compounds associated with petroleum products.

5.5.2 Metals

Metals were detected at levels exceeding RCGW-2 reportable groundwater concentrations at five monitoring well locations. Lead was present at or above the RCGW-2 (0.01 mg/l) at four locations, CM-38 (0.01 mg/l), CM-43 (0.025 mg/l), CM-45 (0.016 mg/l), and CM-53 (0.01 mg/l). Cadmium was identified in well Existing-2 at 0.008 mg/l, exceeding the RCGW-2 of 0.004 mg/l. Metals concentrations in groundwater are sometimes false positives associated with suspended soil/sediment particles. Optimally, low flow sampling results in clear samples collected with nominal disturbance of the surrounding medium; therefore, they are not filtered following collection. The groundwater sampling records (Appendix G) indicate the samples from CM-38, CM-43, CM-45, and CM-53 were cloudy, while the Existing-2 sample was clear.

In our opinion, the metals concentrations in groundwater are not associated with a condition likely to require remedial actions. The concentrations are relatively low. Resampling with field filtration may support a finding that the metals were associated with suspended sediments, rather than a release condition. Groundwater is not used for drinking purposes in this area. The only potential exposure location identified for groundwater is in the nearest surface water body, when groundwater discharges to surface water. At this Site, the nearest



surface water body is the Chicopee River, located 1,400 feet to the north. In our opinion, migration and discharge of impacted Site groundwater to surface water at significant concentrations is not likely.

5.6 SUMMARY OF REPORTABLE CONCENTRATION EXCEEDENCES

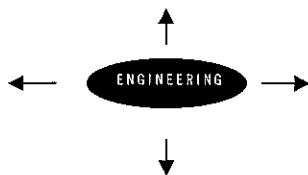
The applicable reporting categories for the Site are RCS-1 for soil and RCGW-2 for groundwater. Exceedences of Reportable Concentrations were detected at 13 locations across the Site. The following table provides a summary of these conditions.

Potentially Reportable Detections by Location

Reportable Condition No.	Sample Location	Constituents >RCS-1 in Soil	Constituents >RCGW-2 in Groundwater
RC-1	BT-E, DP-1	petroleum	N/A
RC-2	CM-22	petroleum	none
RC-3	CM-38	petroleum	petroleum, lead
RC-4	CM-39	lead	None
RC-5	CM-40, CM-53, CM-54	barium, cadmium, lead	N/A
RC-6	CM-43	petroleum	petroleum, lead
RC-7	CM-45	none	lead
RC-8	CM-52	cadmium	
RC-9	DP-2	polycyclic aromatic hydrocarbons	N/A
RC-10	MW-205	none	cadmium
RC-11	OTP-4	polycyclic aromatic hydrocarbons	N/A
RC-12	OTP-6	polycyclic aromatic hydrocarbons	N/A
RC-13	OTP-8	polycyclic aromatic hydrocarbons	N/A

In addition to these reportable conditions, the present Site owner (Goodwin Realty LLC) is addressing two reportable conditions at other locations (as are discussed in Section 4.7). These release locations are located around test pit TP-3 in Area 4 and around test pit TP-16 in Area 1.

Of the 13 potentially reportable conditions identified by OTO and summarized above, four involve petroleum products in soil/groundwater, three involve heavy metals in soil, three involve heavy metals in groundwater, and four involve polycyclic aromatic hydrocarbons in soil.



Six of the seven conditions associated with petroleum and heavy metals (presented above) in soil appear to be reportable under the Massachusetts Contingency Plan (MCP). RC-3 is located downgradient of former tanks Nos. 6 and 7, which were removed in 1987 and addressed by the Crane Company as part of facility closure. The detection of petroleum in well CM-38 could therefore be construed to be covered by the Waiver Completion Statement prepared by ATC on behalf of Crane. If this were the case, no further response actions would be required for RC-3. However, the MassDEP may not agree with this interpretation, since ATC did not generate groundwater quality data in this area of the Site. Since the detection in groundwater at location RC-3 was above the MCP GW-2 standard, we recommend additional work be performed to demonstrate the concentrations detected would not result in a significant risk to future building occupants (a condition that was not considered in the existing waiver completion submittal).

As was discussed above, the elevated detections in heavy metals in groundwater (RC-3, RC-6, and RC-9) may not constitute a reportable condition, since these metal detections may be attributable to sediment in the water samples. The collection of additional samples from these wells is recommended, with analyses for total and dissolved metals.

Polycyclic Aromatic Hydrocarbons were detected above reportable conditions at four locations (RC-9, RC-11, RC-12, and RC-13). These detections may be attributable to the presence of coal ash in the soil. If this is the case, these detections may be subject to reporting exemptions contained in the MCP. The analysis of soil samples from these locations for coal and coal ash content is recommended.

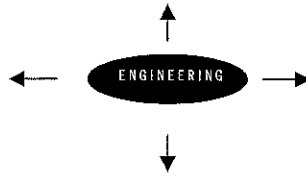
The locations of these conditions are shown on Figure 4.

6.0 SUMMARY AND CONCLUSIONS

Environmental Site Assessment activities were conducted for the approximately 15.9 acre parcel of land in Indian Orchard owned by Goodwin Realty LLC and formerly occupied by the Crane Company/Chapman Valve facility. The assessment consisted of: a review of Site history and past investigations at the Site; a review of regulatory agency files; conversations with the Site owner and local officials; the collection and analysis of soil and groundwater samples; and preparation of this report. A summary of our findings and conclusions is presented below.

6.1 SITE USE HISTORY

The Site was formerly occupied by the Chapman Valve/Crane Company factory, which operated at the Site from approximately 1874 to 1986. The factory included approximately twelve buildings which were used as machine shops, iron, brass and steel foundries, and associated maintenance, power house, and office areas. An underground utility trench housing steam lines was located between Buildings 25 and 48. Most of the Site buildings



were demolished in 2000. The Site has been vacant since that time and is currently owned by Goodwin Realty LLC.

During its operation, the foundry was fueled by coal and coke. Significant quantities of oil and other hazardous materials were used in Site operations. At least 19 underground storage tanks, most containing petroleum, were previously located on Site and were removed in 1987. Past employees of the Crane Company alleged improper disposal of wastes occurred on Site, including petroleum releases to the ground surface and releases from leaking equipment during factory operations.

6.2 PRIOR SITE INVESTIGATIONS AND REMEDIATION

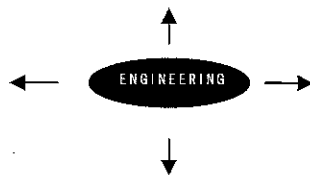
Multiple environmental conditions have been identified at the Site since the 1980s and have been assessed under Release Tracking Number (RTN) 1-00170.

Releases identified at the Site included petroleum in shallow soils along the eastern side of the property and petroleum in subsurface soils in the vicinity of former underground storage tanks Nos. 1-4, 6-7, and 10-11. Response actions conducted at the Site have included:

- the removal and off-site disposal of PCB oils from transformers and other electrical equipment;
- the excavation and off-site disposal of a cumulative total of over 2,400 cubic yards of petroleum impacted soil from eight locations on Site; and
- the collection and analysis of soil and groundwater samples from across the Site.

The excavation in the UST Nos. 1-4 Area was limited by the presence of building foundations and the underground utility tunnel. Impacted soil is known to remain below structures in that area. ATC estimated approximately 50 cubic yards of impacted soil remained beyond the limits of that excavation.

The Site is a transition site under the MCP, as it was listed with MassDEP prior to the creation of the current regulatory framework. A Completion Statement was filed for the Site in May 1998. While the Completion Statement would typically be the final document needed to "close" a site under the MCP, at this Site, additional release conditions were identified following submittal of that document. At MassDEP's direction, supplemental investigations were performed under the existing RTN. Correspondence in MassDEP files indicates they anticipate submittal of a Response Action Outcome (RAO) report to satisfy MCP requirements for the Site.



6.3 OTO INVESTIGATIONS

OTO investigations included a review of Site history and prior investigations, collection and analysis of soil samples from borings and test pits, installation of groundwater monitoring wells, and collection and analysis of groundwater samples. Samples were analyzed for petroleum constituents, PCBs, volatile and semi-volatile organic compounds, and metals. This report does not address asbestos which may remain in Site media and is the subject of a separate report.

For the purposes of evaluating the regulatory significance of concentrations in Site soil and groundwater, we have compared results to MCP Reportable Concentrations (RCS-1 for soil, RCGW-2 for groundwater). The property is already listed with MassDEP due to previously reported releases; therefore, concentrations detected above MCP Reportable Concentrations (RCs) are not necessarily reportable if they are consistent in nature and location with previously identified conditions.

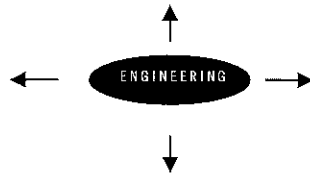
PCBs, VOCs, and non-petroleum SVOCs were not detected in Site soil or groundwater at concentrations which exceed MCP Reportable Concentrations. Constituents which were detected at level above Reportable Concentrations are discussed below for soil and groundwater.

6.3.1 Soil Conditions

Petroleum constituents including aliphatic and aromatic hydrocarbons and polycyclic aromatic hydrocarbons (PAHs) were detected in soil and groundwater samples, particularly in the vicinity of monitoring wells CM-38 and CM-43. Well MC-38 is downgradient of the UST Nos. 6-7 area in which soil excavation was conducted due to petroleum impacts, and indicates residual petroleum is present in that area. The results at this location could reasonably be considered consistent with conditions identified in Crane's Waiver Completion Statement, and therefore do not required further response actions.

The debris piles (samples DPDP-1 and DP-2) contained PAHs at levels exceeding RCs. These levels are moderate and would likely be considered consistent with a condition of No Significant Risk using a Method 3 Risk Characterization. The PAHs may also be exempt from reporting if coal ash is identified at these locations.

Petroleum constituents were identified in two areas not previously identified as impacted. Location CM-22, performed through the Building 25 slab in Area 6, contained petroleum fractions slightly above the RCS-1 standard. The concentrations present would be consistent with a condition of No Significant Risk under a Method 3 Risk Characterization. However, additional delineation should be conducted in this area to determine the extent of the condition.



The highest petroleum concentrations detected in soil during our investigations were at BT-E, near an abandoned box truck in Area 6. The truck contained miscellaneous building supplies, an empty drum, and a drum partially filled with liquid. The EPH concentrations at that location are approximately ten times the RCS-1 and half of the MCP Upper Concentration Limits. The release was shallow (immediately below the slab) and was not detected at nearby sample locations BT-B and BT-W. This is therefore likely a localized condition, possibly from release of drum contents, rather than more widespread historic releases from machinery in the building. Additional delineation and possibly a limited excavation should be conducted at this location.

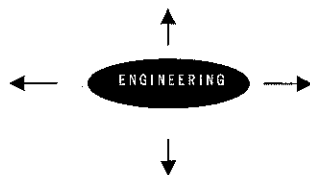
6.3.2 Groundwater Conditions

Site groundwater contained petroleum constituents above RCGW-2s at locations CM-38 and CM-43, where soil impacts were also identified. Cadmium exceeded the RCGW-2 at one location (MW-205), and lead was exceeded at four locations (CM-38, CM-43, CM-45 and CM-53). The wells with lead exceedences are not proximate to one another, but are at widespread locations across the Site. We recommend resampling and analysis of groundwater from these locations, which may indicate the metals detections are the result of suspended solids rather than dissolved contaminants. If the metals detections are confirmed, they could likely be addressed under a Method 2 or Method 3 Risk Characterization. Groundwater at this location is not a current or potential drinking water source; therefore, the only potential exposure route that would be evaluated for metals in groundwater is aquatic environmental receptor contact following discharge to a surface water body. The nearest surface water body is approximately 1,400 feet away; therefore, this exposure route is not a concern.

One constituent, C9-C18 aliphatics, was detected in groundwater at a concentration that exceeds the MCP Method 1 GW-2 standard at one location, CM-43, in Area 4. Those standards are developed to be protective of indoor receptors who may be exposed when volatile constituents migrate from the subsurface into overlying structures. There are currently no buildings on Site; therefore, this is not a completed exposure pathway at the present time. However, if the property is redeveloped as planned, evaluation of the potential for subsurface vapors to migrate into a new building should be conducted. Based on the presence of petroleum in soil at this location, a limited excavation may serve the dual purposes of remediating soil and groundwater.

6.4 IMPACTS OF RELEASES ON FUTURE DEVELOPMENT

Regardless of the possible submittal of an RAO for the Site, petroleum impacted soils remain at the Site. Even if an RAO is achieved, if future redevelopment and/or construction activities occur within the boundaries of the Disposal Site and involve excavation and relocation of petroleum-impacted soils, proper soil management will be



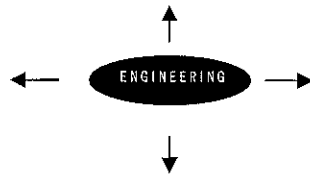
required pursuant to 310 CMR 40.0032 of the MCP. MassDEP regulations place specific requirements and restrictions on the excavation and relocation of petroleum-impacted soil. Re-use on site may be conducted, but soils may not be moved to a location where they would degrade conditions. Management may include soil testing, on-site reuse, and/or off-site disposal at an appropriate facility. When and if redevelopment within the Disposal Site limits is considered, we recommend you consult with a Licensed Site Professional to evaluate soil management options.

6.5 ESTIMATED COST OF FUTURE RESPONSE ACTIONS

As is summarized above, it is our opinion that additional response actions are required at 13 locations. In addition, additional response actions are required at two locations where releases were previously identified but a Response Action Outcome has not yet been achieved by the property owner. Some of the 13 locations identified by OTO may not be ultimately reportable and subject to the MCP, dependent on the results of additional analyses proposed below. Future response actions would likely include:

- The collection and analysis of additional soil and groundwater samples to evaluate the lateral extent of contaminants;
- The collection and analysis of groundwater samples for total and dissolved metals from three locations to confirm previous detections above reportable concentrations;
- The collection and analysis of samples from four locations for coal and coal ash content;
- Reporting of the confirmed releases to the MassDEP;
- The excavation and off site disposal of petroleum and metal impacted soils from four locations. It is estimated that a total of 300 cubic yards will be excavated;
- The completion of a Method 3 Risk Characterization; and
- Completion of a Response Action Outcome Report.

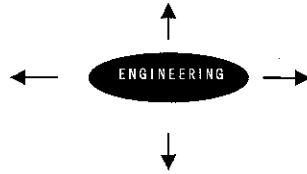
We anticipate that a single risk characterization and Response Action Outcome report will be required for the Site. Anticipated response costs to achieve compliance on the remaining release conditions are as follows:



Area	Proposed Response Actions	Estimated Cost
RC-1	Delineate extent of soil impact, localized soil excavation (assume 100 cy), Method 3 risk assessment, RAO	\$20,000
RC-2	Delineate extent of soil impact, Method 3 risk assessment, RAO	\$15,000
RC-3	Consider petroleum in groundwater consistent with waiver completion; resample groundwater for total and dissolved lead; assume that condition will not be reportable, document with MassDEP	\$5,000
RC-4	Delineate extent of soil impact, localized soil excavation (assume 100 cy), Method 3 risk assessment, RAO	\$20,000
RC-5	Delineate extent of soil impact, localized soil excavation (assume 50 cy), Method 3 risk assessment, RAO	\$15,000
RC-6	Resample groundwater for total and dissolved metals; assume that condition will not be reportable	\$1,500
RC-7	Resample groundwater for total and dissolved metals; assume that condition will not be reportable	\$1,500
RC-8	Delineate extent of soil impact, localized soil excavation (assume 50 cy), Method 3 risk assessment, RAO	\$15,000
RC-9	Perform microscopic analysis on soil; assume that condition will not be reportable due to coal/ash	\$1,000
RC-10	Resample groundwater for total and dissolved metals; assume that condition will not be reportable	\$1,000
RC-11	Perform microscopic analysis on soil; assume that condition will not be reportable due to coal/ash	\$1,000
RC-12	Perform microscopic analysis on soil; assume that condition will not be reportable due to coal/ash	\$1,000
RC-13	Perform microscopic analysis on soil; assume that condition will not be reportable due to coal/ash	\$1,000
WJF	Method 3 Risk Assessment and RAO Report	\$7,000
	TOTAL:	\$105,000

We assume that the work conducted by WJF will adequately delineate the previously-identified conditions which Goodwin Realty LLC has responded to, but that final completion of work in those areas will include risk characterization by OTO.

Please note these estimates are preliminary and actual costs may vary, based upon the result of the additional delineation activities proposed. Until the risk characterization is complete, we cannot determine whether an Activity and Use Limitation will be required to achieve a condition of No Significant Risk. It is possible that an AUL will be required in one or more



sub-areas of the Site. The condition most likely to require an AUL is metals in soil, which pose a risk to residential receptors, particularly through the produce ingestion pathway. The limitations that would likely be required in such an AUL would include no residential or agricultural use of the property.

7.0 LIMITATIONS

Our Environmental Site Assessment activities were performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographic area. Our findings and conclusions must not be considered as scientific certainties, but rather as our professional opinion, concerning the potential significance of the limited data obtained during the course of our study. We do not and cannot represent that the Site contains no hazardous material or oil, or that the Site is free from latent conditions not observed in our assessment. Our report is subject to the additional Limitations contained in Appendix A.

This assessment and report was prepared on behalf of and for the exclusive use of the Springfield Redevelopment Authority for the purpose of rendering an opinion as to the presence of oil or hazardous materials in Site soil and groundwater subject to requirements of M.G.L. Chapter 21E and 310 CMR 40.0000. This report shall not, in whole or in part, be disseminated or conveyed to any other party. No other party may rely upon this report (or any part thereof) without the prior written consent of O'Reilly, Talbot & Okun Associates, Inc.

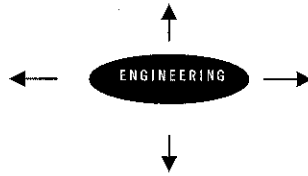
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Pinevale Street
Springfield, Massachusetts

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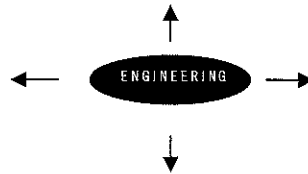
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O'Reilly, Talbot & Okun

[A S S O C I A T E S]

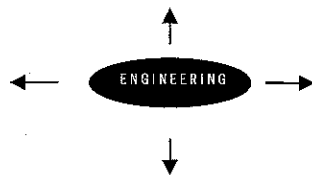


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Pinevale Street
Springfield, Massachusetts

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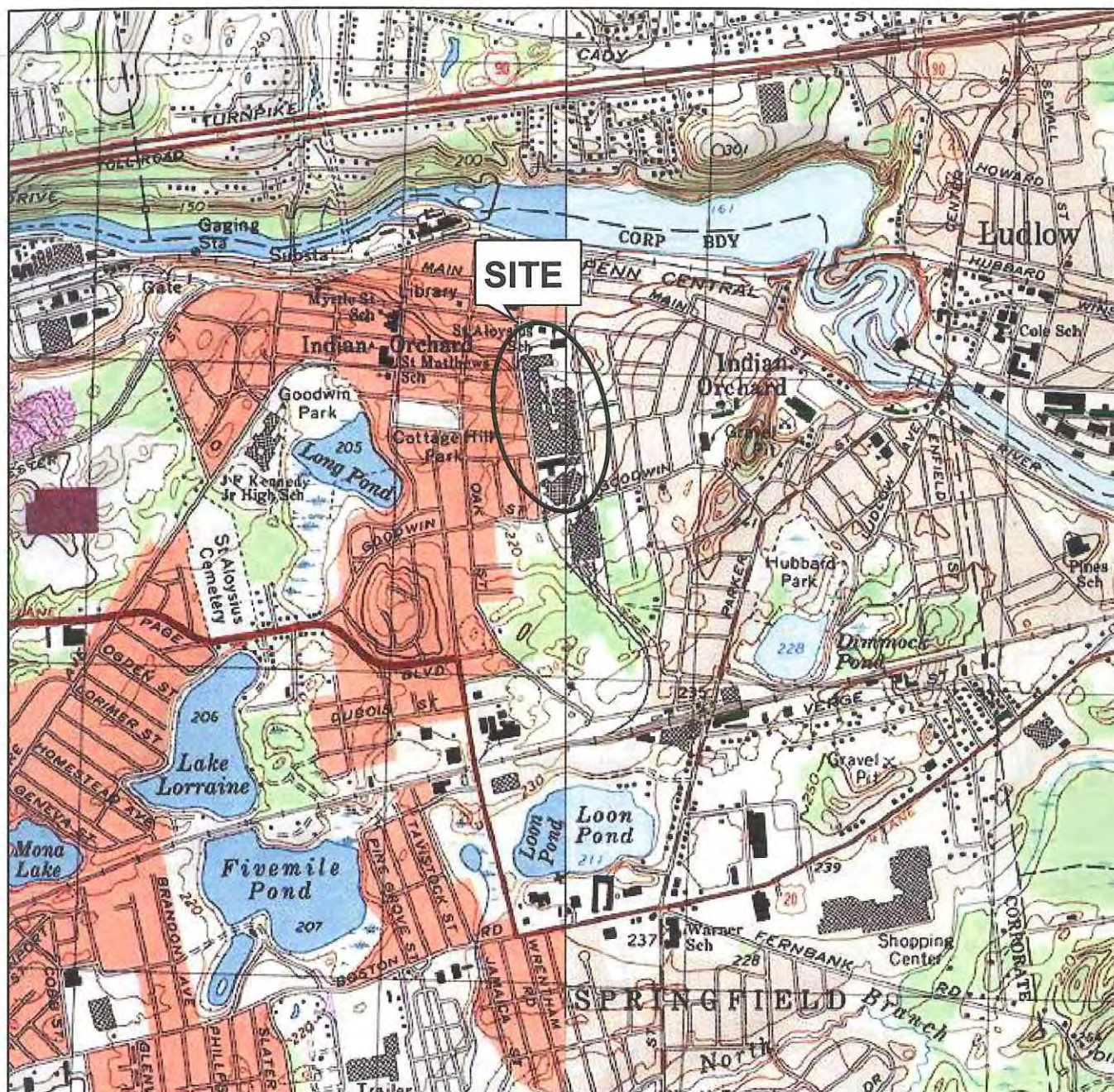
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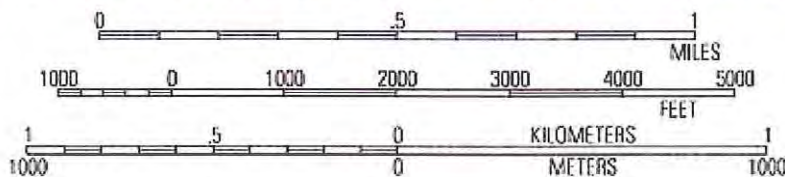
9.0 LIST OF ACRONYMS

AST	Above ground Storage Tank
AUL	Activity and Use Limitation
BMP	Best Management Practices
CMR	Code of Massachusetts Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability ACT
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability ACT Information System
EPA	U.S. Environmental Protection Agency
EPH	Extractable petroleum hydrocarbons
ESA	Environmental Site Assessment
FUSRAP	Formerly Utilized Sites Remedial Action Plan
LSP	Licensed Site Professional
MassDEP	Massachusetts Department of Environmental Protection
MassGIS	Massachusetts Geographic Information System
MCP	Massachusetts Contingency Plan
MGL	Massachusetts General Laws
MGP	Manufactured gas plant
NGVD	National Geodetic Vertical Datum
NHESP	Natural Heritage & Endangered Species Program
NOI	Notice of Intent
NPL	National Priority List
OHM	Oil and/or Hazardous Materials
OTO	O'Reilly, Talbot & Okun Associates, Inc.
PAHs	Polycyclic aromatic hydrocarbons
PCBs	Polychlorinated biphenyls
RAO	Response Action Outcome
RC	Reportable Concentration
RCRA	Resource Conservation and Recovery Act
RTN	Release Tracking Number
SVOC	Semivolatile Organic Compound
TPH	Total Petroleum Hydrocarbons
UST	Underground Storage Tank
VOC	Volatile Organic Compound
VSQG	Very Small Quantity Generator
WPA	Wetlands Protection Act



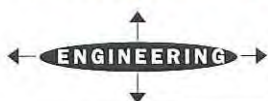
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 Map Version: 1969
 Current as of: 1975

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[ASSOCIATES]



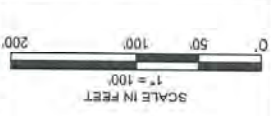
Pinevale Street Property
 Springfield, Massachusetts

SITE LOCUS

November, 2009

Figure 1

DESIGNED BY: VBT
 CHECKED BY: M/T
 DATE: OCTOBER 13, 2009
 DRAWN BY: CDA
 REV: JANUARY 2010/CDA
 O'REILLY, TALBOT & OKUN ASSOCIATES
 223 WINDSOR STREET
 SPRINGFIELD, MA 01106
 PHONE: 413-232-2222
 FAX: 413-232-2222
 EMAIL: OFFICE@TO&O.COM

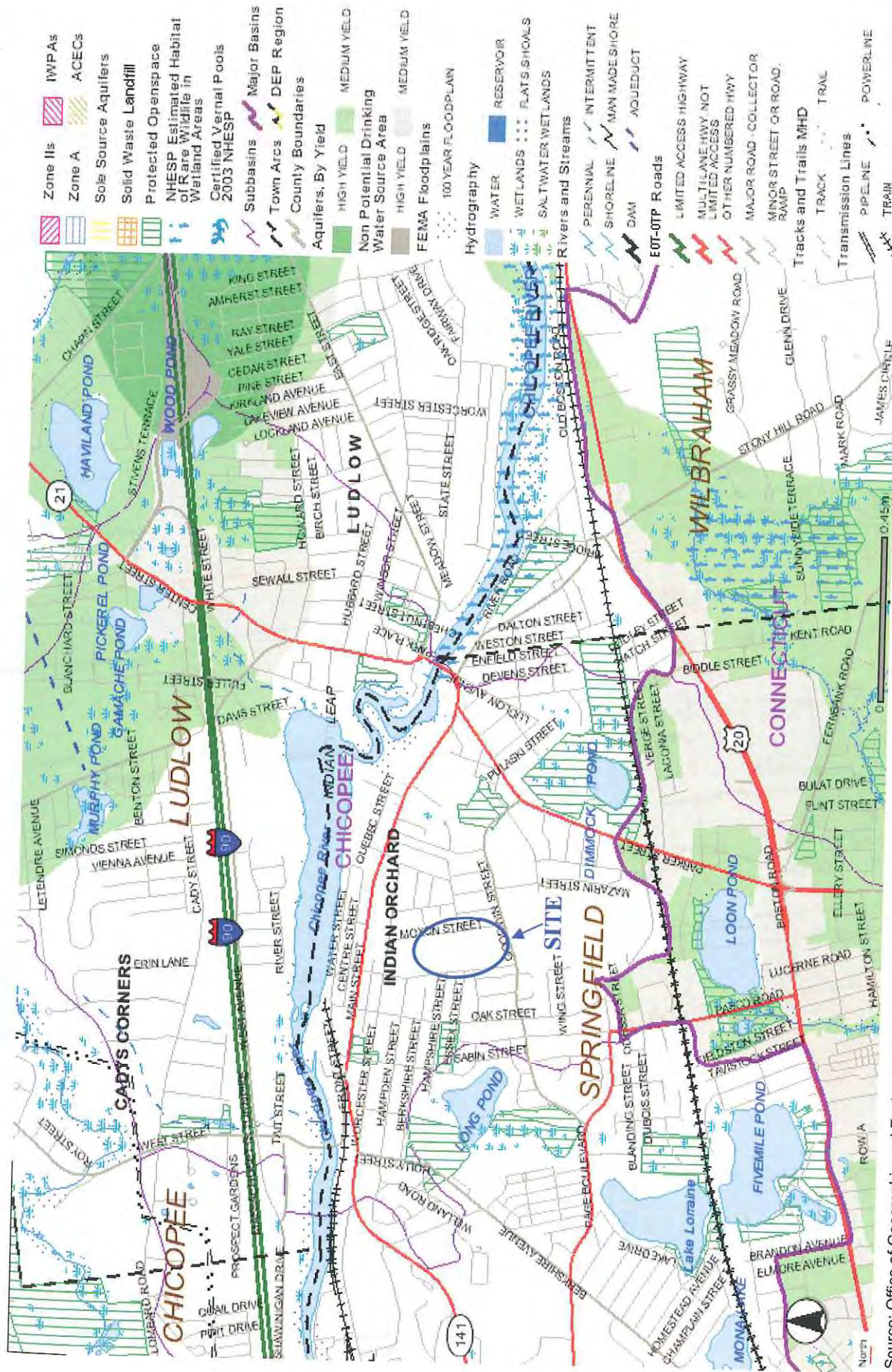


FORMER CRANE COMPANY
 SPRINGFIELD, MASSACHUSETTS
 SITE PLAN
 PINEVALE STREET PROPERTY

PROJECT No.
 J0076-22-04
 FIGURE No.
 2



- NOTES:
- THIS PLAN WAS DEVELOPED BY REFERRING TO EXISTING PLANS, ELECTRONIC DATA SENT TO OT, FIELD OBSERVATIONS, AND TO TAPED MEASUREMENTS (WHEN POSSIBLE) TAKEN FROM EXISTING SITE FEATURES. THE FOLLOWING EXISTING PLANS WERE USED AS REFERENCE IN THE DEVELOPMENT OF THIS PLAN:
 - "INTERIM MEASURES SOIL EXCAVATION AREAS AND SOIL BORING LOCATIONS" BY ATC ASSOCIATES INC., DATED 01/29/98
 - "FOUNDRY WASTE" BY CON-TEST INC., DATED 11/96 (REV. DATE 02/02)
 - IT IS IMPORTANT TO NOTE THAT ALL DATA IS SHOWN AS APPROXIMATE. SITE FEATURES, SAMPLE LOCATIONS, ETC. ARE ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD(S) USED IN DEVELOPING THIS PLAN.



Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs on-line mapping, 1/4/2010

**O'REILLY, TALBOT & OKUN
ASSOCIATES, INC.**

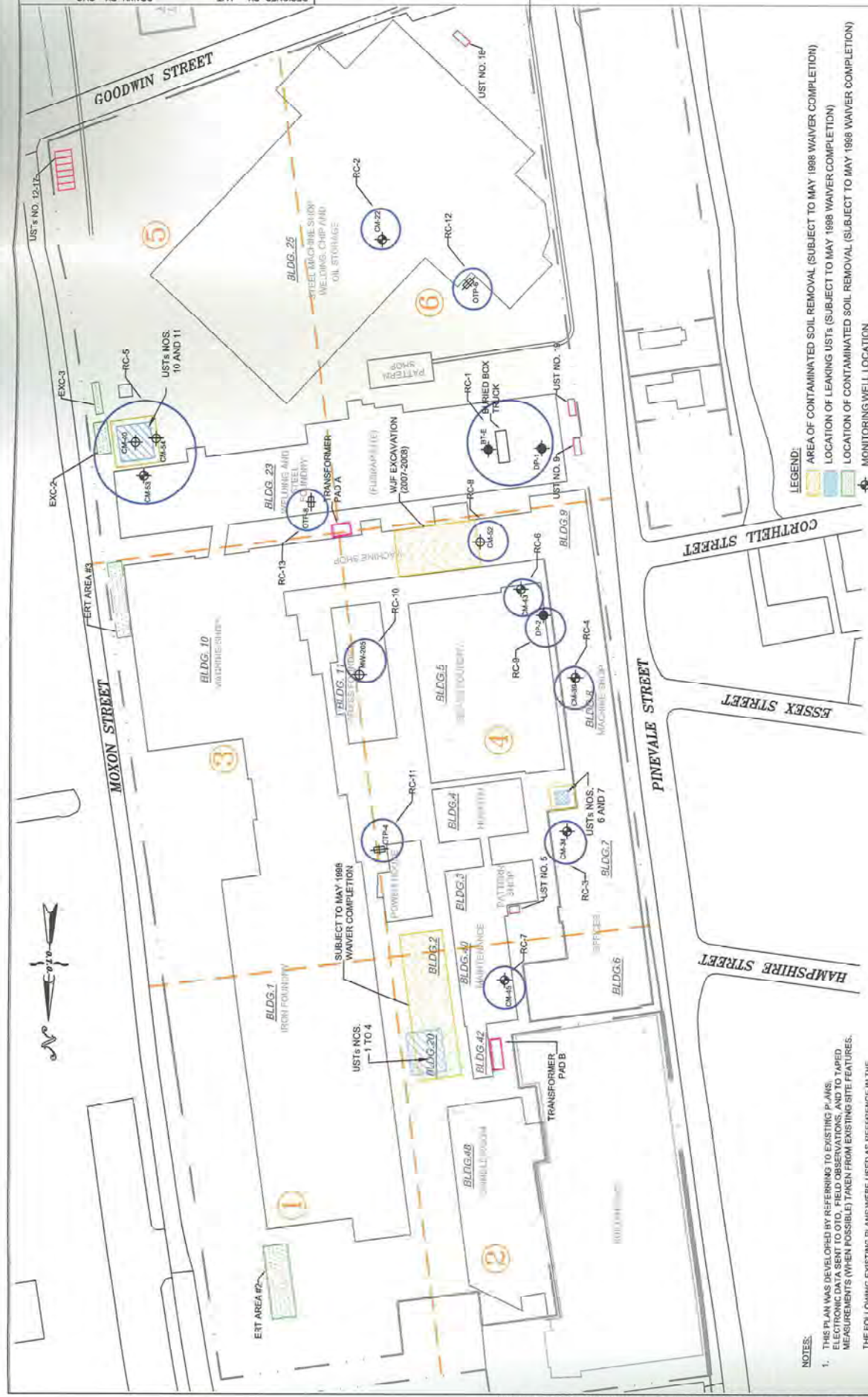
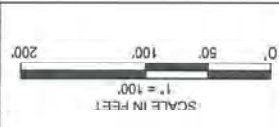
Job No. 0076-22-04

**FORMER CHAPMAN VALVE SITE
PINEVALE STREET
SPRINGFIELD, MASSACHUSETTS**

**DEP PRIORITY
RESOURCE MAP**

DATE: JANUARY 2010

FIGURE NO.: 3



- LEGEND:**
- AREA OF CONTAMINATED SOIL REMOVAL (SUBJECT TO MAY 1988 WAIVER COMPLETION)
 - LOCATION OF LEAKING USTs (SUBJECT TO MAY 1988 WAIVER COMPLETION)
 - LOCATION OF CONTAMINATED SOIL REMOVAL (SUBJECT TO MAY 1988 WAIVER COMPLETION)
 - MONITORING WELL LOCATION
 - TEST PIT LOCATION
 - DEBRIS PILE SAMPLE LOCATION
 - POTENTIAL REPORTABLE CONDITION LOCATION

- NOTES:**
- THIS PLAN WAS DEVELOPED BY REFERRING TO EXISTING P.A.M.S. ELECTRONIC DATA SENT TO QTO, FIELD OBSERVATIONS, AND TO TAPED MEASUREMENTS (WHEN POSSIBLE) TAKEN FROM EXISTING SITE FEATURES. THE FOLLOWING EXISTING PLANS WERE USED AS REFERENCE IN THE DEVELOPMENT OF THIS PLAN:
 - "INTERIM MEASURES SOIL EXCAVATION AREAS AND SOIL BORING LOCATIONS" BY ATC ASSOCIATES, INC., DATED 01/26/98
 - "FOUNDRY WASTE" BY CON-TEST, INC., DATED 11/90 (REV. DATE 02/92)
 - IT IS IMPORTANT TO NOTE THAT ALL DATA IS SHOWN AS APPROXIMATE. SITE FEATURES, SAMPLE LOCATIONS, ETC. ARE ACCURATE ONLY TO THE DEGREE IMPARTED BY THE METHODS USED IN DEVELOPING THIS PLAN.

Table 1
Underground Storage Tank (UST) Summary
Former Chapman Valve Site
Pinevale Street, Springfield

UST No.	Location	Capacity	Inches of Product	Contents
1	Old Power House	25,000 gallon	47	No. 4 oil
2	Old Power House	25,000 gallon	91	No. 4 oil
3	Old Power House	25,000 gallon	13	No. 6 oil
4	Old Power House	25,000 gallon	65	Water/sludge
5	Pattern Storage	100 gallon	Unknown	Alcohol
6	Brass Foundry #1	3,000 gallon	46	No. 2 oil
7	Brass Foundry #2	3,000 gallon	76	No. 2 oil
8	Essex and Pinevale Lot	650 gallon	8	Gasoline
9	Dept. 40	8,000 gallon	Unknown	No. 2 oil
10	New Power House #1	20,000 gallon	13	No. 4 oil
11	New Power House #2	20,000 gallon	11	Water/sludge
12	Dept. #7 Hill #1	20,000 gallon	94	No. 2 oil
13	Dept. #7 Hill #2	20,000 gallon	6	Water/oil
14	Dept. #7 Hill #3	20,000 gallon	6	Water/oil
15	Dept. #7 Hill #4	20,000 gallon	60	No. 6 Water/sludge
16	Dept. #7 Hill #5	20,000 gallon	6	No. 6 Sludge
17	Dept. #7 Hill #6	20,000 gallon	6	No. 6 Sludge
18	Dept. #7 Ship.	3,000 gallon	0	0
19	Dept. 40	8,000 gallon	Unknown	No. 2 oil

NOTES:

1. These 19 USTs were removed in 1987. Product contents and thickness measured prior to removal.

Table 2
Soil Analytical Results: Test Pits, 2006
Extractable and Volatile Petroleum Hydrocarbons (EPH/YPH) & PCBs
Concentrations in mg/kg
Factory Parcel / Pinevale Street
Former Chapman Valve/Crane Company

Sample Location:	TP-3	TP-7	TP-9	TP-14	TP-16	TP-18	MADEP Ash Fill Background	RCS-1 Standard	UCLs
Depth (feet):	0.6-1	1-2	1-2	1-2	2-4	10-12			
Date Collected:	06/26/2006	06/26/2006	06/26/2006	07/26/2006	07/26/06	06/26/2006			
PID Reading:	0.0	0.0	0.0	0.0	0.0	123.0	NA	NA	NA
Volatile Petroleum Hydrocarbons									
C5-C8 Aliphatics						26.2	NA	100	5,000
C9-C12 Aliphatics						193	NA	1,000	20,000
C9-C10 Aromatics						277	NA	100	5,000
YPH Target Analytes									
Benzene						<0.067	NA	30	9,000
Ethylbenzene						0.66	NA	500	10,000
Methyl tert-butyl ether						<0.067	NA	100	5,000
Naphthalene						5.84	NA	500	10,000
Toluene						<0.067	NA	500	10,000
Xylenes (total)						0.80	NA	300	10,000
Extractable Petroleum Hydrocarbons									
C9-C18 Aliphatics	<303		<33.6			1,520	NA	1,000	20,000
C19-C36 Aliphatics	9,320		<33.6			877	NA	2,500	20,000
C11-C22 Aromatics	1,790		<33.6			792	NA	800	10,000
EPH Target Analytes									
Naphthalene	13.3		<0.2			3.4	1	500	10,000
2-Methylnaphthalene	8.3		<0.2			4.5	1	500	10,000
Acenaphthylene	54.7		<0.2			3.3	1	100	10,000
Acenaphthene	19.2		<0.2			5.3	2	1,000	10,000
Fluorene	23.9		<0.2			6	2	1,000	10,000
Phenanthrene	616		<0.2			2	20	100	10,000
Anthracene	154		0.2			0.4	4	1,000	10,000
Fluoranthene	459		0.3			0.8	10	1,000	10,000
Pyrene	429		0.3			0.4	20	1,000	10,000
Benzo(a)anthracene	184		0.3			0.1	9	7	3,000
Chrysene	145		0.7			<0.2	7	7	400
Benzo(b)fluoranthene	104		2.1			<0.2	8	7	3,000
Benzo(k)fluoranthene	117		<0.2			<0.2	4	70	10,000
Benzo(a)pyrene	115		0.3			<0.2	7	2	300
Indeno(1,2,3-cd)pyrene	71.1		0.8			<0.2	3	7	3,000
Dibenz(a,h)anthracene	11.2		<0.2			<0.2	1	0.7	300
Benzo(g,h,i)perylene	56.1		0.7			<0.2	3	1,000	10,000
Polychlorinated biphenyls (PCBs; mg/kg)									
Aroclor 1254	2.05						NA	2	100

- NOTES:
1. Concentrations in mg/kg (parts per million) on a dry weight basis.
 2. "<" indicates not detected; value is sample-specific quantitation limit.
 3. MCP Method 1 soil standards from 310 CMR 40.097(5)(6).
 4. "UCLs" = Upper Concentration Limits, from 310 CMR 40.099(7). "NS" indicates no standard.
 5. Technical Update: Background Levels of
 6. "PID" = Photoionization detector soil headspace measurement in parts per million.
 7. Values shown in bold exceed Method 1 S-1/GW-3 standards.
 8. "—" indicates not analyzed for this parameter.

Table 3
Soil Analytical Results: Test Pits, 2006
Inorganic Analytes
Concentrations in mg/kg
Factory Parcel / Pinevale Street
Former Chapman Valve/Crane Company

Sample Location:	TP-3	TP-7	TP-9	TP-14	TP-16	MADEP Ash Fill Background	RCS-1 Standard	UCLs
Depth (feet):	0.6-1	1-2	1-2	1-2	2-4			
Date Collected:	06/26/2006	06/26/2006	06/26/2006	07/26/2006	07/26/06			
Arsenic	6.19	19.0	3.13	<2.74	22.7	20	20	200
Barium	39.8	203	26.7	72.2	42.2	50	1,000	10,000
Cadmium	0.33	<0.31	0.73	<0.28	<0.31	3	2	300
Chromium (IV or total)*	19.1	8.09	26.5	24	16.2	40	30	2,000
Lead	80.7	163	30.5	21.9	1040	600	300	3,000
Mercury	0.027	0.089	<0.009	0.562	0.054	1	20	300
Selenium	<5.05	<6.08	<5.59	<5.47	<6.04	1	400	8,000
Silver	<0.51	<0.61	<0.56	<0.55	<0.61	5	100	2,000

NOTES:

1. Concentrations in milligrams per kilogram (mg/kg, or parts per million) on a dry weight basis.
2. "<" indicates not detected; value is sample-specific quantitation limit.
3. MCP Method 1 soil standards from 310 CMR 40.0975(6).
4. UCLs = Upper Concentration Limits, from 310 CMR 40.0996(7). "NS" indicates no standard.
5. Background values from MADEP "Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil", May 23, 2002.

* Per the 4/06 MCP, chromium is assumed to be hexavalent unless testing is done to prove otherwise.

Table 4
Soil Analytical Results: Volatile and Extractable Petroleum Hydrocarbons (VPH/EPH)
Former Chapman Valve Site
Pinevale Street, Springfield

Sample No.:	CM-22	CM-23	CM-25	CM-38	CM-43	CM-45	MADEP Ash Fill Background	Reportable Conc. RCS-1	Method 1 Standards S-1 / GW-2	S-1 / GW-3
Depth (feet):	15-17	7-9	11-13	11-13	10-12	10-12				
Date Collected:	9/24/09	9/24/09	9/25/09	10/1/09	10/2/09	10/27/09				
PID Reading (ppmv):	92.1	2.4	118	120	131	0	NA	NA	NA	NA
Semivolatiles (Method 8270)	--	ND	--	--	--	--				
VPH Fractions										
C5-C8 Aliphatics	<16	--	<20	30	<23	--	NA	100	100	100
C9-C12 Aliphatics	140	--	<13	58	37	--	NA	1,000	1,000	1,000
C9-C10 Aromatics	270	--	<13	150	170	--	NA	100	100	100
VPH Target Compounds										
Benzene	<0.052	--	<0.066	<0.086	<0.078	--	NA	2	30	30
Ethylbenzene	0.39	--	<0.066	0.28	0.094	--	NA	40	500	500
Methyl tert-butyl ether	<0.052	--	<0.066	<0.086	--	--	NA	0.1	100	100
Naphthalene	2.2	--	<0.66	2.8	1.1	--	NA	4	40	500
Toluene	<0.052	--	<0.066	<0.086	<0.078	--	NA	30	500	500
Xylenes (total)	0.54	---	<0.20	1.1	0.27	--	NA	300	300	500
EPH Fractions										
C9-C18 Aliphatics	1,200	--	18	970	2,400	<12	NA	1,000	1,000	1,000
C19-C36 Aliphatics	190	--	11	120	520	48	NA	3,000	3,000	3,000
C11-C22 Aromatics	300	--	13	530	890	24	NA	1,000	1,000	1,000
EPH Target Compounds										
Acenaphthene	1.2	--	<0.11	1.5	0.28	0.13	2	4	1,000	1,000
Acenaphthylene	1.4	--	<0.11	3.9	0.62	<0.12	1	1	600	10
Anthracene	<0.11	--	<0.11	<0.11	<0.11	0.25	4	1,000	1,000	1,000
Benzo(a)anthracene	<0.11	--	<0.11	<0.11	<0.11	0.68	9	7	7	7
Benzo(a)pyrene	<0.11	--	<0.11	<0.11	<0.11	0.58	7	2	2	2
Benzo(b)fluoranthene	<0.11	--	<0.11	<0.11	<0.11	0.89	8	7	7	7
Benzo(g,h,i)perylene	<0.11	--	<0.11	<0.11	<0.11	0.38	3	1,000	1,000	1,000
Benzo(k)fluoranthene	<0.11	--	<0.11	<0.11	<0.11	0.33	4	70	70	70
Chrysene	<0.11	--	<0.11	<0.11	<0.11	0.83	7	70	70	70
Fluoranthene	0.4	--	<0.11	<0.11	0.4	1.6	10	1,000	1,000	1,000
Fluorene	1.8	--	<0.11	3.3	1.6	0.2	2	1,000	1,000	1,000
Indeno(1,2,3-cd)pyrene	<0.11	--	<0.11	<0.11	<0.11	0.41	3	7	7	7
2-Methylnaphthalene	4.1	--	<0.11	9.9	1.6	<0.12	1	0.7	80	300
Naphthalene	1.9	--	<0.11	1.9	0.42	<0.12	1	4	40	500
Phenanthrene	0.59	--	<0.11	1.7	<0.11	1.3	20	10	500	500
Pyrene	0.47	--	<0.11	<0.11	<0.11	1.5	20	1,000	1,000	1,000

NOTES:

1. Concentrations in mg/kg (parts per million) on a dry weight basis.
2. "<" indicates not detected; value is sample-specific quantitation limit.
3. "RC-S" = Reportable concentration from 310 CMR 40.1600.
4. Background values from MassDEP "Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil", May 23, 2002.
5. "PID"=Photoionization detector soil headspace measurement in parts per million by volume.
6. Values shown in **bold** exceed Method 1 standards.
7. "---" indicates not analyzed for this parameter. "ND" indicates none of the target analytes for this analysis were detected.

Table 5
Soil Analytical Results: RCRA 8 Metals and PCBs
Former Chapman Valve Site
Pinevale Street, Springfield

Sample No.:	CM-15	CM-16	CM-17	CM-18	CM-19	CM-20	CM-21	CM-22	CM-23	CM-23A	CM-24	CM-25	CM-26	CM-27	CM-28	CM-29	MassDEP Natural Soil Background	MassDEP Ash Fill Background	Reportable Conc. RCS-1
Depth (feet):	1-3	1-3	1-3	2-4	2-4	0-2	1-3	1-3	1-3	1-3	1-3	1-3	0-2	0-2	1-3	1-3			
Date Collected:	9/22/09	9/22/09	9/22/09	9/22/09	9/23/09	9/23/09	9/24/09	9/24/09	9/24/09	10/27/09	9/25/09	9/25/09	9/25/09	9/25/09	9/28/09	9/28/09			
RCRA 8 Metals																			
Arsenic	5.6	3.3	2.9	3.2	3.9	4.1	2.8	<2.6	7.3	--	4.6	3.5	3.2	3.9	<2.7	<2.6	20	20	20
Barium	47	54	50	43	75	33	63	26	95	--	63	23	78	32	63	68	50	50	1,000
Cadmium	<0.26	<0.27	<0.26	<0.28	<0.27	<0.27	0.27	<0.26	0.98	--	0.29	<0.27	0.38	<0.26	<0.27	0.3	2	3	2
Chromium VI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	30	40	30
Chromium (III)*	12	11	11	8.8	14	11	14	7.3	99	2.0	12	10	18	11	16	9.9	30	40	1,000
Lead	4.1	2.3	2.9	6.7	5.3	8.5	15	3.4	170	--	21	3.5	5.8	14	5.4	9.5	100	600	300
Mercury	<0.022	<0.022	<0.019	<0.019	<0.017	<0.018	<0.022	0.031	0.032	--	0.026	<0.023	<0.016	0.033	<0.014	<0.018	0.3	1	20
Selenium	<5.2	<5.3	<5.2	<5.6	<5.4	<5.4	<5.1	<5.2	<5.9	--	<5.3	<5.5	<5.3	<5.1	<5.3	<5.2	0.5	1	400
Silver	<0.52	<0.53	<0.52	<0.56	<0.54	<0.54	<0.51	<0.52	<0.50	--	<0.53	<0.55	<0.53	<0.51	<0.53	<0.52	0.6	5	100
PCBs (total)	--	--	--	<0.11	--	--	--	<0.10	<0.12	--	--	<0.11	--	<0.10	--	--	--	--	2

NOTES:

- Concentrations in milligrams per kilogram (mg/kg, or parts per million) on a dry weight basis.
- "<" indicates not detected, value is sample specific quantitation limit.
- "RCS-1" = Reportable concentration from 310 CMR 40.1600.
- Background values from MassDEP Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil, May 23, 2002.
- Values shown in **bold** exceed Method 1 standards.
- "NA" = Not applicable or not available. "NS" indicates no standard.
- "--" indicates not analyzed for this parameter.
- Per the 4/06 MCP, chromium is assumed to be hexavalent unless testing is done to prove otherwise.

Table 5 (continued)
Soil Analytical Results: RCRA 8 Metals and PCBs
Former Chapman Valve Site
Pinevale Street, Springfield

Sample No.: Depth (feet): Date Collected:	CM-30 1-3 9/28/09	CM-31 1-3 9/28/09	CM-32 1-3 9/29/09	CM-33 1-3 9/29/09	CM-34 1-3 9/29/09	CM-35 1-3 9/29/09	CM-36 1-3 9/30/09	CM-37 1-3 9/30/09	CM-38 0.5-1 10/1/09	CM-39 0-2 10/1/09	CM-40 0-2 10/1/09	CM-40A 0-2 10/28/09	CM-41 1-3 10/2/09	CM-42 1-3 10/2/09	CM-43 1-3 10/2/09	CM-44 0-2 10/2/09	MassDEP Natural Soil Background	MassDEP Ash Fill Background	Reportable Conc. RCS-1
RCRA 8 Metals																			
Arsenic	2.9	3.7	3.2	4.5	6	5.3	3.1	5.9	6.4	8.5	6.4	—	<2.6	2.6	3.9	5.9	20	20	20
Barium	38	38	53	110	25	45	48	62	1700	390	1700	—	25	33	120	120	50	50	1,000
Cadmium	<0.26	<0.27	<0.28	<0.26	<0.25	0.31	<0.26	0.28	2.2	1.9	2.2	—	<0.26	<0.26	0.51	1.2	2	5	2
Chromium VI	—	—	—	—	—	—	—	—	—	—	—	<5.4	2.0	—	—	—	30	40	30
Chromium (III)*	8.5	11	8.8	20	7.8	14	12	20	70	63	70	54	11	8.9	18	25	30	40	1,000
Lead	3.9	12	5.2	3.6	4.6	65	2.1	13	290	550	290	—	3.6	5.5	27	110	100	600	300
Mercury	0.02	0.027	<0.016	0.022	<0.020	<0.025	<0.022	0.027	0.26	0.26	0.36	—	<0.021	<0.016	0.038	0.29	0.3	1	20
Selenium	<5.2	<5.4	<5.5	<5.3	<5.0	<5.5	<5.3	<5.3	<5.6	<5.6	<6.1	—	<5.3	<5.1	<5.3	<5.7	0.5	1	400
Silver	<0.52	<0.54	<0.55	<0.53	<0.50	<0.55	<0.53	<0.53	1.6	<0.61	<0.61	—	<0.53	<0.51	<0.53	<0.57	0.6	5	100
PCBs (total)	—	—	<0.11	<0.11	—	—	<0.11	<0.11	<0.11	<0.11	—	—	—	<0.10	—	<0.11	—	—	2

NOTES:

- Concentrations in milligrams per kilogram (mg/kg, or parts per million) on a dry weight basis.
- "<" indicates not detected; value is sample-specific quantitation limit.
- "RCS-1" = Reportable concentration from 310 CMR 40.1600.
- Background values from MassDEP "Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil", May 23, 2002.
- Values shown in **bold** exceed Method 1 standards.
- "NA" = Not applicable or not available. "NS" indicates no standard.
- "—" indicates not analyzed for this parameter.
- Per the 4/06 MCP, chromium is assumed to be hexavalent unless testing is done to prove otherwise.

Table 5 (continued)
Soil Analytical Results: RCRA 8 Metals and PCBs
Former Chapman Valve Site
Pinevale Street, Springfield

Sample No.:	CM-45	CM-46	CM-47	CM-48	CM-49	CM-50	CM-51	CM-52	CM-53	CM-54	CM-55	MassDEP Natural Soil Background	Reportable Conc. RCS-1
Depth (feet):	0.2	1-3	3-5	0.2	1-3	3-5	1-3	1-3	0.2	0.2	2.4	0.2	20
Date Collected:	10/27/09	10/27/09	10/27/09	10/27/09	10/27/09	10/27/09	10/27/09	10/28/09	10/28/09	10/28/09	10/28/09	10/28/09	10/28/09
RCRA 8 Metals													
Arsenic	10	--	--	--	--	--	--	4.9	--	--	--	--	20
Barium	230	--	--	--	--	--	33	86	290	3,300	280	50	1,000
Cadmium	1.7	--	--	--	--	--	<0.27	3.3	2.4	4.4	0.61	2	2
Chromium VI	--	1.7	--	--	--	--	--	--	--	--	--	30	30
Chromium (III)*	10	550	8.2	13	25	7.8	10	48	120	130	13.0	30	1,000
Lead	160	--	--	--	--	--	3.8	36	400	300	110	100	300
Mercury	0.086	--	--	--	--	--	<0.019	0.12	5	--	--	0.3	20
Selenium	<6.1	--	--	--	--	--	<5.4	<5.6	--	--	--	0.5	400
Silver	<0.61	--	--	--	--	--	<0.54	<0.56	--	--	--	0.6	100
PCBs (total)	--	--	--	--	--	--	<0.11	<0.11	--	--	--	--	2

NOTES:

- Concentrations in milligrams per kilogram (mg/kg, or parts per million) on a dry weight basis.
- "<" indicates not detected; value is sample-specific quantitation limit.
- "RCS-1" = Reportable concentration from 310 CMR 40.1600.
- Background values from MassDEP "Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil", May 23, 2002.
- Values shown in **bold** exceed Method 1 standards.
- "NA" = Not applicable or not available. "NS" indicates no standard.
- "--" indicates not analyzed for this parameter.
- Per the 4/06 MCL, chromium is assumed to be hexavalent unless testing is done to prove otherwise.

Table 5 (continued)
Soil Analytical Results: RCRA 8 Metals and PCBs
Former Chapman Valve/Crane Manufacturing Site
Pinevale Street, Springfield
Springfield, Massachusetts

Sample No.:	OTP-4	OTP-4	OTP-6	OTP-8	DP-1	DP-2	DP-3	MassDEP Natural Soil Background	MassDEP Ash Fill Background	Reportable Conc. RCS-1
Depth (feet):	0-2	3-4	0-3	0-2	0-2	0.15	0-2			
Date Collected:	11/12/09	11/12/09	11/12/09	11/12/09	11/12/09	11/12/09	11/12/09			
RCRA 8 Metals										
Arsenic	4.6	5.7	5.7	3.8	3.7	6.4	3.5	20	20	20
Barium	62	46	480	240	170	110	35	50	50	1,000
Cadmium	0.29	<0.31	0.84	1.3	0.38	0.67	<0.27	2	3	2
Chromium VI	--	--	--	--	--	--	--	30	40	30
Chromium (III)*	13	7.9	25	24	9.9	13	9.8	30	40	1,000
Lead	32	12	170	140	29	66	32	100	600	300
Mercury	1.2	0.043	0.066	0.26	0.073	0.18	0.025	0.3	1	20
Selenium	<5.3	<6.2	<5.4	<5.6	<5.4	<5.6	<5.4	0.5	1	400
Silver	0.78	<0.62	<0.54	<0.56	<0.54	<0.56	<0.54	0.6	5	100

NOTES:

1. Concentrations in milligrams per kilogram (mg/kg, or parts per million) (on a dry weight basis).
2. "<" indicates not detected; value is sample-specific quantitation limit.
3. "RCS-1" = Reportable concentration from 310 CMR 40.1600.
4. Background values from MassDEP "Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil", May 23, 2002.
5. Values shown in **bold** exceed Method 1 standards.
6. "NA" = Not applicable or not available.
7. "--" indicates not analyzed for this parameter.
8. Per the 4/06 MCL, chromium is assumed to be hexavalent unless testing is done to prove otherwise.

Table 6
Soil Analytical Results: Test Pits, 2009
Former Chapman Valve/ Crane Manufacturing Site
Pinevale Street
Springfield, Massachusetts

Sample No.: Depth (feet): Date Collected:	OTP-4 0-2 11/12/09	OTP-4 3-4 11/12/09	OTP-6 0-3 11/12/09	OTP-8 0-2 11/12/09	DP-1 0-2 11/12/09	DP-2 0-1.5 11/12/09	DP-3 0-2 11/12/09	BT-E 11/12/09	BT-B 11/12/09	BT-W 11/12/09	Reportable Conc. RCS-1
Volatile Organic Compounds											
n-Butylbenzene	---	---	<0.011	---	---	---	---	1.4	<0.0059	<0.0078	NS
sec-Butylbenzene	---	---	<0.0022	---	---	---	---	0.49	<0.0012	<0.0016	NS
4-Isopropyltoluene	---	---	<0.0022	---	---	---	---	1.2	<0.0012	<0.0016	100
1,2,4-Trimethylbenzene	---	---	<0.0022	---	---	---	---	1.8	<0.0012	<0.0016	1,000
1,3,5-Trimethylbenzene	---	---	<0.0022	---	---	---	---	1.1	<0.0012	<0.0016	10
Xylenes (total)	---	---	<0.0066	---	---	---	---	1.19	<0.0036	<0.0047	300
VPH Fractions											
C5-C8 Aliphatics	--	--	--	--	--	--	--	<200	--	--	100
C9-C12 Aliphatics	--	--	--	--	--	--	--	330	--	--	1,000
C9-C10 Aromatics	--	--	--	--	--	--	--	650	--	--	100
VPH Target Compounds											
Benzene	--	--	--	--	--	--	--	<0.68	--	--	2
Ethylbenzene	--	--	--	--	--	--	--	<0.68	--	--	40
Methyl tert-butyl ether	--	--	--	--	--	--	--	<0.68	--	--	0.1
Naphthalene	--	--	--	--	--	--	--	24	--	--	4
Toluene	--	--	--	--	--	--	--	<0.68	--	--	30
Xylenes (total)	--	--	--	--	--	--	--	4.8	--	--	300
EPH Fractions											
C9-C18 Aliphatics	<21	<25	<54	<56	<22	<56	<11	9,800	--	--	1,000
C19-C36 Aliphatics	23	<25	<54	110	<22	58	<11	2,600	--	--	3,000
C11-C22 Aromatics	120	120	470	200	65	210	14	3,500	--	--	1,000
EPH Target Compounds											
Acenaphthene	0.49	<0.25	8.4	1.5	0.42	1.5	<0.11	7.4	--	--	4
Acenaphthylene	0.52	<0.25	<0.54	<0.56	<0.22	<0.56	<0.11	1.5	--	--	1
Anthracene	2.1	<0.25	19	2.8	0.8	3.3	0.13	5.8	--	--	1,000
Benzo(a)anthracene	7.2	<0.25	38	11	3.2	10	0.26	4.1	--	--	7
Benzo(a)pyrene	6.6	<0.25	32	10	3.2	9.2	0.24	3.6	--	--	2
Benzo(b)fluoranthene	9.6	<0.25	46	16	4.6	15	0.34	5.5	--	--	7
Benzo(g,h,i)perylene	4.2	<0.25	21	7.4	2.3	6	0.14	2.6	--	--	1,000
Benzo(k)fluoranthene	3.3	<0.25	17	5.6	1.7	5.2	0.13	2	--	--	70
Chrysene	8.2	<0.25	41	13	3.7	12	0.3	4.9	--	--	70
Dibenzo(a,b)anthracene	1.2	<0.25	5.9	2	0.62	1.9	<0.11	0.71	--	--	0.7
Fluoranthene	16	<0.25	97	23	6.7	23	0.6	10	--	--	1,000
Fluorene	0.98	0.32	10	1.5	0.4	1.5	0.12	9.7	--	--	1,000
Indeno(1,2,3-cd)pyrene	4.6	<0.25	22	7.8	2.4	7.1	0.16	2.7	--	--	7
2-Methylnaphthalene	<0.21	<0.25	2.2	<0.56	<0.22	<0.56	<0.11	12	--	--	0.7
Naphthalene	<0.21	<0.25	6.8	0.84	<0.22	<0.56	<0.11	11	--	--	4
Phenanthrene	11	0.33	84	15	3.3	15	0.52	4.6	--	--	10
Pyrene	16	<0.25	89	22	6.8	22	0.59	17	--	--	1,000
PCBs (total)	<0.11	<0.12	<0.11	<0.11	<0.11	<0.11	<0.11	--	--	--	2

NOTES:

1. Concentrations in mg/kg (parts per million) on a dry weight basis.
2. "<" indicates not detected; value is sample-specific quantitation limit.
3. "RCS" = Reportable concentration from 310 CMR 40.1600.
4. Background values from MassDEP "Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil", May 23, 2002.
5. "PID"=Photoionization detector soil headspace measurement in parts per million by volume.
6. Values shown in **bold** exceed Method 1 standards.
7. "ND" indicates none of the target analytes for this analysis were detected.

Table 7
Groundwater Field Screening Results
Former Chapman Valve Site
Pinevale Street, Springfield

Well No.	Sample Date:	Depth to water (feet):	pH (standard units)	Specific Conductance (umho/cm)	Temp. (°C)	Dissolved Oxygen (mg/l)	ORP (mV)
CM-17	10/5/09	9.7	6.15	392	16.9	0.65	112.5
CM-22	10/6/09	14.0	6.85	677	15.4	0.82	-71.2
CM-25	10/6/09	13.4	7.18	663	16.2	0.33	-123.0
CM-34	10/5/09	10.8	6.87	409	17.2	0.92	-
CM-36	10/5/09	13.9	6.40	385	14.3	3.92	101.9
CM-37	10/5/09	11.1	6.60	368	15.1	0.28	-
CM-38	10/6/09	10.6	6.88	593	17.6	0.32	-100.5
CM-39	10/5/09	9.7	6.45	582	16.4	0.97	99.0
CM-41	10/6/09	11.9	7.23	326	16.5	8.28	93.3
CM-42	10/5/09	8.3	6.97	455	14.9	2.45	-
CM-43	11/3/09	9.8	6.77	543	15.5	0.59	53.7
CM-45	11/3/09	10.6	6.98	715	14.0	0.59	-144.1
CM-50	11/3/09	9.1	6.73	528	12.5	1.08	91.4
CM-53	11/3/09	8.1	8.33	1,379	13.9	0.48	-169.4
MW-204	10/5/09	7.2	6.73	363	15.9	0.35	-
MW-205	10/5/09	7.2	6.63	569	16.1	0.36	-39.1
MW-201	10/5/09	7.1	6.65	577	15.6	0.33	-69.6
MW-202	10/6/09	7.3	6.79	850	13.9	0.36	-107.0
MW-35	10/5/09	7.0	6.71	453	16.8	0.49	-

NOTES:

1. Measurements made by OTO with portable equipment in the field.
2. Depth to water measurements made from top of well casing, which is above grade in most instances, but below grade for others.

Table 8
Groundwater Analytical Results
Former Chapman Valve Site
Pinevale Street, Springfield

Well No.:	CM-17	CM-22	CM-25	CM-34	CM-36	CM-37	CM-38	CM-39	CM-41	CM-42	CM-43	CM-45	CM-50	CM-53	MW-204	MW-205	MW-201	MW-202	MW-35	RCGW-2	GW-2	GW-3
Sample Date:	10/5/09	10/6/09	10/6/09	10/5/09	10/5/09	10/5/09	10/6/09	10/5/09	10/6/09	10/5/09	11/3/09	11/3/09	11/3/09	11/3/09	10/5/09	10/5/09	10/5/09	10/6/09	10/5/09			
VPH Fractions																						
C9-C12 Aliphatics	<0.10	0.64	0.640	<0.10	<0.10	<0.10	<0.500	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.17	0.15	0.21	0.13	5	5	50
C9-C10 Aromatics	<0.10	0.36	0.900	<0.10	<0.10	<0.10	1.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.15	<0.10	<0.10	<0.10	0.16	7	7	50
VPH Target Compounds																						
Naphthalene	<0.01	<0.01	0.086	<0.01	<0.01	<0.01	0.25	<0.01	<0.01	<0.01	<0.02	0.11	<0.10	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01	1	1	20
EPH Fractions																						
C9-C18 Aliphatics	<0.15	0.45	0.84	<0.15	<0.15	<0.15	8.4	<0.15	<0.15	<0.15	44	<0.15	0.3	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	5	5	50
C19-C36 Aliphatics	<0.15	<0.150	<0.150	<0.15	<0.15	<0.15	1.1	<0.15	<0.150	<0.15	13	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	50	NA	50
C11-C22 Aromatics	<0.10	0.46	0.74	<0.10	<0.10	<0.10	5	0.11	0.1	<0.10	12	0.13	0.21	<0.10	0.34	0.17	0.18	0.24	0.41	5	50	5
EPH Target Compounds																						
Acenaphthene	<0.002	<0.003	0.004	<0.002	<0.002	<0.002	0.011	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	0.0024	6	NA	6
Acenaphthylene	<0.002	0.007	0.011	<0.002	<0.002	<0.002	0.055	<0.002	<0.002	<0.002	0.03	<0.002	<0.002	<0.002	0.005	<0.002	<0.002	<0.002	0.008	0.04	10	0.04
Benzo(a)anthracene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	0.002	1	NA	1
Benzo(a)pyrene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.5	NA	0.5
Benzo(b)fluoranthene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	0.4	NA	0.4
Chrysene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002	<0.003	<0.002	<0.002	<0.002	<0.002	<0.002	0.07	NA	0.07
Fluoranthene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.015	<0.003	<0.002	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	0.2	NA	0.2
Fluorene	<0.002	0.004	0.0065	<0.002	<0.002	<0.002	0.032	<0.002	<0.002	<0.002	0.028	<0.003	<0.002	<0.002	0.005	<0.002	<0.002	<0.002	<0.002	0.04	NA	0.04
2-Methylnaphthalene	<0.002	0.039	0.047	<0.002	<0.002	<0.002	0.13	0.016	<0.002	<0.002	0.032	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	2	2	20
Naphthalene	<0.002	0.008	0.048	<0.002	<0.002	<0.002	0.36	0.004	<0.002	<0.002	0.011	<0.005	<0.002	0.003	0.008	<0.002	<0.002	<0.002	0.004	1	1	20
Phenanthrene	<0.002	<0.002	0.032	<0.002	<0.002	<0.002	0.02	0.006	<0.002	<0.002	<0.002	0.007	<0.002	0.006	<0.002	<0.002	<0.002	<0.002	0.0028	10	NA	10
Pyrene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.011	0.003	<0.002	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	0.02	NA	0.02
RCRA 8 Metals																						
Arsenic	<0.002	<0.004	<0.002	<0.002	<0.002	<0.002	0.0022	<0.002	<0.002	<0.002	0.003	0.004	<0.002	0.005	<0.002	<0.002	0.0075	0.0034	<0.002	0.9	NA	0.9
Barium	<0.25	0.27	0.52	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	50	NA	50
Cadmium	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	<0.003	<0.003	<0.003	<0.003	0.008	<0.003	<0.003	<0.003	0.004	NA	0.004
Lead	<0.005	0.0053	<0.005	<0.005	<0.005	0.0061	0.01	<0.005	<0.05	<0.005	0.025	0.016	<0.005	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	NA	0.01
Volatile Organic Compounds																						
Bromodichloromethane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.020	<0.001	0.0013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.006	0.006	50
n-Butylbenzene	<0.001	0.0056	0.011	<0.001	<0.001	<0.001	<0.020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.001	NS	NS	NS
sec-Butylbenzene	<0.001	0.0027	0.0041	<0.001	<0.001	<0.001	<0.020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0022	<0.001	<0.001	<0.001	NS	NS	NS
tert-Butylbenzene	<0.001	<0.001	0.0016	<0.001	<0.001	<0.001	<0.020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NS	NS	NS
Carbon Disulfide	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.060	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	10	NS	NS
Chloroform	<0.002	0.0022	0.002	<0.002	<0.002	<0.002	<0.040	<0.002	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.05	0.05	20
Isopropylbenzene	<0.001	0.0013	0.0034	<0.001	<0.001	<0.001	<0.020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	100	NS	NS
4-Isopropyltoluene	<0.001	0.005	0.0084	<0.001	<0.001	<0.001	<0.020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	10	NS	NS
Naphthalene	<0.002	<0.002	0.088	<0.002	<0.002	<0.002	0.25	0.033	<0.002	<0.002	<0.002	0.007	<0.002	0.005	<0.002	<0.002	<0.002	<0.002	<0.002	1	1	20
n-Propylbenzene	<0.001	0.0031	0.0063	<0.001	<0.001	<0.001	<0.020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	10	NS	NS
1,2,4-Trimethylbenzene	<0.001	0.012	0.088	<0.001	<0.001	<0.001	0.16	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	100	NS	NS
1,3,5-Trimethylbenzene	<0.001	0.0042	0.032	<0.001	<0.001	<0.001	0.045	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1	NS	NS
Xylenes (total)	<0.003	<0.003	0.0036	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	5	9	5

NOTES:
1. Concentrations in milligrams per liter (mg/L or parts per million).
2. "u.c." indicates not detected, value is quantitation limit.
3. RCGW = Reportable concentration for groundwater, from 310 CMR 40.1600.
4. MCP Method 1 groundwater standards from 310 CMR 40.0974(2).
5. Values shown in bold meet or exceed Method 1 standards.
6. "NA" = Not applicable.

Table 9
Areas of Environmental Concern
Former Chapman Valve Site
Pinevale Street, Springfield

Locations Where RC is Exceeded	Constituents >RCS-1 in Soil	Constituents >RCGW-2 in Groundwater
BT-E	C9-C10 Aromatics,	N/A
	C9-18 Aliphatics	
	C11-C22 Aromatics	
	Acenaphthene	
	Acenaphthylene	
	Benzo(a)pyrene	
	Dibenzo(a,h)anthracene	
	2-Methylnaphthalene	
	Naphthalene	
CM-22	C9-C10 Aromatics	none
	C9-18 Aliphatics	
	Acenaphthylene	
	2-Methylnaphthalene	
CM-38	C9-C10 Aromatics	C9-18 Aliphatics
	Acenaphthylene	C11-C22 Aromatics
	2-Methylnaphthalene	Acenaphthylene
		Lead
CM-39	Lead	none
CM-40	Barium	none
	Cadmium	
CM-43	C9-C10 Aromatics	C9-18 Aliphatics
	C9-18 Aliphatics	C11-C22 Aromatics
	2-Methylnaphthalene	Lead
CM-45		Lead
CM-52	Cadmium	
CM-53	Barium	Lead
	Cadmium	
	Lead	
CM-54	Barium	none
	Cadmium	
	Lead	
DP-1	Benzo(a)pyrene	N/A
DP-2	Benzo(a)anthracene	N/A
	Benzo(a)pyrene	
	Benzo(b)fluoranthene	
	Dibenzo(a,h)anthracene	
	Indeno(1,2,3-cd)pyrene	
	Phenanthrene	
MW-205	none	Cadmium
TP-4	Benzo(a)anthracene	N/A
	Benzo(a)pyrene	
	Benzo(b)fluoranthene	
	Dibenzo(a,h)anthracene	
	Phenanthrene	
TP-6	Acenaphthene	N/A
	Benzo(a)anthracene	
	Benzo(a)pyrene	
	Benzo(b)fluoranthene	
	Dibenzo(a,h)anthracene	
	Indeno(1,2,3-cd)pyrene	
	2-Methylnaphthalene	
	Naphthalene	
TP-8	Phenanthrene	N/A
	Benzo(a)anthracene	
	Benzo(a)pyrene	
	Benzo(b)fluoranthene	
	Dibenzo(a,h)anthracene	
	Indeno(1,2,3-cd)pyrene	
	Phenanthrene	

LIMITATIONS

1. Our report does not present scientific certainties, but rather our professional opinions on the data obtained through our assessment. Our report was prepared for the exclusive benefit of our client. Reliance upon the report and its conclusions is not made to third parties or future property owners. We would be pleased to discuss extension of reliance to third parties through execution of a written contract with such parties.
2. The observations presented in this report were made under the conditions described herein. The conclusions presented in this report were based solely upon the services described in the report and not on scientific tasks or procedures beyond the scope of the project or the time and budgetary constraints imposed by the client. The work described in this report was carried out in accordance with the contract Terms and Conditions.
3. In preparing the report O'Reilly, Talbot, Okun & Associates, Inc. relied on certain information provided by state and local officials and other parties referenced herein, and on information contained in prior site reports. Although there may have been some degree of overlap in the information provided by these sources, O'Reilly, Talbot, Okun & Associates, Inc. did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this assessment.
4. Limited observations were made of the site and of the structures on the site, as indicated within the report. Where access to portions of the site or to structures on the site was unavailable or limited, we render no opinion as to the presence of hazardous materials/ oil or asbestos containing materials, or to the presence of indirect information relating to hazardous materials/ oil in that portion of the site. No destructive sampling was conducted to expose hidden potentially asbestos containing materials, and significant amounts of asbestos could be located in these areas, which would not be observed during our visit. In addition, we render no opinion as to the presence of hazardous materials/ oil or asbestos containing materials, where direct observations of portions of the site were obstructed by objects or coverings on or over these surfaces.
5. Unless otherwise specified in the Report, we did not perform testing or analyses to determine the presence or concentration of asbestos at the site or in the environment at the site.
6. The purpose of this Report was to assess the physical characteristics of the subject site with respect to the presence of hazardous material or oil in soil or groundwater at the site. No specific attempt was made to check on the compliance of present or past owners or operators of the site with federal, state, or local laws and regulations, environmental or otherwise.

271

INDIAN ORCHARD

273

EAST

FOUNDRY

CHAPMAN VALVE MFG CO
Mutual Risk
Admission Refused
Holds from blue prints

ERECTING SHOP

PUBLIC SCHOOL
BENJAMIN FRANKLIN
BIRTH, 1757

WIGHT-THAYER CO
COAL YARD

265

WORCHESTER

PINE

272

HAMPSHIRE

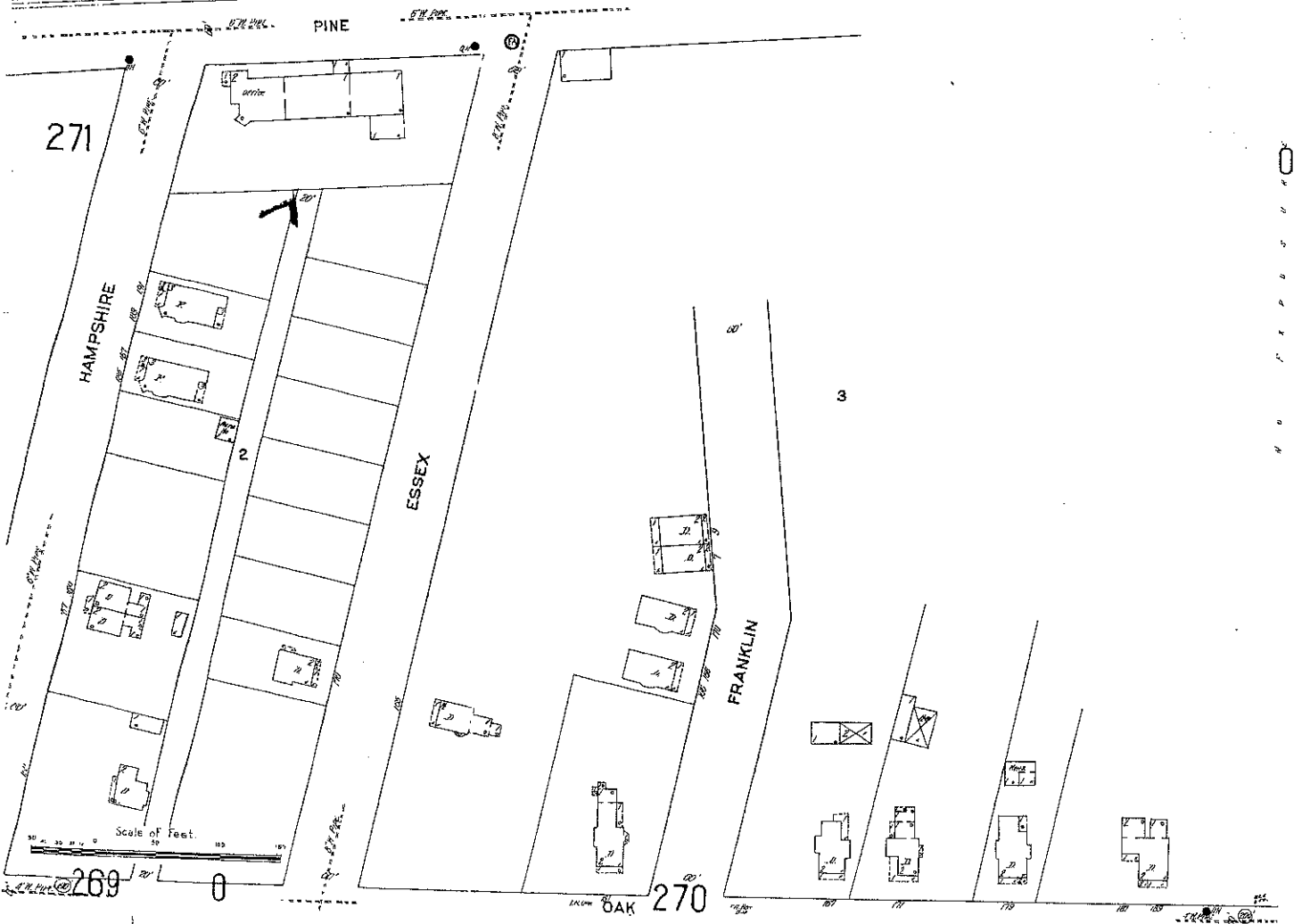
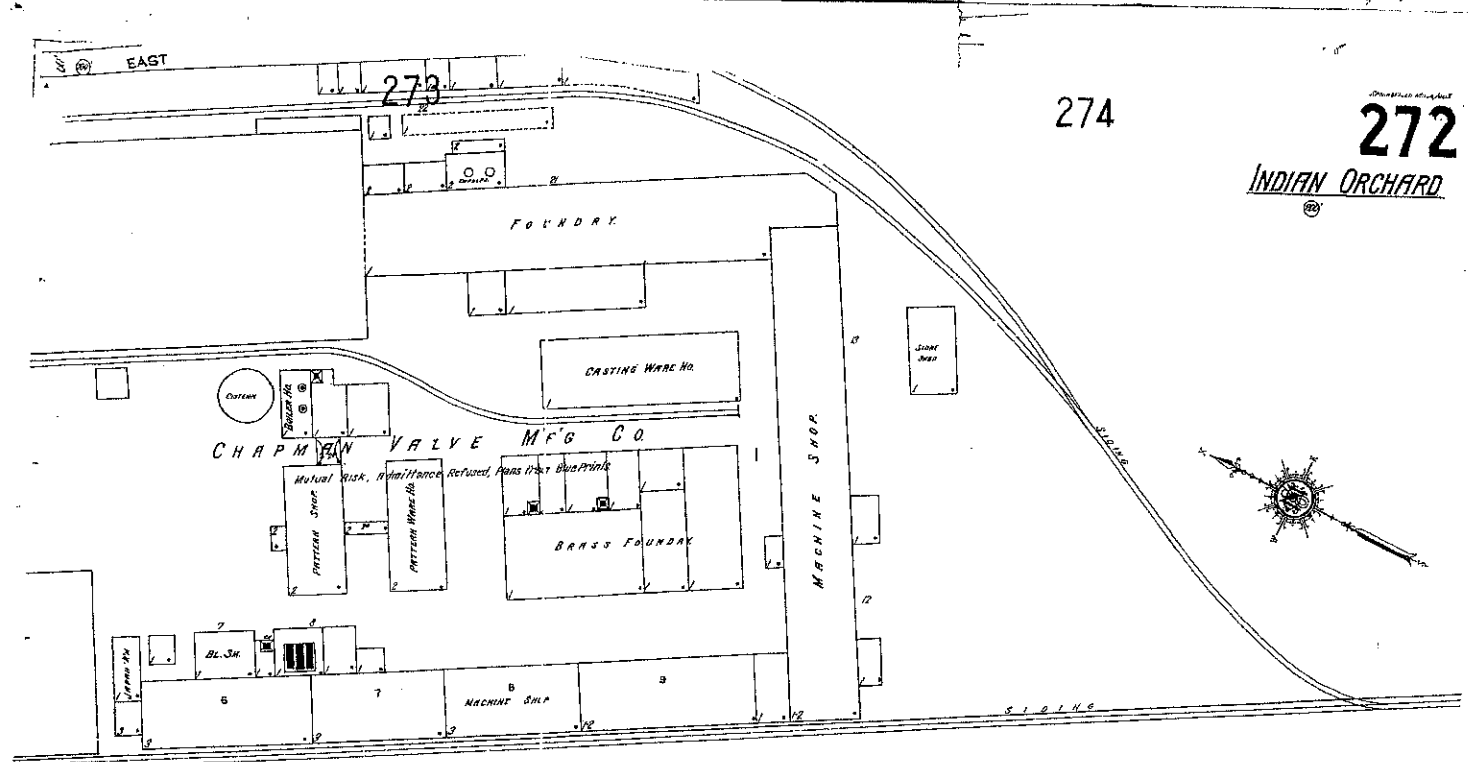
BERKSHIRE

264

OAK 269

Scale of Feet
0 20 40 60 80 100 120 140 160 180 200

1911



272
INDIAN ORCHARD

1911

615

(271-272-273)

603

WORCESTER



St. Aloysius PAROCHIAL SCHOOL

CARTIER

NOT OPENED

3
(4)

MOXON

617

HEALEY

LA FRANCE

AV.

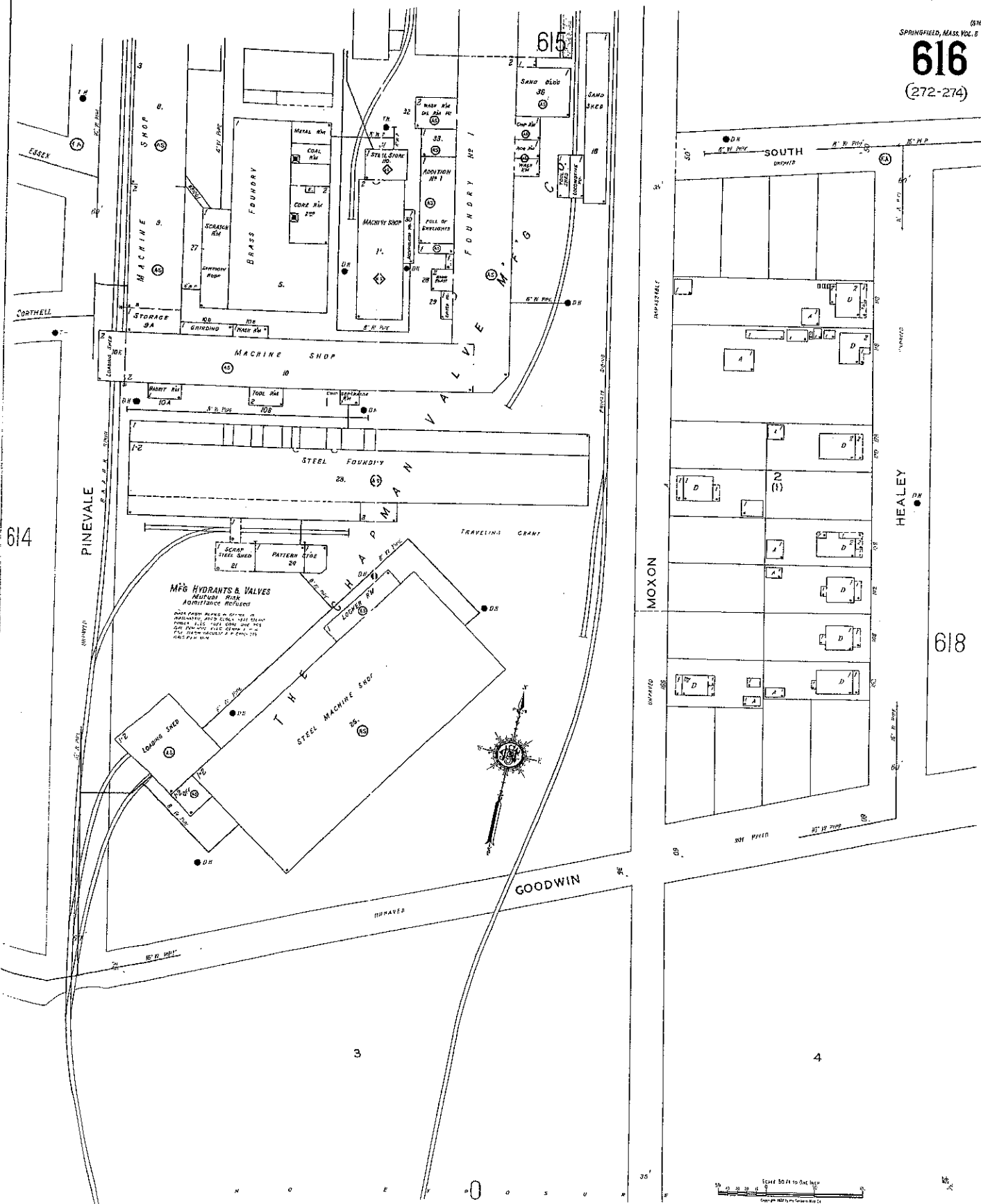
5

SOUTH

618

1932

616
(272-274)

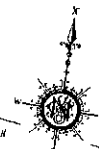


(932)

(63K) SPRINGFIELD, MASS. VOLL
615
(271-272-273)
MASS. 049

603

WORCESTER



SCHOOL

ST. ALOYSIUS PAROCHIAL SCHOOL

CARTIER

612

PINEVALE

THE CHAPMAN VALVE MFG. CO.
MATCHING PRODUCTIONS SERVICE POWER ELEC.
LUGS & ETC. KEEL STEEL TUBS COIL CHANGES
LUGS & ETC. KEEL STEEL TUBS COIL CHANGES
LUGS & ETC. KEEL STEEL TUBS COIL CHANGES
(THE CHAPMAN CO.)

FACTORY

STEEL FAB. TONG. FIB. COILS. ALUM. AL. BR. APPROX. WELLS
STEEL TUBS & GLASS TUBS.

RESEMBLING STORAGE & SHOPPING

PLASTIC WELLS - 10' DIA. & 4' HIGH

MACH. SHOP

PLASTIC WELLS - 10' DIA. & 4' HIGH

STOCK CUTTING

W.C.

COIL FILES (7' DIA. & 4' HIGH)

COIL FILES (7' DIA. & 4' HIGH)

COIL FILES (7' DIA. & 4' HIGH)

COIL FILES (7' DIA. & 4' HIGH)

COIL FILES (7' DIA. & 4' HIGH)

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COIL FILES (7' DIA. & 4' HIGH)

COIL FILES (7' DIA. & 4' HIGH)

COIL FILES (7' DIA. & 4' HIGH)

MOXON

617

HEALEY

LA FRANCE

AV

UNPAVED

UNPAVED

UNPAVED

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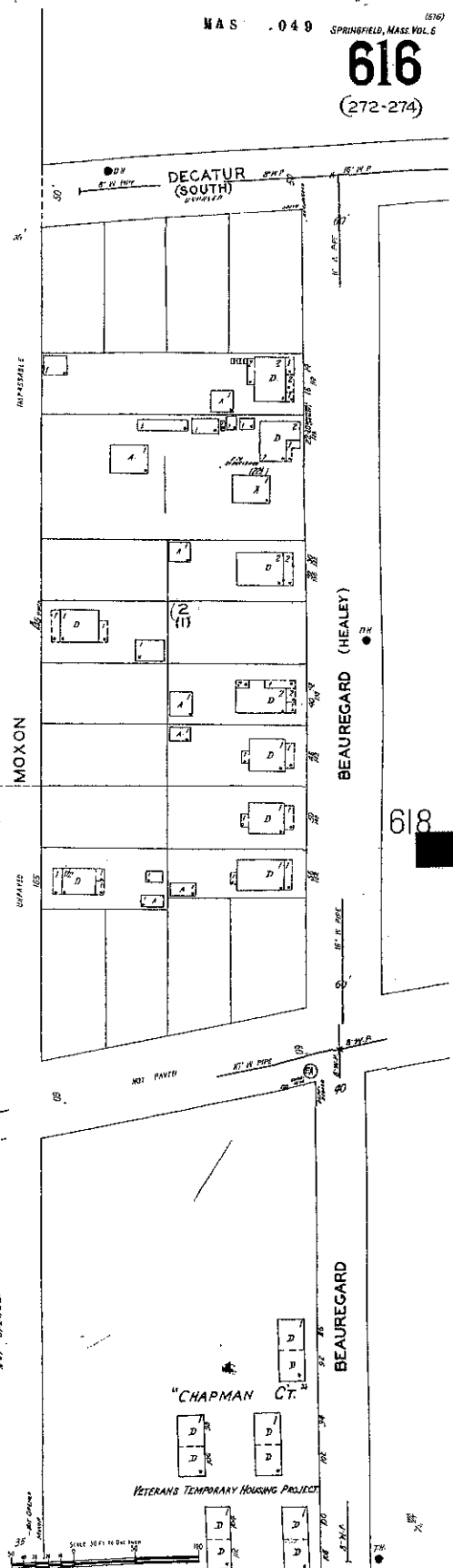
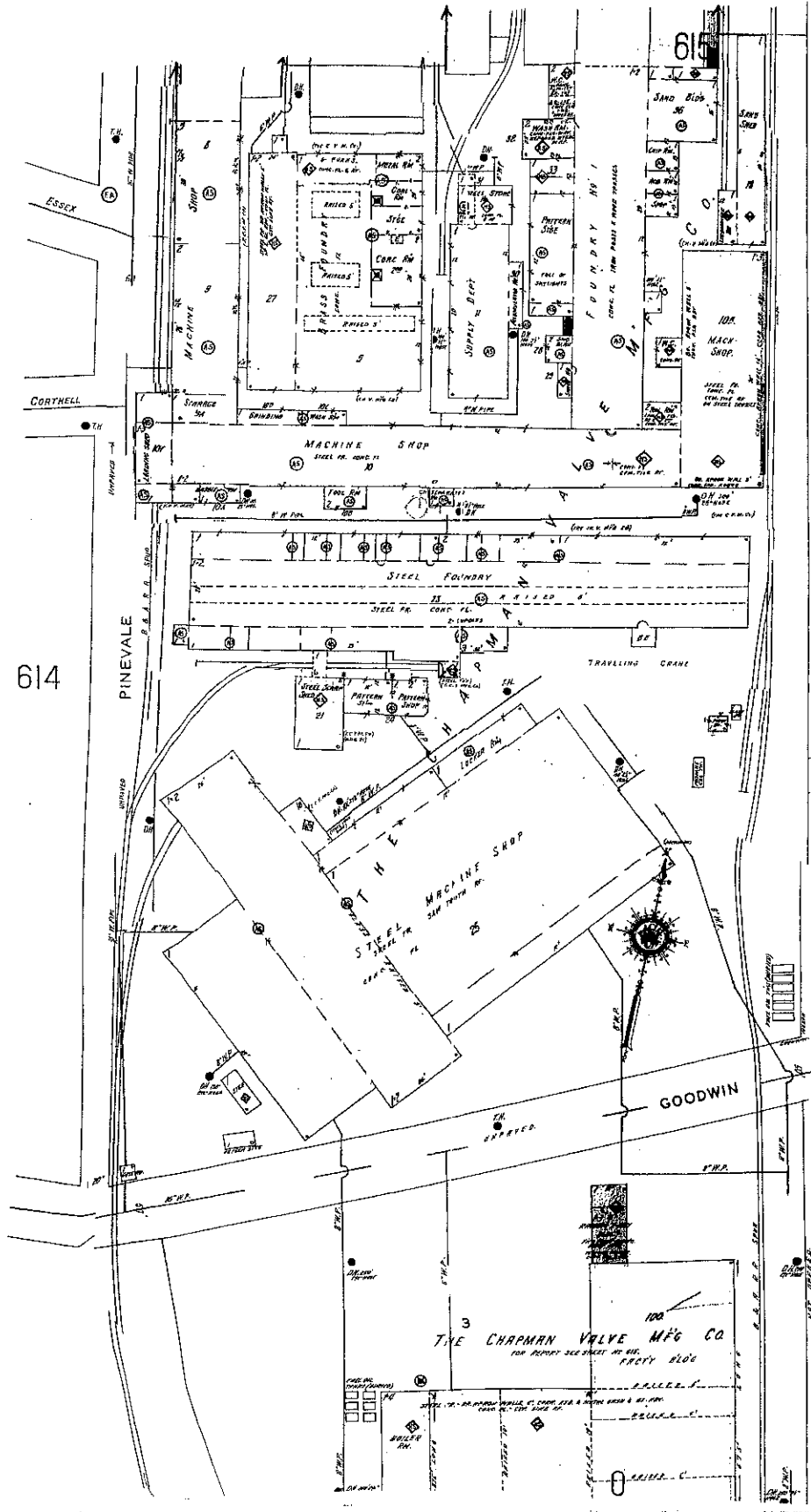
UNPAVED

DECATUR (SOUTH)

618

1960

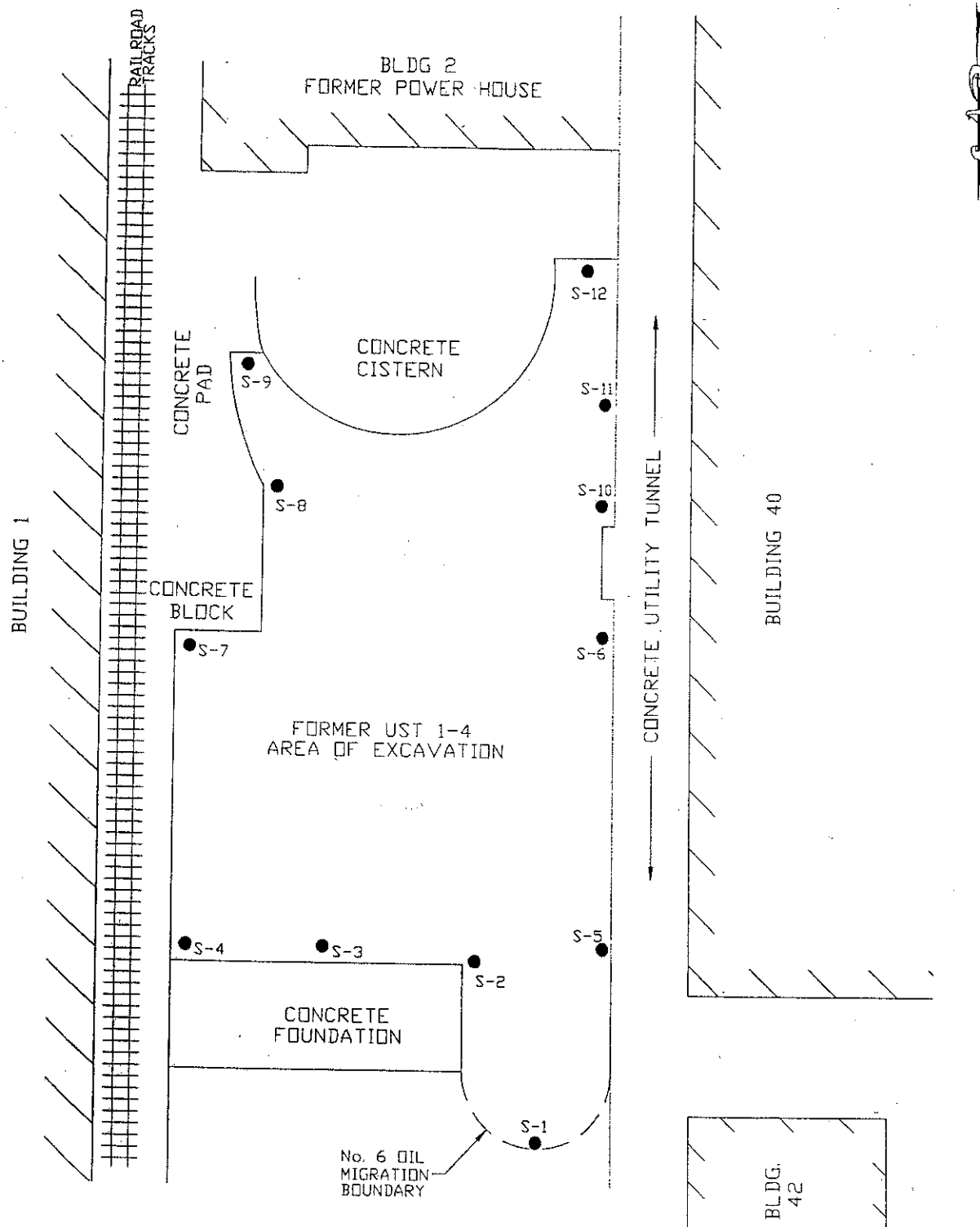
616
(272-274)



1950

TABLE 3-1
TANK INVENTORY

<u>Tank #</u>	<u>Location</u>	<u>Total Capacity</u>	<u>Inches of Product</u>	<u>Type</u>
1.	Old Power House	25,000 g	47	#4 Oil
2.	Old Power House	25,000 g	91	#4 Oil
3.	Old Power House	25,000 g	13	#6 Oil
4.	Old Power House	25,000 g	65	Water/Sludge
5.	Pattern Storage	100 g	?	Alcohol
6.	Brass Fdy #1	3,000 g	46	#2 Oil
7.	Brass Fdy #2	3,000 g	76	#2 Oil
8.	Lot Essex & Pinevale	650 g	8	Gasoline
9.	Dept. 40	8,000 g	?	#2 Oil
10.	New Power House #1	20,000 g	13	\$4 Oil
11.	New Power House #2	20,000 g	11	Water/sludge
12.	Dept. #7 Hill #1	20,000 g	94	#2 Oil
13.	Dept. #7 Hill #2	20,000 g	6	Water/oil
14.	Dept. #7 Hill #3	20,000 g	6	Water/oil
15.	Dept. #7 Hill #4	20,000 g	60	#6 Water/sludge
16.	Dept. #7 Hill #5	20,000 g	6	#6 Sludge
17.	Dept. #7 Hill #6	20,000 g	6	#6 Sludge
18.	Dept. #7 Ship.	3,000 g	0	0
19.	Dept. 40	8,000 g	-	#2 Oil



UST 1-4 EXCAVATION AREA
(EXC-1)
SOIL SAMPLING LOCATIONS
CRANE MANUFACTURING
FACILITY

SPRINGFIELD, MA
DER. WAIVER, SITE #1, 0170

PROJECT NUMBER:
10585.0010

APPROX. SCALE:
1" = 17'

DRAWN BY:
PWF 01/26/98

DRAWING FILE: CRANE

FIGURE NUMBER:
8

CHECKED BY:
TOB

REVISED BY:
TOB

VATC ASSOCIATES INC.

39 Spruce Street
East Longmeadow, MA 01028
Tel. (413) 525-1198 Fax. (413) 525-8227

TABLE 2

SUMMARY OF CONSTITUENTS DETECTED IN SITE MEDIA*

CRANE CO.
 INDIAN ORCHARD FACILITY
 SPRINGFIELD, MASSACHUSETTS

Constituent	Soil	Groundwater	Air	Groundwater Infiltration	Oil-phase
Volatile Organic Compounds (VOCs)					
Benzene	NA ^b	X ^c	ND ^d	ND	NA
Chloroform	NA	X	ND	ND	NA
1,1-Dichloroethane	NA	X	NA	ND	NA
Methylene chloride	NA	X	NA	ND	NA
MTBE	NA	X	ND	NA	NA
Toluene	NA	X	ND	ND	NA
1,1,1-Trichloroethane	NA	X	ND	ND	NA
Semivolatile Organic Compounds (SVOCs)					
Acenaphthylene	X	ND	NA	NA	NA
Anthracene	X	ND	NA	NA	NA
Benzo(a)anthracene	X	ND	NA	NA	NA
Benzo(a)pyrene	X	ND	NA	NA	NA
Benzo(b)fluoranthene	X	ND	NA	NA	NA
Benzo(g,h,i)perylene	X	ND	NA	NA	NA
Benzo(k)fluoranthene	X	ND	NA	NA	NA
Chrysene	X	ND	NA	NA	NA
Dibenz(a,h)anthracene	X	ND	NA	NA	NA
Fluoranthene	X	ND	NA	NA	NA
Fluorene	X	ND	NA	NA	NA
Indeno(1,2,3-cd)pyrene	X	ND	NA	NA	NA
2-Methylnaphthalene	X	ND	NA	NA	NA
Naphthalene	X	ND	NA	NA	NA
Phenanthrene	X	ND	NA	NA	NA
Pyrene	X	ND	NA	NA	NA

TABLE 2 (Continued)

SUMMARY OF CONSTITUENTS DETECTED IN SITE MEDIA

CRANE CO.
INDIAN ORCHARD FACILITY
SPRINGFIELD, MASSACHUSETTS

Constituent	Soil	Groundwater	Air	Groundwater Infiltration	Oil- phase
Total Petroleum Hydrocarbons (TPH)	X	X	X ^c	X	NA
Hydrocarbon Analyses					
Other Hydrocarbons	X	NA	NA	NA	NA
C ₉ -C ₁₈ Aliphatics	X	NA	NA	NA	NA
C ₁₉ -C ₃₆ Aliphatics	X	NA	NA	NA	NA
C ₁₀ -C ₂₂ Aromatics	X	NA	NA	NA	NA
Polychlorinated Biphenols (PCBs)					
PCB-1254	X	X	NA	ND	ND
PCB-1260	ND	X	NA	ND	ND
Total PCB	X	X	NA	ND	ND
Metals					
Arsenic	X	X	NA	NA	NA
Barium	X	NA	NA	NA	NA
Dissolved Barium	NA	X	NA	NA	NA
Cadmium	X	X	NA	NA	NA
Dissolved Cadmium	NA	X	NA	NA	NA
Chromium	X	X	NA	NA	NA
Copper	NA	X	NA	NA	NA
Lead	X	X	NA	NA	NA
Mercury	X	X	NA	NA	NA
Nickel	NA	X	NA	NA	NA
Selenium	X	ND	NA	NA	NA
Silver	ND	X	NA	NA	NA
Zinc	NA	X	NA	NA	NA

^a This table represents a summary of all constituents detected in media sampled from the site. It does not present a complete list of all constituents that were analyzed for in the site media, or a list of the constituents retained of interest in the risk assessment. For soils, the table presents detected constituents remaining on-site after completion of Interim Measures.

^b NA indicates the constituent was not analyzed for in the referenced medium.

^c X indicates the constituent was detected in the referenced medium.

^d ND indicates the constituent was not detected in the referenced medium.

^e Detection of oil per oil mist air sample.

TABLE 3
SUMMARY OF CONSTITUENTS DETECTED IN SITE SOILS

CRANE CO.
INDIAN ORCHARD FACILITY
SPRINGFIELD, MASSACHUSETTS

Constituents Detected	Potential Source Area	Frequency of Detection	Arithmetic Average ^a	Range of Detected Values (Minimum-Maximum)	Background Arithmetic Average ^a	Background Range of Detected Values (Minimum-Maximum)	MADEP Background Level
Semivolatiles (mg/kg)^b							
Benzo(b)fluoranthene	Site-wide	1/13 (7.7%)	2.64	12	ND	ND	--
	Site-wide (excluding samples beneath permanent foundations)	--	--	ND	--	--	--
Fluorene	Site-wide	1/13 (7.7%)	2.11	6.0	ND	ND	--
	Site-wide (excluding samples beneath permanent foundations)	--	--	ND	--	--	--
2-Methylnaphthalene	Site-wide	1/13 (7.7%)	2.61	7.1	ND	ND	--
	Site-wide (excluding samples beneath permanent foundations)	--	--	ND	ND	ND	--
Naphthalene	Site-wide	1/13 (7.7%)	2.00	3.93	ND	ND	--
	Site-wide (excluding samples beneath permanent foundations)	--	--	ND	ND	ND	--
Phenanthrene	Site-wide	1/13 (7.7%)	2.28	7.1	ND	ND	--
	Site-wide (excluding samples beneath permanent foundations)	--	--	ND	ND	ND	--
PCBs (mg/kg)							
PCB-1254	Site-wide	5/31 (16.1%)	0.057	0.039 - 0.561	--	--	--
	Site-wide (excluding samples beneath permanent foundations)	3/27 (11.1%)	0.042	0.043 - 0.106	--	--	--
Hydrocarbons (mg/kg)							
C ₉ -C ₁₈ Aliphatics	Site-wide	1/2 (50%)	1,286	2,570	--	--	--
	Site-wide (excluding samples beneath permanent foundations)	--	--	--	--	--	--

TABLE 4
SUMMARY OF CONSTITUENTS DETECTED IN GROUNDWATER

CRANE CO.
INDIAN ORCHARD FACILITY
SPRINGFIELD, MASSACHUSETTS

Constituent Detected (units)	Frequency of Detection ^a	Range of Detection (Minimum - Maximum)	Site Background ^b	Monitoring Well Retained In
VOLATILES (µg/L)				
Benzene	1/71 (1.4%)	8.5	ND ^c	MW-5
Chloroform	1/49 (2.0%)	10	ND	MW-19
1,1-Dichloroethane	2/49 (4.1%)	4.0 - 6.0	ND	---
Methylene chloride	11/49 (22.4%)	6.0 - 350 [177 - 240] ^e	ND	MW-6
MTBE	1/46 (2.2%)	1.9	ND	MW-34
Toluene	7/71 (9.9%)	0.7 - 3.3 [2.4 - 3.3] ^f	1.7	MW-10; MW-14
1,1,1-Trichloroethane	2/49 (4.1%)	8.9 - 16.0	ND	--
PCBs (µg/L)				
PCB-1254	1/35 (2.9%)	0.1	ND	MW-10
PCB-1260	1/35 (2.9%)	0.06	ND	MW-13
Total PCBs	2/30 (6.7%)	0.06 - 0.1	ND	MW-10; MW-13
TPH (mg/L)	30/60 (50.0%)	0.49 - 24 [4.9 - 16] ^g	1.2	MW-5; MW-26
METALS (mg/L)^h				
Total Arsenic (1988)	18/20 (90.0%)	0.002 - 0.46	NA ⁱ	MW-1 thru MW-4; MW-6 thru MW-12; MW-14; MW-16 thru MW-19
Dissolved Barium (1996)	16/17 (94.1%)	0.025 - 0.339	0.149	MW-14; MW-18; MW-19; MW-32; MW-33
Total Cadmium (1988)	18/20 (90.0%)	0.003 - 0.088	NA	MW-2 thru MW-4; MW-6 thru MW-11; MW-13 thru MW-19
Dissolved Cadmium (1996)	4/17 (23.5%)	0.0005 - 0.0011	ND	MW-10; MW-12; MW-16; MW-17
Total Chromium (1988)	20/20 (100.0%)	0.002 - 0.172	NA	MW-1 thru MW-4; MW-6 thru MW-19
Total Copper (1988)	19/20 (95.0%)	0.02 - 2.21	NA	MW-1 thru MW-4; MW-6 thru MW-14; MW-16 thru MW-19

TABLE 4 (Continued)
SUMMARY OF CONSTITUENTS DETECTED IN GROUNDWATER

CRANE CO.
INDIAN ORCHARD FACILITY
SPRINGFIELD, MASSACHUSETTS

Constituent Detected (units)	Frequency of Detection ^a	Range of Detection (Minimum - Maximum)	Site Background ^b	Monitoring Well Retained In
METALS (mg/L)^b				
Total Lead (1988)	20/20 (100.0%)	0.0066 - 0.87	NA	MW-1 thru MW-4; MW-6 thru MW19
Total Mercury (1988)	4/20 (20.0%)	0.0006 - 0.00199	NA	MW-4; MW-6; MW-10; MW-16
Total Nickel (1988)	20/20 (100.0%)	0.007 - 0.308	NA	MW-1 thru MW-4; MW-6 thru MW19
Total Silver (1988)	2/20 (10.0%)	0.001 - 0.04	NA	MW-4; MW-15
Total Zinc (1988)	20/20 (100.0%)	0.02 - 3.7	NA	MW-1 thru MW-4; MW-6 thru MW19

^a Frequency of detection is presented both as a fraction and as a percentage.

^b Background groundwater is represented by CMW-30.

^c ND = nondetect.

^d Dashes (–) indicate the constituent was not retained for further evaluation.

^e Range of detection of values of methylene chloride retained for further evaluation in the risk assessment.

^f Range of detection of values of toluene retained for further evaluation in the risk assessment.

^g Range of detection of values of TPH retained for further evaluation in the risk assessment.

^h Groundwater samples collected in 1988 were analyzed for total metals; samples collected in 1996 were analyzed for dissolved phase metals.

ⁱ NA = not analyzed for the referenced constituent.

TABLE 3
SUMMARY OF CONSTITUENTS DETECTED IN SITE SOILS

CRANE CO.
INDIAN ORCHARD FACILITY
SPRINGFIELD, MASSACHUSETTS

Constituents Detected	Potential Source Area	Frequency of Detection	Arithmetic Average ^a	Range of Detected Values (Minimum-Maximum)	Background Arithmetic Average ^a	Background Range of Detected Values (Minimum-Maximum)	MADBP Background Level
C ₁₀ -C ₃₆ Aliphatics	Site-wide	2/2 (100%)	2,071	2.3 - 4,140	--	--	--
	Site-wide (excluding samples beneath permanent foundations)	--	--	--	--	--	--
C ₁₀ -C ₂₂ Aromatics	Site-wide	2/2 (100%)	2,359	27.5 - 4,690	--	--	--
	Site-wide (excluding samples beneath permanent foundations)	--	--	--	--	--	--
Other Hydrocarbons	Site-Wide	8/11 (72.7%)	3,542.9	18 - 15,000	--	--	--
	Site-wide (excluding samples beneath permanent foundations)	3/4 (75%)	60.3	18 - 180	--	--	--
TPH (mg/kg)	Site-wide	65/77 (84.4%)	823.8	10 - 11,300	ND	ND	--
	Site-wide (excluding samples beneath permanent foundations)	50/53 (94.3%)	1041.7	28.6 - 11,300	ND	ND	--
Metals (mg/kg)	Site-wide	5/22 (22.7%)	3.25 (2.5)	4.96 - 7.97	ND	ND	17
	Site-wide (excluding samples beneath permanent foundations)	5/18 (27.8%)	3.42 (2.5)	4.96 - 7.97	ND	ND	17
Barium	Site-wide	22/22 (100%)	28.8 (26.1)	12.4 - 64.1	30.5 (19.3)	15 - 69.8	45
	Site-wide (excluding samples beneath permanent foundations)	18/18 (100%)	30.4 (28.9)	12.4 - 64.1	30.5 (19.3)	15 - 69.8	45
Cadmium	Site-wide	13/22 (59.1%)	0.10 (0.09)	0.04 - 0.26	0.03 (0.03)	0.04 - 0.05	2
	Site-wide (excluding samples beneath permanent foundations)	12/18 (66.7%)	0.11 (0.09)	0.04 - 0.26	0.03 (0.03)	0.04 - 0.05	2

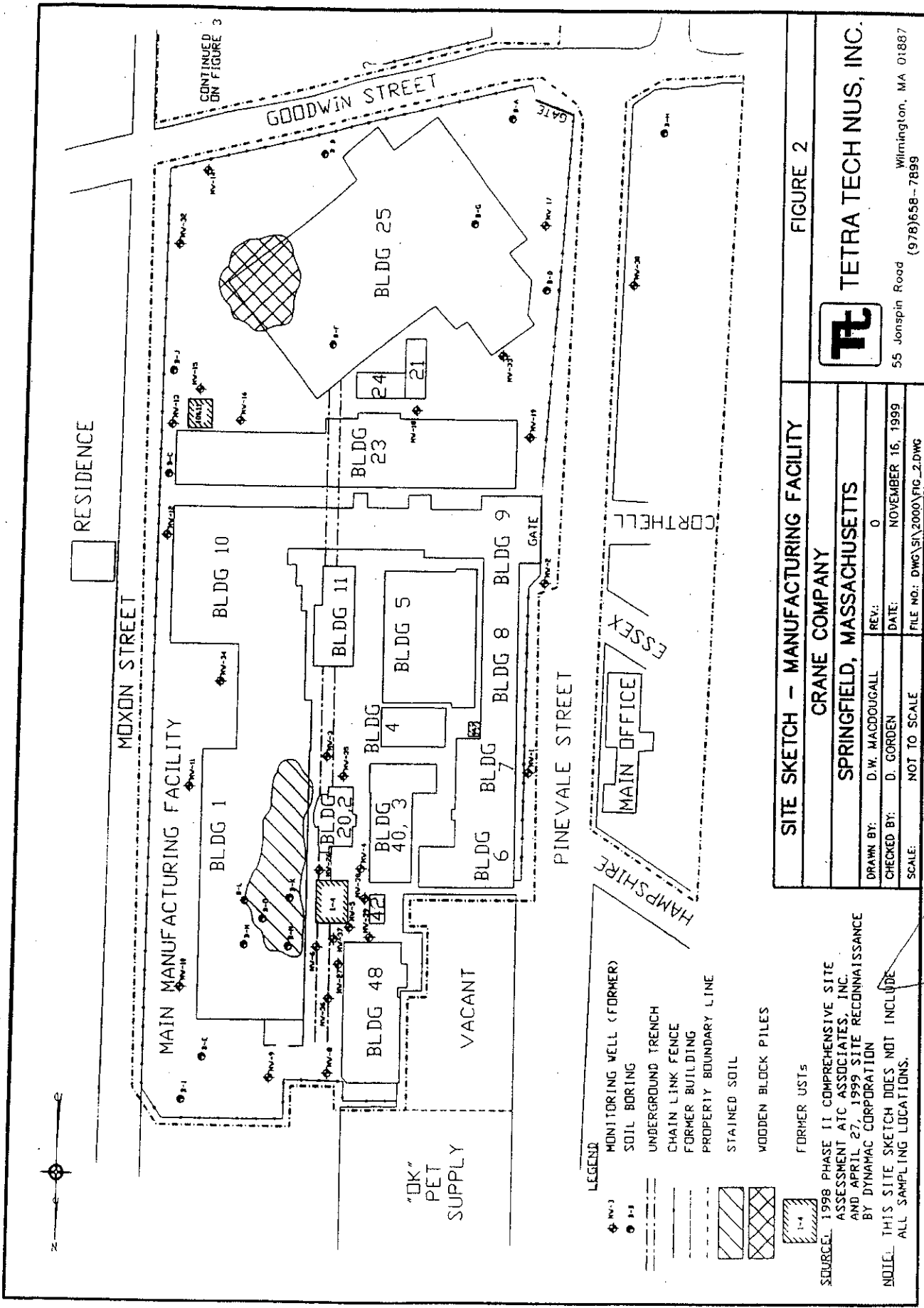
TABLE 3
SUMMARY OF CONSTITUENTS DETECTED IN SITE SOILS

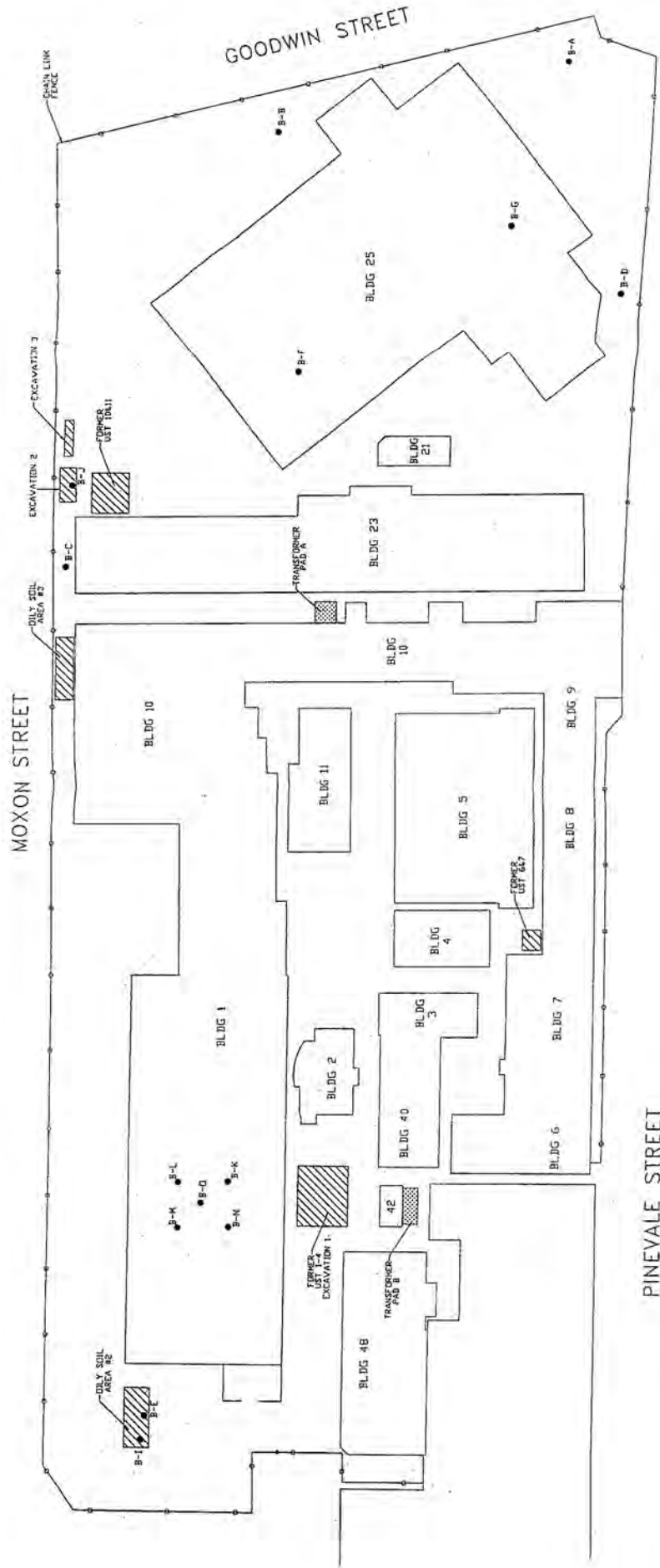
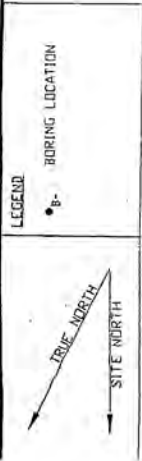
CRANE CO.
INDIAN ORCHARD FACILITY
SPRINGFIELD, MASSACHUSETTS

Constituents Detected	Potential Source Area	Frequency of Detection	Arithmetic Average ^a	Range of Detected Values (Minimum-Maximum)	Background Arithmetic Average ^a	Background Range of Detected Values (Minimum-Maximum)	MADEP Background Level
Chromium	Site-wide	22/22 (100%)	9.58 (7.90)	4.3 - 19.5	5.44 (5.53)	3.73 - 8.32	29
	Site-wide (excluding samples beneath permanent foundations)	18/18 (100%)	10.35 (9.15)	4.3 - 19.5	5.44 (5.53)	3.73 - 8.32	29
Lead	Site-wide	16/22 (72.7%)	16.9 (8.80)	2.54 - 73	ND	ND	99
	Site-wide (excluding samples beneath permanent foundations)	14/18 (77.8%)	19.88 (13.70)	2.54 - 73	ND	ND	99
Mercury	Site-wide	9/22 (40.9%)	0.02 (0.02)	0.02 - 0.07	ND	ND	0.3
	Site-wide (excluding samples beneath permanent foundations)	9/18 (50.0%)	0.02 (0.02)	0.02 - 0.07	ND	ND	0.3
Selenium	Site-wide	2/22 (9.1%)	2.84 (2.49)	6.19 - 6.44	ND	ND	0.5
	Site-wide (excluding samples beneath permanent foundations)	2/18 (11.1%)	2.91 (2.5)	6.19 - 6.44	ND	ND	0.5

^a One-half the sample quantitation limit was used to represent nondetect data in the calculation of the arithmetic average; median value presented in parenthesis below average value for metals. Average and median values have been rounded to the same number of significant figures as the corresponding laboratory analytical data.

^b Acenaphthylene, anthracene, benzo(a) anthracene, benzo(a) pyrene, benzo(g,h,i) perylene, benzo(k) fluoranthene, chrysene, dibenz(a,h) anthracene, indeno (1, 2, 3-cd) pyrene, and pyrene were only detected in soil samples obtained from the Building #1, Department #1 Foundry and are considered exempt data.





		ATC ASSOCIATES INC. 39 Spruce Street East Longmeadow, Ma 01028 Tel: (413) 525-1198 Fax: (413) 525-8227	
INTERIM MEASURES SOIL EXCAVATION AREAS AND BORING LOCATIONS CRANE MANUFACTURING FACILITY		PROJECT NUMBER: 90736.8101	FIGURE NUMBER: 4
DEP WAIVER SITE #1-0170 SPRINGFIELD, MA		SCALE: 1" = 100' DRAWN BY: PWF 01/26/98	CHECKED BY: TOB REVISED BY:
		DRAWING FILE: CRANE	

TABLE I

SOIL SUMMARY DATA TABLE

Crane Co. Manufacturing Facility
Pinevale, Goodwin, and Moxon Streets
Springfield, Massachusetts
DEP Site No. 1-0170

Sampling Date: 19-20 December 1995

Compound	Units	Minimum Detection Limits	B-32/MW-32 (10-12)	B-33/MW-33 (10-12)	B-34/MW-34 (10-12)	B-35/MW-35 (10-12)	B-36/MW-36 (10-12)
Halogenated and Aromatic VOCs							
Chloroform	mg/kg	0.04	ND	ND	BDL	ND	ND
Methylene Chloride	mg/kg	0.02	ND	ND	BDL	BDL	ND
Remaining 8240 Parameters	mg/kg	0.01-2.0	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbons (TPH)							
TPH	mg/kg	19.6-20.0	BDL	BDL	BDL	20.7	BDL
Polychlorinated Biphenyls (PCBs)							
Total PCBs	mg/kg	0.023-0.026	ND	ND	ND	ND	ND

NOTES:

mg/kg - milligrams per kilogram

VOCs - Volatile Organic Compounds

ND - compound was not detected above or below the laboratory detection limit

BDL - compound was detected below the applicable laboratory detection limit; however, could not be quantified

Laboratory analysis for VOCs via SW846 Method 8240

Laboratory analysis for TPH via EPA Method 418.1

Laboratory analysis for PCBs via SW846 Method 8080

TABLE 2

GROUNDWATER SUMMARY DATA TABLE

Crane Co. Manufacturing Facility
Pinevale, Goodwin, and Moxon Streets
Springfield, Massachusetts
DEP Site No. 1-0170

Sampling Date: 12 January 1996

Compound	Units	Minimum Detection Limits	B-32/MW-32 (10-12)	B-33/MW-33 (10-12)	B-34/MW-34 (10-12)	B-35/MW-35 (10-12)	B-36/MW-36 (10-12)	Trip Blank
Halogenated and Aromatic VOCs								
Measured 8240 Parameters	ug/l	1.0-400	ND	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbons (TPH)								
TPH	mg/l	0.44-0.66	0.83	BDL	0.82	BDL	BDL	NM
Polychlorinated Biphenyls (PCBs)								
Total PCBs	ug/l	0.05-0.07	ND	ND	ND	ND	ND	NM

NOTES:

mg/l - milligrams per liter

ug/l - micrograms per liter

VOCs - Volatile Organic Compounds

ND - compound was not detected above or below the laboratory detection limit

BDL - compound was detected below the applicable laboratory detection limit; however, could not be quantified

NM - Not Measured

Laboratory analysis for VOCs via SW846 Method 8240

Laboratory analysis for TPH via EPA Method 418.1

Laboratory analysis for PCBs via EPA Method 608

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TABLE 3

MONITORING WELL SUMMARY

Crane Co. Manufacturing Facility
Pinevale, Goodwin, and Moxon Streets
Springfield, Massachusetts
DEP Site No. 1-0170

20-21 August 1996

Location	Date	Steel Casing Elevation	Depth to LNAPL	LNAPL Thickness	Depth to Water	Water Elevation	Comments
MW-1	21 Aug 96	203.36	ND	NA	6.67	196.69	
MW-2	21 Aug 96	204.66	ND	NA	7.13	197.53	
MW-3	20 Aug 96	NS	DRY	DRY	DRY	NA	
MW-4	20 Aug 96	NS	7.50	NM	NM	NM	viscous oil; thickness could not be determined
MW-5	20 Aug 96	NS	ND	NA	7.76	NM	
MW-9	20 Aug 96	205.11	ND	NA	9.61	195.50	
MW-10	20 Aug 96	210.33	ND	NA	13.86	196.47	
MW-11	20 Aug 96	214.77	DRY	DRY	DRY	NA	
MW-12	20 Aug 96	218.50	NM	NA	NM	NM	
MW-13	20 Aug 96	221.18	ND	NA	13.53	207.65	
MW-14	21 Aug 96	226.57	ND	NA	14.23	212.34	
MW-15	20 Aug 96	219.62	ND	NA	11.95	207.67	
MW-16	20 Aug 96	219.89	ND	NA	13.74	206.15	
MW-17	20 Aug 96	211.77	ND	NA	9.00	202.77	
MW-18	20 Aug 96	207.03	ND	NA	8.56	198.47	
MW-19	20 Aug 96	206.85	ND	NA	8.70	198.15	
MW-30*	21 Aug 96	207.78	ND	NA	8.82	198.96	
MW-32*	20 Aug 96	224.17	ND	NA	11.74	212.43	
MW-33*	20 Aug 96	211.23	ND	NA	12.75	198.48	
MW-34*	21 Aug 96	205.32	ND	NA	8.32	197.00	
MW-35	21 Aug 96	NS	NF	NF	NF	NF	
MW-36*	20 Aug 96	201.98	ND	NA	8.65	193.33	

NOTES:

*Wells installed after June 1995 survey. Steel casing elevations derived from PVC survey elevation (October, 1996) corrected with field difference between steel and PVC casing elevations.

ND - Not Detected

NA - Not Applicable

NS - Not Surveyed

NM - Not Measured

NF - Well Not Found

LNAPL - Light Nonaqueous Phase Liquid

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TABLE 4
GROUNDWATER LABORATORY ANALYTICAL DATA

Crane Co. Manufacturing Facility
Pinevale, Goodwin, and Moxon Streets
Springfield, Massachusetts
DEP Site No. 1-0170

06 January 1995 to 03 October 1996

Location	Date	TPH (mg/L)	PCB (ug/L)	VOCs (ug/L)	Comments
MW-1	06 Jan 95	0.56	NM	BDL (1,1 DCE); BDL (PCE)	
	12 Oct 95	ND	ND	BDL (1,1,1 TCE); BDL (PCE)	
	22 Aug 96	ND	ND	ND	
MW-2	15 Mar 95	BDL	NM	ND	
	12 Oct 95	ND	ND	ND	
	22 Aug 96	ND	ND	ND	
MW-5	06 Jan 95	NS	NS	NS	Well Not Found "
	12 Oct 95	NS	NS	NS	
	23 Aug 96	7.53	ND	8.5 (B), 2.6 (T), BDL (X)	
MW-6	06 Jan 95	0.77	NM	ND	
	12 Oct 95	NS	NS	NS	Well Not Found "
	20 Aug 96	NS	NS	NS	
MW-9	15 Mar 95	0.49	NM	ND	
	13 Oct 95	ND	ND	ND	
	23 Aug 96	ND	ND	0.5 (T)	
MW-10	06 Jan 95	1.16	NM	ND	
	13 Oct 95	ND	ND	ND	
	22 Aug 96	ND	0.10	2.4 (T)	
MW-12	06 Jan 95	0.64	NM	ND	
	13 Oct 95	ND	ND	ND	
	03 Oct 96	0.77, 0.69**	ND, ND**	1.0 (T), 0.8 (T)**	
MW-13	06 Jan 95	0.80	NM	ND	
	13 Oct 95	ND	0.06	ND	
	21 Aug 96	ND	ND	0.7 (M)	
MW-14	06 Jan 95	0.77	NM	ND	
	13 Oct 95	NS	NS	NS	Dry
	21 Aug 96	BDL	ND	3.3 (T)	
MW-15	06 Jan 95	0.51	NM	ND	
	12 Oct 95	ND	ND	ND	
	21 Aug 96	ND	ND	0.9 (T)	
MW-16	15 Mar 95	BDL	NM	ND	
	12 Oct 95	ND	ND	ND	
	21 Aug 96	ND	ND	BDL (T)	
MW-17	15 Mar 95	BDL	NM	BDL (PCE)	
	12 Oct 95	ND	ND	BDL (PCE); BDL (1,1,1 TCE)	
	22 Aug 96	ND	ND	ND	
MW-18	15 Mar 95	BDL	NM	ND	
	12 Oct 95	ND	ND	BDL (MC)	
	22 Aug 96	ND	ND	0.9 (T)	
MW-19	06 Jan 95	0.42	NM	ND	
	12 Oct 95	BDL	ND	10.0 (C)	
	22 Aug 96	ND	ND	BDL (T)	
MW-26	06 Jan 95	NS	NS	NS	
	12 Oct 95	NS	NS	NS	
	03 Oct 96	4.90	ND	1.1 (T)	
MW-30	06 Jan 95	ND	ND	ND	
	12 Oct 95	NS	NS	NS	
	22 Aug 96	ND	ND	1.7 (T)	

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TABLE 4 (Continued)

Location	Date	TPH (mg/L)	PCB (ug/L)	VOCs (ug/L)	Comments
MW-32	12 Jan 96	0.83	ND	ND	
	21 Aug 96	BDL	ND	1.4 (T)	
MW-33	12 Jan 96	BDL	ND	ND	
	22 Aug 96	ND	ND	1.2 (T)	
MW-34	12 Jan 96	0.82	ND	ND**	
	23 Aug 96	ND	ND	1.8 (T), 1.9 (M)	
MW-35	12 Jan 96	BDL	ND	NM	
	23 Aug 96	NS	NS	NS	
MW-36	12 Jan 96	BDL	ND	ND	
	23 Aug 96	ND	ND	0.7 (T)	
Trip Blank	13 Oct 95	NM	NM	ND	
	12 Jan 96	NM	NM	ND	
	20 Aug 96	NM	NM	1.2 (T)	
	03 Oct 96	NM	NM	0.6 (T)	

NOTES:

** Duplicate Sample

B - Benzene; T - Toluene; X - Xylenes; M - MTBE; PCE - Tetrachloroethylene; 1,1,1 DCE - 1,1,1 Dichloroethane;
1,1,1 TCE - 1,1,1 Trichloroethane; MC - Methylene Chloride; C - Chloroform

ND - Not Detected

NS - Not Sampled

NM - Not Measured

BDL - Below Detection Limit

mg/L - Milligrams per Liter

ug/L - Micrograms per Liter

TPH analyzed via EPA Method 418.1

PCBs analyzed via EPA Method 608

VOCs analyzed via EPA Method 8240 (1/95 and 3/95), Method 624 (10/95) and Method 602 (8/96 and 10/96)

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TABLE 2
SUMMARY OF SOIL LABORATORY ANALYTICAL RESULTS FOR EXCAVATION 1
UST 1-4 AREA

Crane Co. Manufacturing Plant
Goodwin and Pinevale Streets
Springfield, Massachusetts

DEP Waiver Site No. 1-0170

Sampling Date: 13 December 1997

Compound	Units	Minimum Detection Limits	S-7				S-9		S-11		S-12	
			W. Sidewall (9-10)				W. Sidewall S.W. Corner (9-10)		E. Sidewall (7-8)		E. Sidewall S.E. Corner (9-10)	
Extractable Petroleum Hydrocarbons (EPH)												
c9-c18 Aliphatics	mg/kg dry wt.	2.4-27.8	NM				ND		2,570		NM	
c19-c36 Aliphatics	mg/kg dry wt.	2.2-25.4	NM				2.3		4,140		NM	
c10-c22 Aromatics	mg/kg dry wt.	2.8-32.9	NM				27.5		4,690		NM	
Acenaphthene	mg/kg dry wt.	1.4-15.9	NM				ND		BDL		NM	
Acenaphthylene	mg/kg dry wt.	1.4-15.9	NM				ND		BDL		NM	
Benzo(a)anthracene	mg/kg dry wt.	2.0-23.3	NM				ND		BDL		NM	
Benzo(a)pyrene	mg/kg dry wt.	2.1-24.5	NM				ND		BDL		NM	
Benzo(b)fluoranthene	mg/kg dry wt.	2.5-29.0	NM				ND		BDL		NM	
Benzo(k)fluoranthene	mg/kg dry wt.	1.8-21.2	NM				ND		BDL		NM	
Chrysene	mg/kg dry wt.	1.8-21.2	NM				ND		BDL		NM	
Fluoranthene	mg/kg dry wt.	2.0-23.0	NM				ND		BDL		NM	
Fluorene	mg/kg dry wt.	1.7-19.7	NM				ND		BDL		NM	
2-Methylnaphthalene	mg/kg dry wt.	1.2-13.8	NM				ND		BDL		NM	
Naphthalene	mg/kg dry wt.	1.4-15.9	NM				ND		BDL		NM	
Phenanthrene	mg/kg dry wt.	1.9-2.1	NM				ND		BDL		NM	
Pyrene	mg/kg dry wt.	2.0-23.6	NM				ND		BDL		NM	
Total Petroleum Hydrocarbons (TPH)												
#2/#4 Fuel Oil or Diesel	mg/kg dry wt.	8.3-1,200	ND				NM		NM		ND	
#6 Fuel Oil	mg/kg dry wt.	17.0-2,500	ND				NM		NM		ND	
Gasoline	mg/kg dry wt.	8.3-1,200	ND				NM		NM		ND	
Jet Fuel	mg/kg dry wt.	8.3-1,200	ND				NM		NM		ND	
Kerosene	mg/kg dry wt.	8.3-1,200	ND				NM		NM		ND	
Other Hydrocarbons	mg/kg dry wt.	8.3-1,200	BDL				NM		NM		2,200	

NOTES:

mg/kg - milligrams per kilogram

ND - compound was not detected above or below the laboratory detection limit

NM - compound was not measured

BDL - compound was detected below the applicable laboratory detection limit; however, could not be quantified

Laboratory analysis for EPH via Mass DEP Draft 1.0

Laboratory analysis for TPH via SW846 8015 Modified

ATC PHASE II 1998

TABLE 1

SUMMARY OF SOIL LABORATORY ANALYTICAL RESULTS FOR EXCAVATION 1
UST 1-4 AREA

Crane Co. Manufacturing Plant
Goodwin and Pinevale Streets
Springfield, Massachusetts

DEP Waiver Site No. 1-0170

Sampling Date: 02 July 1997

Compound	Units	Minimum Detection Limits	S-1 S-2 S-3 S-4 S-5 S-6					
			N.W. Sidewalk (6'-8')	N. Sidewalk-West Under Pad (6'-8')	N. Sidewalk-Mid Under Pad (6'-8')	N. Sidewalk-East Under Pad (6'-8')	W. Sidewalk-North Under Tunnel (6'-8')	W. Sidewalk-South Under Tunnel (6'-8')
Polycyclic Aromatic Hydrocarbons (PAHs)								
Acenaphthene	mg/kg	0.33-3.33	BDL	BDL	BDL	ND	BDL	BDL
Acenaphthylene	mg/kg	0.33-3.33	ND	BDL	BDL	ND	BDL	BDL
Anthracene	mg/kg	0.33-3.33	ND	ND	ND	ND	ND	BDL
Benzo(a)anthracene	mg/kg	0.33-3.33	BDL	BDL	BDL	ND	BDL	BDL
Benzo(a)pyrene	mg/kg	0.67-6.67	BDL	BDL	ND	ND	BDL	BDL
Benzo(b)fluoranthene	mg/kg	0.33-3.33	ND	BDL	BDL	ND	BDL	BDL
Chrysene	mg/kg	0.67-6.67	BDL	BDL	BDL	ND	BDL	BDL
Fluoranthene	mg/kg	0.33-3.33	BDL	BDL	BDL	ND	BDL	BDL
Fluorene	mg/kg	0.33-3.33	BDL	BDL	BDL	ND	BDL	BDL
2-Methylnaphthalene	mg/kg	0.33-3.33	ND	BDL	ND	ND	BDL	7.10
Naphthalene	mg/kg	0.33-3.33	ND	BDL	BDL	ND	BDL	3.93
Phenanthrene	mg/kg	0.33-3.33	BDL	BDL	BDL	ND	BDL	7.10
Pyrene	mg/kg	1.0-10.0	BDL	BDL	BDL	ND	BDL	BDL
Total Petroleum Hydrocarbons (TPH)								
#2/#4 Fuel Oil or Diesel	mg/kg	8.3-1,200	ND	ND	ND	ND	ND	ND
#6 Fuel Oil	mg/kg	17.0-2,500	ND	ND	ND	ND	ND	ND
Gasoline	mg/kg	8.3-1,200	ND	ND	ND	ND	ND	ND
Jet Fuel	mg/kg	8.3-1,200	ND	ND	ND	ND	ND	ND
Kerosene	mg/kg	8.3-1,200	ND	ND	ND	ND	ND	ND
Other Hydrocarbons	mg/kg	8.3-1,200	39	9,300	5,800	BDL	6,300	15,000

NOTES:

mg/kg - milligrams per kilogram

ND - compound was not detected above or below the laboratory detection limit

BDL - compound was detected below the applicable laboratory detection limit; however, could not be quantified

Laboratory analysis for PAHs via SW846 Method 8270

Laboratory analysis for TPH via SW846 8015 Modified

ATTN: DUALEX - 11 1998

TABLE 2

SUMMARY OF SOIL LABORATORY ANALYTICAL RESULTS FOR EXCAVATION 2 AND 3

Crane Co. Manufacturing Plant
Goodwin and Finevale Streets
Springfield, Massachusetts

DEP Waiver Site No. 1-0170

Sampling Date: 08 December 1997

Compound	Units	Minimum Detection Limits	S-1	
			Soil Bottom EXC-2 (8'-9')	Soil Bottom EXC-3 (4'-5')

Total Petroleum Hydrocarbons (TPH)

mg/kg 20.0-22.0 28.6 34,300

Volatile Organic Compounds (VOCs)

Acetone mg/kg 0.08 NM BDL

Polychlorinated Biphenyls (PCBs)

Total PCBs mg/kg 0.025 NM ND

NOTES:

mg/kg - milligrams per kilogram

ND - compound was not detected above or below the laboratory detection limit

NM - compound was not measured

BDL - compound was detected below the applicable laboratory detection limit; however, could not be quantified

Laboratory analysis for TPH via EPA Method 418.1

Laboratory analysis for VOCs via SW846 8240

Laboratory analysis for PCBs via SW846 8080

ATC PHASE II 1998

TABLE I
SUMMARY OF POST-EXCAVATION SOIL ANALYTICAL DATA

Oily Soil Areas #2 and #3
Former Crane Manufacturing Facility
Goodwin and Pinevale Streets
Springfield, Massachusetts
DEP Waiver Site No. 1-0170

Sampling Date: 18 November 1996

Compound	Units	Minimum Detection Limits	Composite Grid Samples							
			Area #2 Grids E/R (2)	Area #2 Grids F/Q (1.5)	Area #2 Grids GP (1.5)	Area #2 Grids H/O (1.5)	Area #2 Grids I/N (1.5)	Area #2 Grids I/M (1.5)	Area #3 Grids G/H (3)	Area #3 Grids Q/R (1)
Total Petroleum Hydrocarbons (TPH)	mg/kg	19.6 - 20.1	64.8	113	283	540	927	500	648	56.5

NOTES:

mg/kg - milligrams per kilogram
Laboratory analysis for TPH via EPA Method 418.1

ATTN: PHASE II 1098

LEGEND

GROUNDWATER CONTOUR

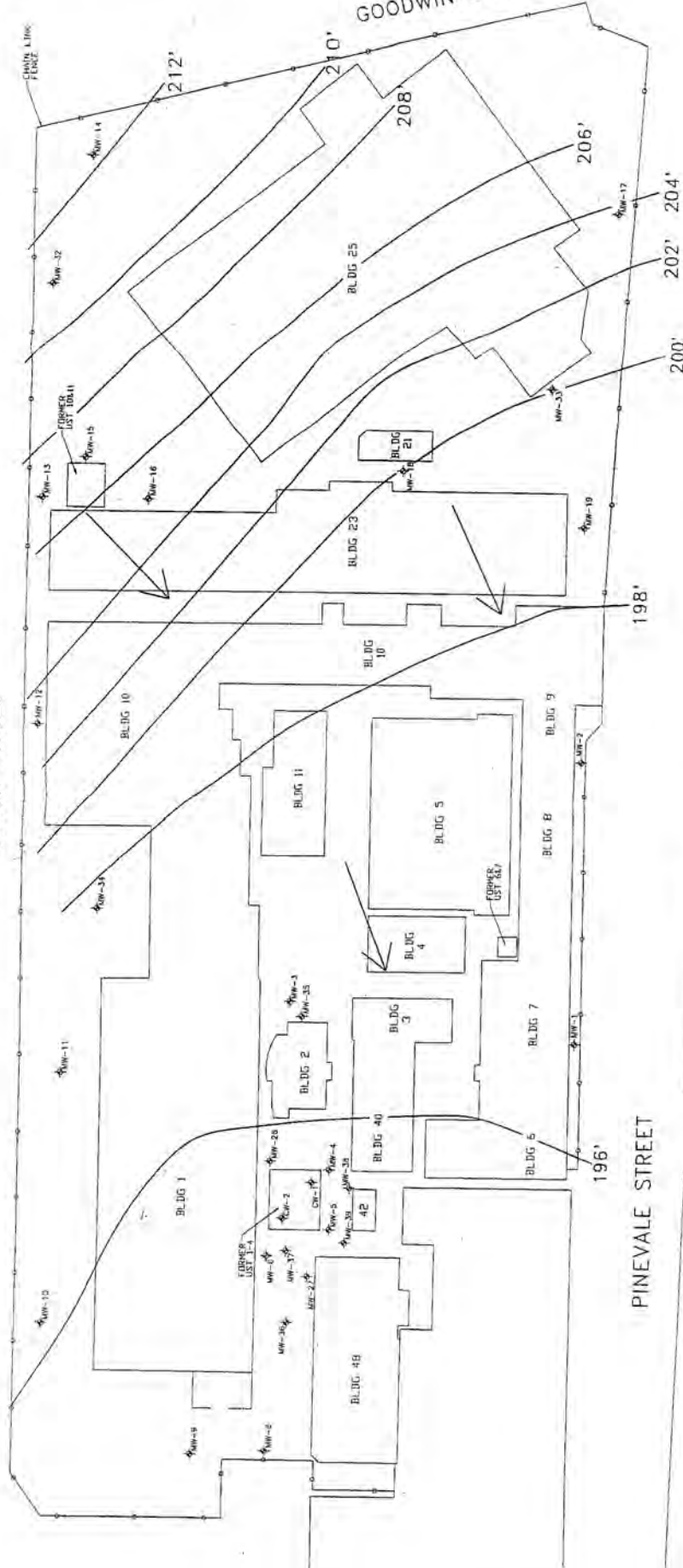
ESTIMATED FLOW DIRECTION
OF GROUNDWATER

TRUE NORTH
SITE NORTH

MOXON STREET

GOODWIN STREET

PINEVALE STREET



MONITORING WELL LOCATIONS
& GROUNDWATER CONTOUR MAP
(21 AUGUST 1998)

CRANE MANUFACTURING
FACILITY

SPRINGFIELD, MA
DEP WAIVER SITE #1-0170

PROJECT NUMBER
10585.0010

SCALE
1" = 100'

DRAWN BY
PWF 01/26/98

REVISOR BY
DRAWING FILE: CRANE

FIGURE NUMBER

5

CHECKED BY: TOB

REVISED BY:

ATC ASSOCIATES INC.

39 Spruce Street
East Longmeadow, MA 01028
Tel: (413) 525-1198 Fax: (413) 525-8227

ATC 7/14/98 # 1026

TABLE 1

SOIL SAMPLE DESCRIPTIONS

Crane Co.
Pinevale, Goodwin and Moxon Streets
Springfield (Indian Orchard), Massachusetts

RTN 1-0170

NON-WE-03-3A070

Sampling Date: 27 August 2003

Soil Sample Location		Ground Surface Material	Soil Description
B-2	B-2A	Soil	Medium to dark brown medium to fine sand, some gravel, moist, loose, no odor or stains
	B-2B	Soil	Light brown coarse to medium sand, some gravel, moist, loose, no odor or stains
B-3	B-3A	Soil	Medium brown medium to fine sand, trace silt and brick fragments, dry, loose, no odor or stains
	B-3B	Soil	Medium brown fine sand and very small brick fragments, trace gravel, dry, loose, no odor or stains
B-6	B-6A	Soil	Medium brown fine sand, some silt, trace gravel, dry, loose, no odor or stains
	B-6B	Soil	Medium brown fine sand, some silt, trace gravel, dry, loose, no odor or stains
B-8	B-8A	Asphalt	Dark brown, medium to fine sand, some silt, dry, loose, no odor or stains
	B-8B	Asphalt	Dark brown, medium to fine sand, some silt, dry, loose, no odor or stains
B-9	B-9A	Asphalt	Dark brown, coarse to medium sand, trace gravel and silt, dry, loose, no odor or stains
	B-9B	Asphalt	Dark brown medium sand, trace gravel and silt, moist, loose, no odor or stains
B-10	B-10A	Soil	Dark brown medium to fine sand, trace silt and organics, moist, loose, no odor or stains
	B-10B	Soil	Dark brown medium to fine sand, trace silt and organics, moist, loose, no odor or stains
B-11	B-11A	Soil	Dark brown medium to fine sand, trace silt, gravel and organics, moist, loose, no odor or stains
	B-11B	Soil	Medium brown medium to fine sand, trace silt, gravel and organics, dry, loose, no odor or stains
B-14	B-14A	Soil	Medium brown medium to fine sand, trace silt and gravel, moist, loose, no odor or stains
	B-14B	Soil	Medium brown medium to fine sand, trace silt and gravel, moist, loose, no odor or stains
B-16	B-16A	Concrete	Medium brown coarse to medium sand and gravel, moist, loose, no odor or stains
	B-16B	Concrete	Medium brown coarse to medium sand and gravel, moist, loose, no odor or stains
B-18	B-18A	Concrete	Dark brown medium sand, some silt, trace gravel, moist, loose, no odor or stains
	B-18B	Concrete	Medium brown medium sand, some gravel, trace fine sand, moist, loose, no odor or stains
BF-1		Soil	Dark brown medium to fine sand, trace very small building materials, dry, loose, no odor or stains
BF-2		Soil	Dark brown medium to fine sand, trace very small building materials, moist, loose, no odor or stains
IMS-1		Concrete	Medium brown silt and fine to medium sand, trace gravel and brick pieces, moist, dense, no odor or stains
IMS-2		Concrete	Medium to orange brown silt and fine sand, trace gravel, moist, dense, no odor or stains

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TABLE 2
SUMMARY OF SOIL ANALYTICAL DATA
METALS

Crane Co.
Pinevale, Goodwin and Moxon Streets
Springfield (Indian Orchard), Massachusetts
RTN 1-0170
NON-WF-03-3A070

Sampling Date: 27 August 2003

Compound	Unit	Composite Soil Samples													
		B-2 6-12" bgs	B-3 6-12" bgs	B-6 6-12" bgs	B-8 6-12" bgs	B-9 6-12" bgs	B-10 6-12" bgs	B-11 6-12" bgs	B-14 6-12" bgs	B-16 6-12" bgs	B-18 6-12" bgs	BF-1 6-12" bgs	BF-2 6-12" bgs	IMS-1 6-12" bgs	IMS-2 6-12" bgs
Metals															
Antimony	mg/kg	ND (<8.12)	ND (<8.42)	ND (<8.31)	ND (<8.39)	ND (<8.22)	ND (<8.32)	ND (<8.37)	ND (<8.54)	ND (<8.11)	ND (<8.38)	ND (<10.9)	14.2	ND (<8.79)	ND (<9.16)
Arsenic	mg/kg	ND (<10.1)	ND (<10.5)	ND (<10.4)	ND (<10.5)	ND (<10.3)	18.2	ND (<10.5)	ND (<10.7)	ND (<10.1)	ND (<10.5)	ND (<10.9)	11.6	ND (<11.0)	ND (<11.5)
Barium	mg/kg	ND (<101)	167	ND (<104)	ND (<105)	ND (<103)	144	195	ND (<107)	ND (<101)	ND (<105)	NS	NS	ND (<110)	ND (<115)
Beryllium	mg/kg	ND (<0.63)	ND (<0.66)	ND (<0.65)	ND (<0.66)	ND (<0.64)	0.91	ND (<0.65)	ND (<0.67)	ND (<0.63)	ND (<0.65)	ND (<0.68)	ND (<0.70)	ND (<0.69)	ND (<0.72)
Cadmium	mg/kg	ND (<1.01)	ND (<1.05)	ND (<1.04)	4.37	ND (<1.03)	2.38	5.04	ND (<1.07)	ND (<1.01)	ND (<1.05)	1.12	3.48	ND (<1.10)	ND (<1.15)
Chromium	mg/kg	ND (<20.3)	ND (<21.0)	ND (<20.8)	23.7	ND (<20.6)	76.3	49.9	ND (<21.4)	ND (<20.3)	ND (<20.9)	ND (<21.9)	ND (<22.5)	ND (<22.0)	ND (<22.9)
Copper	mg/kg	ND (<102)	ND (<105)	267	195	ND (<103)	12000	565	ND (<107)	ND (<101)	ND (<105)	708	14100	ND (<110)	ND (<115)
Lead	mg/kg	14.7	38.8	88.4	46.4	12.1	1370	641	11.4	3.65	103	97.9	803	9.3	8.18
Mercury	mg/kg	0.012	0.049	0.065	0.055	0.015	0.316	1.3	0.018	0.006	0.043	0.085	0.063	0.71	0.01
Nickel	mg/kg	ND (<16.2)	ND (<16.8)	ND (<16.6)	21.5	ND (<16.4)	111	88.4	ND (>17.1)	ND (<16.2)	ND (<16.8)	21.4	33.7	ND (<17.6)	ND (<18.3)
Selenium	mg/kg	ND (<10.1)	ND (<18.4)	ND (<10.4)	ND (<10.5)	ND (<10.3)	ND (<13.0)	ND (<10.5)	ND (<10.7)	ND (<10.1)	ND (<10.5)	ND (<10.9)	ND (16.8)	ND (<16.5)	ND (<11.5)
Silver	mg/kg	ND (<1.01)	ND (<1.05)	ND (<1.04)	13.2	2.11	3.65	1.25	ND (<1.07)	ND (<1.01)	1.3	ND (<1.09)	2.37	ND (<1.10)	ND (<1.15)
Thallium	mg/kg	ND (<6.50)	ND (<6.74)	ND (<6.65)	ND (<6.71)	ND (<6.58)	ND (<6.65)	ND (<6.69)	ND (<6.83)	ND (<6.49)	ND (<6.70)	ND (<8.75)	ND (<8.99)	ND (<7.03)	ND (<7.33)
Zinc	mg/kg	ND (<102)	125	127	134	ND (<103)	661	632	ND (<107)	ND (<101)	ND (<105)	375	6320	ND (<110)	ND (>115)

NOTES:

ND - Non Detect

mg/kg - milligrams per kilogram (parts per million)

bgs - below ground surface

Laboratory method detection limits given in parenthesis.

Samples analyzed for 13 Priority Pollutant Metals.

current
(2009)
3-1/2009 2/3

20
20
1,000
100
2
30
NS
300
20
20
400
100
8
2,500

ATC POST-AUDIT 2003

TABLE 3
SOIL VAPOR POINT DATA

Crane Co.
Pinevale, Goodwin and Moxon Streets
Springfield (Indian Orchard), Massachusetts
RTN 1-0170
NON-WE-03-3A070

Soil Vapor Point ID	Sampling Dates	Location	Depth bgs	Ground Surface Material	PID Response (ppm)
SV-1	9/12/03	North of former monitoring well MW-8	12 inches	Asphalt	21.4
SV-2	8/22/03	Northwest of former monitoring well MW-8	12 inches	Asphalt	1.2
SV-3	9/12/03	North of former monitoring well MW-27	12 inches	Concrete	28.9
SV-4	9/12/03	Northwest of former monitoring well MW-27	12 inches	Concrete	26.4
SV-5	8/22/03	North-northwest of former monitoring well MW-27	12 inches	Concrete	ND
SV-6	9/12/03	East of former monitoring well MW-8	12 inches	Asphalt	20.5

NOTES:

PID - Photoionization Detector

PID responses off of the soil vapor samples were collected using a ThermoEnvironmental 580B Photoionization Detector.

ppm - Parts Per Million

ND - Not Detected (less than 1.0 ppm)

bgs - Below Ground Surface

ATC POST-AUDIT 2003

TABLE 4

SUMMARY OF SOIL VAPOR ANALYTICAL DATA

Crane Co.
Pinevale, Goodwin and Moxon Streets
Springfield (Indian Orchard), Massachusetts
RTN 1-0170
NON-WE-03-3A070

Sampling Date: 12 September 2003

APH Compounds	Unit	Soil Vapor Points			
		SV-1	SV-3	SV-4	SV-6
1,3 Butadiene	ug/m ³	<2.0	<2.0	<2.0	<2.0
Methyl-tert-butyl ether (MTBE)	ug/m ³	<2.0	<2.0	<2.0	<2.0
Benzene	ug/m ³	<2.0	5	<2.0	<2.0
Toluene	ug/m ³	87	109	7	6
Ethylbenzene	ug/m ³	3	<2.0	<2.0	<2.0
m/p-Xylenes	ug/m ³	11	1	<2.0	6
o-Xylene	ug/m ³	3	<2.0	<2.0	<2.0
Naphthalene	ug/m ³	<14.0	<14.0	<14.0	<14.0
2-Methylnaphthalene	ug/m ³	<15.0	<15.0	<15.0	<15.0
C5-C8 Aliphatic Hydrocarbons	ug/m ³	962	543	594	406
C9-C12 Aliphatic Hydrocarbons	ug/m ³	<90.0	<90.0	<90.0	<90.0
C9-C10 Aromatic Hydrocarbons	ug/m ³	<76.0	<76.0	<76.0	<76.0

NOTE:

APH - Air-Phase Petroleum Hydrocarbons

ND - Not Detected

ug/m³ - micrograms per cubic meter

TABLE 4A

SUMMARY OF SOIL VAPOR ANALYTICAL DATA

Crane Co.
Pinevale, Goodwin and Moxon Streets
Springfield (Indian Orchard), Massachusetts

RTN 1-0170
NON-WE-03-3A070

Sampling Date: 12 September 2003

APH Compounds	Unit	Soil Vapor Points			
		SV-1	SV-3	SV-4	SV-6
1,3 Butadiene	PPBv	<1.0	<1.0	<1.0	<1.0
Methyl-tert-butyl ether (MTBE)	PPBv	<0.5	<0.5	<0.5	<0.5
Benzene	PPBv	<0.5	2	<0.5	<0.5
Toluene	PPBv	23	29	2	2
Ethylbenzene	PPBv	1	<0.5	<0.5	<0.5
m/p-Xylenes	PPBv	3	6	<0.5	1
o-Xylenes	PPBv	1	<0.5	<0.5	<0.5
Naphthalene	PPBv	<2.6	<2.6	<2.6	<2.6
2-Methylnaphthalene	PPBv	<2.6	<2.6	<2.6	<2.6
C5-C8 Aliphatic Hydrocarbons	PPBv	NR	NR	NR	NR
C9-C12 Aliphatic Hydrocarbons	PPBv	NR	NR	NR	NR
C9-C10 Aromatic Hydrocarbons	PPBv	NR	NR	NR	NR

NOTE:

APH - Air-Phase Petroleum Hydrocarbons

ND - Not Detected

NR - Not Reported

PPBv - Parts per billion per volume

TABLE 5

SUMMARY OF SOIL ANALYTICAL DATA
EPH AND VPH COMPOUNDS

Crane Co.
Pinevale, Goodwin and Moxon Streets
Springfield (Indian Orchard), Massachusetts
RTN 1-0170
NON-WE-03-3A070

Sampling Date: 11 September 2003

Compound	Unit	Soil Samples	
		S-1	S-2
EPH Compounds			
C9-C18 Aliphatics	mg/kg	ND (<21.1)	ND (<21.3)
C19-C36 Aliphatics	mg/kg	ND (<21.1)	ND (<21.3)
C11-C22 Aromatics	mg/kg	27.7	112
Acenaphthene	mg/kg	ND (<0.5)	1.4
Acenaphthylene	mg/kg	ND (<0.5)	ND (<0.5)
Anthracene	mg/kg	ND (<0.5)	2.4
Benzo(a)anthracene	mg/kg	1.1	7
Benzo(a)pyrene	mg/kg	0.8	4.4
Benzo(b)fluoranthene	mg/kg	1.7	8.6
Benzo(g,h,i)perylene	mg/kg	ND (<0.5)	2
Benzo(k)fluoranthene	mg/kg	0.6	1.8
Chrysene	mg/kg	1.1	4.7
Dibenzo(a,h)anthracene	mg/kg	ND (<0.5)	0.9
Fluoranthene	mg/kg	1.8	14.1
Fluorene	mg/kg	ND (<0.5)	0.7
Ideno(1,2,3-cd)pyrene	mg/kg	ND (<0.5)	3.6
2-Methylnaphthalene	mg/kg	ND (<0.5)	ND (<0.5)
Naphthalene	mg/kg	ND (<0.5)	ND (<0.5)
Phenanthrene	mg/kg	0.7	11.9
Pyrene	mg/kg	1.6	11
VPH Compounds			
C5-C8 Aliphatics	mg/kg	ND (<18.5)	ND (<18.7)
C9-C12 Aliphatics	mg/kg	ND (<18.5)	ND (<18.7)
C9-C10 Aromatics	mg/kg	ND (<18.5)	ND (<18.7)
Benzene	mg/kg	ND (<0.16)	ND (<0.16)
Ethylbenzene	mg/kg	ND (<0.16)	ND (<0.16)
MTBE	mg/kg	ND (<0.16)	ND (<0.16)
Naphthalene	mg/kg	ND (<0.526)	ND (<0.533)
Toluene	mg/kg	ND (<0.16)	ND (<0.16)
m/p-Xylene	mg/kg	ND (<0.32)	ND (<0.32)
o-Xylene	mg/kg	ND (<0.16)	ND (<0.16)

NOTES:

EPH - Extractable Petroleum Hydrocarbons

VPH - Volatile Petroleum Hydrocarbons

ND - Non Detect

mg/kg - milligrams per kilogram (parts per million)

Laboratory method detection limits given in paranthesis.

AIC POST-AUDIT 2003

TABLE 6
SUMMARY OF SOIL ANALYTICAL DATA
PAH COMPOUNDS

Crane Co.
Pinevale, Goodwin and Moxon Streets
Springfield (Indian Orchard), Massachusetts
RTN 1-0170
NON-WE-03-3A070

Sampling Date: 11 September 2003

PAH Compounds	Unit	Soil Samples	
		S-1	S-2
Acenaphthene	mg/kg	ND (<0.18)	1.46
Acenaphthylene	mg/kg	ND (<0.18)	0.19
Anthracene	mg/kg	0.33	2.06
Benzo(a)anthracene	mg/kg	1.35	6.90
Benzo(a)pyrene	mg/kg	1.28	6.08
Benzo(b)fluoranthene	mg/kg	1.72	6.44
Benzo(g,h,i)perylene	mg/kg	0.82	2.99
Benzo(k)fluoranthene	mg/kg	0.64	4.87
Chrysene	mg/kg	1.65	7.79
Dibenzo(a,h)anthracene	mg/kg	0.28	1.10
Fluoranthene	mg/kg	2.22	11.1
Fluorene	mg/kg	ND (<0.18)	1.16
Ideno(1,2,3-cd)pyrene	mg/kg	0.89	3.68
2-Methylnaphthalene	mg/kg	ND (<0.18)	0.36
Naphthalene	mg/kg	ND (<0.18)	1.04
Phenanthrene	mg/kg	1.37	9.11
Pyrene	mg/kg	2.14	11.1

NOTES:

PAH - Polynuclear Aromatic Hydrocarbons

ND - Non Detect

mg/kg - milligrams per kilogram (parts per million)

Laboratory method detection limits given in paranthesis.

ATC POST-AUDIT 2003

LEGEND

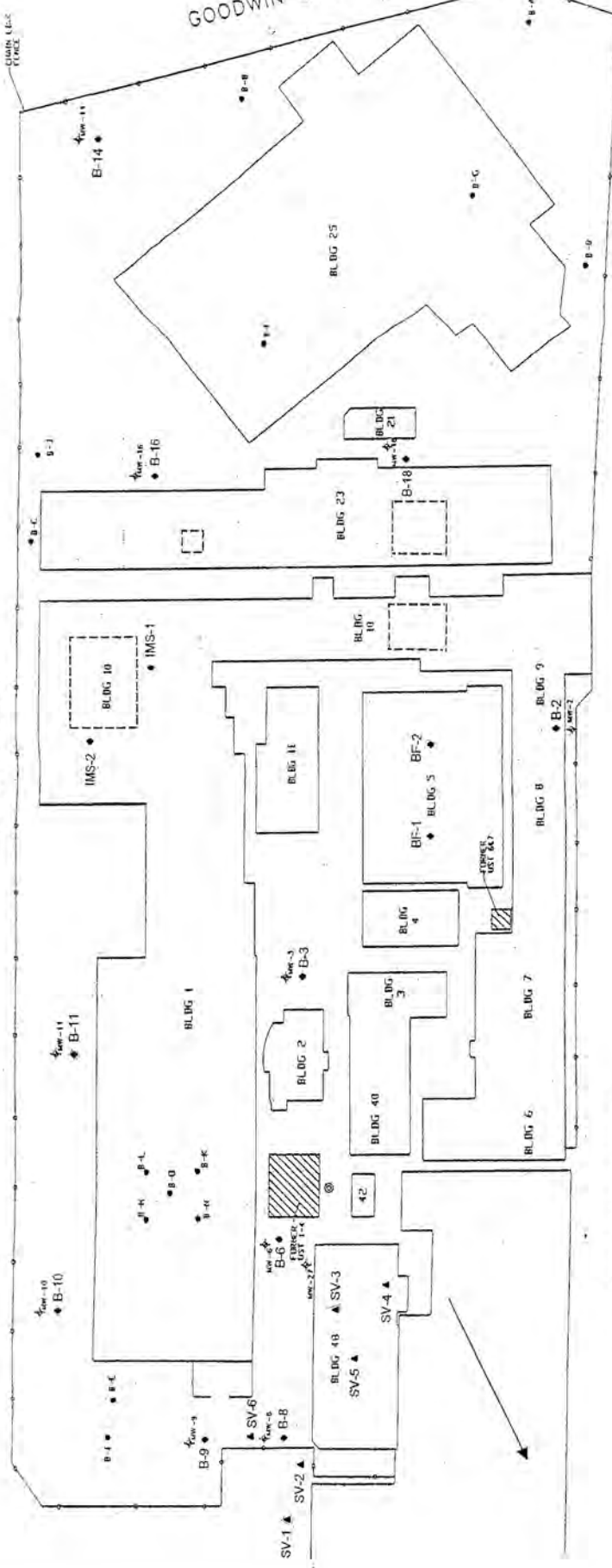
- B-1 FORMER BORING LOCATION - 1988
- B-2 BORING LOCATION - 2003
- SV-1 SOIL VAPOR POINT - 2003
- AREAS OF OILY SOIL REMOVAL - 2003
- ⊙ MANHOLE
- DIRECTION OF GROUNDWATER FLOW



MOXON STREET

GOODWIN STREET

PINEVALE STREET



MAIN OFFICE

ESSEX

CORTELL

HAMPDEN

ADDENDUM RISK CHARACTERIZATION

CRANE MANUFACTURING FACILITY

SPRINGFIELD, MA
DEP WAIVER SITE #1-0170

PROJECT NUMBER:

10585.0010

SCALE:

1" = 100'

DRAWN BY:

PVF 01/26/98

CHECKED BY:

TGB

REVIEWED BY:

FIGURE NUMBER:



39 Spruce Street
East Longmeadow, MA 01028
Tel (413) 525-1198 Fax (413) 525-8227

DRAWING FILE CRANE

U.S. 2001 2002

TABLE 2-2
ANALYTICAL TEST RESULTS FOR SOILS

<u>Boring/Monitor Well No.</u>	<u>Sample No.</u>	<u>Depth</u>	<u>Area</u>	<u>Petroleum (µg/g) Hydrocarbons</u>	<u>PCB's (mg/kg)</u>
MW-1	S-1	0.5'-2'	Railroad	430	
MW-2	S-1	0.5'-2'	Railroad	399	<80
MW-2	S-2	3'-4'	Railroad	352	
MW-3	S-1	1'-2.5'	Yard	354	<160
MW-3	S-3	10'-11.5'	Yard	304	
MW-3	S-4	15'-16.5'	Yard	400	
MW-4	S-313	10'-11.5'	Tank 1-4	420	
MW-4	S-4	15'-16.5'	Tank 1-4	4570	<80
MW-5	S-3	10'-11.5'	Tank 1-4	4396	
MW-5	S-4	15'-16.5'	Tank 1-4	257	
MW-6	S-3	10'-11.5'	Tank 1-4	343	
MW-6	S-4	15'-16.5'	Tank 1-4	276	
MW-7	S-1	0'-1.5'	Yard	1751	<80
MW-7	S-2	5'-6.5'	Yard	394	<80
MW-8	S-1	1'-2'	Railroad	1771	<800
MW-9	S-1	0.5'-1.5'	Railroad	1460	<80
MW-10	S-1	0.5'-1.5'	Railroad	728	
MW-11	S-1	0.5'-2'	Railroad	345	
MW-12	S-1	0.5'-1.5'	Railroad	1194	<80
MW-13	S-1	0.5'-1.5'	Railroad	358	
MW-14	S-1	0.5'-1.5'	Railroad	309	
MW-15	S-3	10'-11.5'	Tank 10-11	263	
MW-16	S-3	10'-11.5'	Tank 10-11	284	
MW-17	S-1	0.5'-1.5'	Railroad	1762	
MW-18	S-1	0.5'-1.5'	Railroad	430	<80
MW-19	S-1	0.5'-1.5'	Railroad	325	
MW-19	S-2	5'-6.5'	Railroad	244	
MW-21	S-1	0.5'-1.5'	Landfill	-	-
MW-21	S-2	5'-6.5'	Landfill	240	<200
MW-21	S-5	20'-21.5'	Landfill		<80
MW-22	S-1	0'-2'	Landfill	231	<80
MW-22	S-5	20'-21.5'	Landfill		<300
MW-23	S-1	0'-2'	Landfill	505	<80
MW-24	S-1	0'-2'	Landfill		<80
MW-24	S-2	5'-6.5'	Landfill	254	<80
MW-25	S-1	0'-2'	Landfill	306	<80
A-1	base of pit		Tank 1-4	39400	
A-2	pit sidewall, above water table		Tank 1-4	1250	
A-3	base of pit at water table		Tank 1-4	12500	
A-4	base of pit at water table		Tank 1-4	1650	
A-5	base of pit below water table		Tank 1-4	1800	
A-6	base of tank #10		Tank 10-11	11300	
A-7	base of tank #11		Tank 10-11	8670	
A-8	soil below base of excavation of tank #10		Tank 10-11	2210	

3322F E445-210

TABLE 2-3 ANALYTICAL TEST RESULTS FOR WATER

Monitor Well No.	Ground Water Sample Depth	Area	Water Level (Ft below ground surface)	Petroleum Hydrocarbons (mg/l)	PCB's (ug/l)
MW-1	7'-15'	Railroad	7.18'	6	<10
2	8'-15'	Railroad	7.73'	24	
3	8.5'-15'	Yard	8.55'	10	<10
4	8.5'-15'	Tank 1-4	8.56'	178	<0.5
4 (oil phase)	8.5'-15'	Tank 1-4	--	--	<5,000
5	8.5'-15'	Tank 1-4	--	16	
6	8.83'-15'	Tank 1-4	--	3	
7	9.6'-15'	Yard 8	9.60'		
8	10'-15'	Railroad	10.10'	8	<10
9	10'-20'	Railroad	10.51'	10	<10
10	15'-20'	Railroad	12.66'	8	<10
11	16.7'-25'	Railroad	14.16'	6	<10
12	16.5'-20'	Railroad	14.43'	3	<10
13	15'	Railroad	13.08'	5	<10
14	17.5'-20'	Railroad	15.16'	4	
15	13'	Tank 10-11	10.66'	4	
16	12'	Tank 10-11	11.54'	3	
17	9.5'-15'	Railroad	9.44'	4	
18	8.8'-15'	Railroad	8.82'	2	<10
19	9.3'-15'	Railroad	9.35'	3	
20	15.7'-20'	Railroad	15.7'-S.U.	3	
21	23'-30'	Landfill	22.98'-S.U.	3	<0.5
22	26'-30'	Landfill	23.79'	4	<0.5
23	23'-30'	Landfill	20.72'	3	
24	14'-20'	Landfill	14.35'-S.U.	2	
25	16'-20'	Landfill	16.35'-S.U.	1	
<u>Surface Water</u>					
<u>Tank 1-4 Area</u>					
W-1			15	<2.0	<50

TABLE 2-4 ANALYTICAL TEST RESULTS FOR WATER

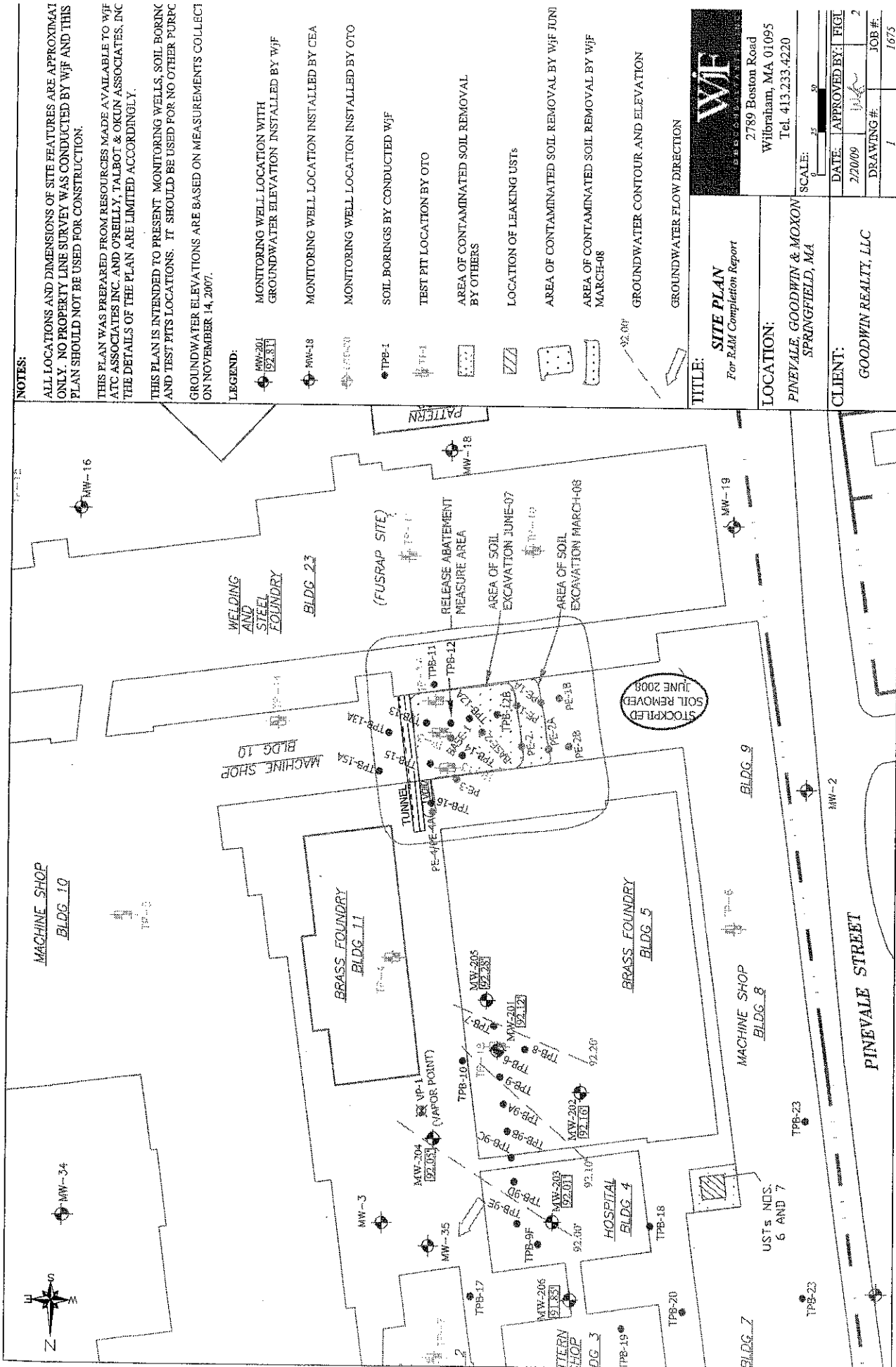
Monitor Well No.	Ground Water Sample Depth	Area	Water Level (ft below ground surface)	Volatile Organic Compounds (ppb)
MW-1	7'-15'	Railroad	7.18'	4.0 1,1-Dichloroethane, 16.0 1,1,1-Trichloroethane
2	8'-15'	Railroad	7.73'	
3	8.5'-15'	Yard	8.55'	2.9 1,1-Dichloroethane
4	8.5'-15'	Tank 1-4	8.56'	2.0 1,1 Dichloroethane, 6.5 Benzene, 18.0 Ethylbenzene, 50.0 total xylenes
4 (oil phase)	8.5'-15'	Tank 1-4	--	
5	8.5'-15'	Tank 1-4	--	
6	8.83'-15'	Tank 1-4	--	
7	9.6'-15'	Yard 8	9.60'	
8	10'-15'	Railroad	10.10'	4.0 1,1,1-Trichloroethane
9	10'-20'	Railroad	10.51'	
10	15'-20'	Railroad	12.66'	ND
11	16.7'-25'	Railroad	14.16'	
12	16.5'-20'	Railroad	14.43'	
13	15'	Railroad	13.08'	ND
14	17.5'-20'	Railroad	15.16'	
15	13'	Tank 10-11	10.66'	
16	12'	Tank 10-11	11.54'	
17	9.5'-15'	Railroad	9.44'	
18	8.8'-15'	Railroad	8.82'	6.0 1,1-Dichloroethane, 8.9 1,1,1 Trichloroethane
19	9.3'-15'	Railroad	9.35'	
20	15.7'-20'	Railroad	15.7'-S.U.	ND
21	23'-30'	Landfill	22.98'-S.U.	ND
22	26'-30'	Landfill	23.79'	ND
23	23'-30'	Landfill	20.72'	
24	14'-20'	Landfill	14.35'-S.U.	
25	16'-20'	Landfill	16.35'-S.U.	

Surface Water
Tank 1-4 Area
W-1

15

ND

ERT RI 1987



WJF RAM completion 2009



TABLE 1
Summary of Extractable Petroleum Hydrocarbon (EPH) Soil Laboratory Data
Former Machine Shop - Building 10
Former Chapman Valve / Crane Company
Pinevale, Goodwin and Moxon Streets
Springfield, Massachusetts 01115

All results reported in mg/kg

Extractable Petroleum Hydrocarbons				EPH Fractions				EPH Target Analytes															
Sample ID	Date	Depth (ft)	PID/Petroleum Screening (ppm)	C ₇ -C ₁₀ Aliphatics	C ₁₀ -C ₁₄ Aliphatics	C ₁₅ -C ₁₈ Aliphatics	C ₁₉ -C ₂₂ Aromatics	Naphthalene	2-Methyl naphthalene	Acenaphthylene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a) anthracene	Chrysene	Benz(b) fluoranthene	Benz(a) fluoranthene	Benz(a) pyrene	Indeno (1,2,3-cd) pyrene	Dibenz(a,h) anthracene	Benz(a) pyrene
TPB-11 0-2'	12/12/06	0-2'	NA	<31.3	63.6	<31.3	<31.3	<0.156	<0.156	<0.156	<0.156	0.364	<0.156	0.834	0.789	0.356	0.452	0.327	0.436	0.464	0.311	<0.156	0.342
TPB-13A 0-2'	12/12/06	0-2'	NA	<31.6	<31.6	<31.6	<31.6	<0.157	<0.157	<0.157	<0.157	0.347	<0.157	1.53	1.550	0.864	0.847	0.845	0.78	1.060	0.673	<0.157	0.848
TPB-14 0-2'	12/12/06	0-2'	NA	<35.2	221	<70.3	<70.3	0.432	<0.350	<0.350	0.513	27.300	5.660	27.500	23.700	9.750	7.440	5.490	5.990	4.280	4.280	0.502	4.890
TPB-12B 0-2'	12/12/06	0-2'	NA	<41.5	<41.5	<41.5	<41.5	0.33	<0.413	<0.413	<0.413	12.500	3.550	22.500	20.100	0.303	6.630	3.89	5.21	4.25	4.25	0.584	4.83
TPB-15A 0-2'	12/12/06	0-2'	NA	<41.1	121	72.6	72.6	<0.205	<0.205	<0.205	<0.205	0.508	<0.205	1.040	1.010	0.303	0.559	0.252	0.494	0.467	0.267	<0.205	0.528
TPB-16 0-2'	6/25/07	1'	NA	<40.3	253	<202	<202	<1.0	<1.0	<1.0	1.890	24.800	6.450	41.200	35.300	12.300	17.300	6.200	6.050	5.46	3.680	0.269	10.80
PE-1 1'	6/25/07	1'	over range	<29.6	<29.6	86.0	86.0	0.685	0.282	0.691	0.593	10.200	2.020	14.500	12.300	6.520	6.200	6.050	5.46	3.680	0.269	<0.205	10.80
PE-2 1'	6/25/07	1'	over range	<29.5	789	445	445	<1.470	<1.470	<1.470	1.710	32.000	7.010	62.300	56.700	24.30	24.30	24.30	22.60	22.60	0.269	<0.205	20.30
PE-3 1'	6/25/07	1'	1199	<28.2	<28.2	60.4	60.4	<0.141	<0.141	<0.141	<0.141	0.221	<0.141	0.821	0.787	0.402	0.381	0.516	0.347	0.427	0.269	<0.141	0.312
Base-1 2'	6/25/07	2'	304	<27.4	138	30.8	30.8	<0.137	<0.137	<0.137	0.295	4.200	0.928	9.510	8.730	5.36	4.700	4.970	3.510	0.933	0.269	<0.137	3.260
Base-2 2'	6/25/07	2'	0	<26.9	<26.9	<26.9	<26.9	<0.134	<0.134	<0.134	<0.134	1.280	0.349	2.070	1.930	0.877	0.925	0.87	0.766	0.933	0.269	<0.137	0.873
PE-2A 1-2'	10/3/07	1-2'	NA	<36.0	<36.0	<36.0	<36.0	<0.179	<0.179	<0.179	<0.179	<0.134	<0.134	0.311	0.289	0.145	<0.134	<0.134	0.140	0.160	<0.134	<0.134	<0.134
PE-1A 1-2'	10/3/07	1-2'	NA	<36.0	<36.0	<36.0	<36.0	<0.179	<0.179	<0.179	<0.179	2.330	1.130	12.200	11.500	4.090	3.620	2.450	3.860	1.520	3.150	0.499	3.830
Method 1 SI/GW2 Standard				1,000	3,000	81.9	<26.9	0.293	<0.134	0.992	<0.134	0.711	1.130	12.200	11.500	4.090	3.620	2.450	3.860	1.520	3.150	0.499	3.830
Method 1 SI/GW3 Standard				1,000	3,000	1,000	1,000	40	80	600	1,000	500	1,000	1,000	1,000	1,000	7	70	70	2	7	0.7	1,000

Notes:

Method 1 Soil Standard S-1 is the applicable standard to avoid implementation of an Activity and Use Limitation.

Italic value indicates exceedance of SI/GW2 standard.

Shaded value indicates exceedance of SI/GW3 standard.

* = Soil was excavated in June 2007.

** = Soil was excavated in March 2008.

EPH = Extractable Petroleum Hydrocarbons.

MCP = Massachusetts Contingency Plan 310 CMR 40.0000.

PID = photoionization detector.

<L = less than the laboratory reporting limit.

ppm = parts per million.

mg/kg = milligram per kilogram (equivalent to parts per million).

NA = Not analyzed.

N/A = Not available.

WJF RAM CAMP. 2009



TABLE 2
Summary of Polychlorinated Biphenyls (PCBs) Soil Laboratory Data
Former Machine Shop - Building 10
Former Chapman Valve / Crane Company
Pinevale, Goodwin and Moxon Streets
Springfield, Massachusetts 01115

All results reported in mg/kg

Sample ID	Date	Depth (ft)	PCB - 1016	PCB - 1221	PCB - 1232	PCB - 1242	PCB - 1248	PCB - 1254	PCB - 1260	PCB - 1262	PCB - 1268
TPB-11 0-2'	12/12/06	0-2'	<0.0271	<0.0271	<0.0271	<0.0271	<0.0271	<0.0271	<0.0271	<0.0271	<0.0271
TPB-13A 0-2'	12/12/06	0-2'	<0.0276	<0.0276	<0.0276	<0.0276	<0.0276	<0.0276	<0.0276	<0.0276	<0.0276
TPB-14 0-2' *	12/12/06	0-2'	<0.0280	<0.0280	<0.0280	<0.0280	<0.0280	<0.0280	<0.0280	<0.0280	<0.0280
TPB-12B 0-2' *	12/12/06	0-2'	<0.0322	<0.0322	<0.0322	<0.0322	<0.0322	<0.0322	<0.0322	<0.0322	<0.0322
TPB-15A 0-2'	12/12/06	0-2'	<0.0285	<0.0285	<0.0285	<0.0285	<0.0285	<0.0285	<0.0285	<0.0285	<0.0285
TPB-16 0-2' *	12/12/06	0-2'	<0.0303	<0.0303	<0.0303	<0.0303	<0.0303	0.29	0.159	<0.0303	<0.0303
Method 1 S1/GW2 Standard			2	2	2	2	2	2	2	2	2
Method 1 S1/GW3 Standard			2	2	2	2	2	2	2	2	2

Notes:

Method 1 Soil Standard S-1 is the applicable standard to avoid implementation of an Activity and Use Limitation.

Italic value indicates exceedance of S1/GW2 standard.

Shaded value indicates exceedance of S1/GW3 standard.

* = Soil was excavated in June 2007.

MCP = Massachusetts Contingency Plan 310 CMR 40.0000.

"<" = less than the laboratory reporting limit.

NA = Not applicable.

mg/kg = milligrams per kilogram (equivalent to parts per million).

WJF RAM COM. 2009



TABLE 3
Summary of Coal Ash Soil Laboratory Data
Former Machine Shop - Building 10
Former Chapman Valve / Crane Company
Pinevale, Goodwin and Moxon Streets
Springfield, Massachusetts 01115

			Exempt					Non-Exempt		Miscellaneous	
Sample ID	Date	Depth (ft)	Coal	Coal Ash	Coal Flyash	Wood Ash	Tar	Oil Soot	Asphalt	Mineral	
TPB-11 0-2'	12/12/06	0-2'					X				
TPB-12B 0-2' *	12/12/06	0-2'							X		
TPB-13A 0-2'	12/12/06	0-2'								X	
TPB-14 0-2' *	12/12/06	0-2'	X						X		
TPB-15A 0-2'	12/12/06	0-2'	X	X							
TPB-16 0-2' *	12/12/06	0-2'		X			X		X		
PE-2 1' *	6/25/07	1'	X	X		X	X				
PE-4 1' *	6/27/07	1'	X			X	X				
PE-1A 1-2'	10/3/07	1-2'	X								
PE-1B 1-2'	10/3/07	1-2'		X		X					
PE-2A 1-2'	10/3/07	1-2'	X			X					
PE-2B 1-2'	10/3/07	1-2'	X			X-Lead					
PE-4A 1'	10/3/07	1'	X			X					

Notes:

* = Soil was excavated in June 2007.

X = Detected.

WJE RAM COMP. 2009

NOTES:

ALL LOCATIONS AND DIMENSIONS OF SITE FEATURES ARE APPROXIMATE ONLY. NO PROPERTY LINE SURVEY WAS CONDUCTED BY WJF AND THIS PLAN SHOULD NOT BE USED FOR CONSTRUCTION.

THIS PLAN WAS PREPARED FROM RESOURCES MADE AVAILABLE TO WJF BY ATC ASSOCIATES INC. AND O'REILLY, TALBOT & OKUN ASSOCIATES, INC. THE DETAILS OF THE PLAN ARE LIMITED ACCORDINGLY.

THIS PLAN IS INTENDED TO PRESENT MONITORING WELLS, SOIL BORINGS AND TEST PIT LOCATIONS. IT SHOULD BE USED FOR NO OTHER PURPOSE.

LEGEND:

AREA OF CONTAMINATED SOIL REMOVAL BY OTHERS

LOCATION OF LEAKING USTS

LOCATION OF CONTAMINATED SOIL REMOVAL

OTO MONITORING WELL LOCATION

CEA MONITORING WELL LOCATION

OTO TEST PIT LOCATION

SOIL BORINGS BY WJF



WJF
GEOCONSULTANTS, INC.

2789 Boston Road
Wilbraham, MA 01095
Tel. 413.233.4220

SCALE: 0 50 100 200

DATE: 12/20/06
APPROVED BY: *[Signature]*
FIGURE: 2

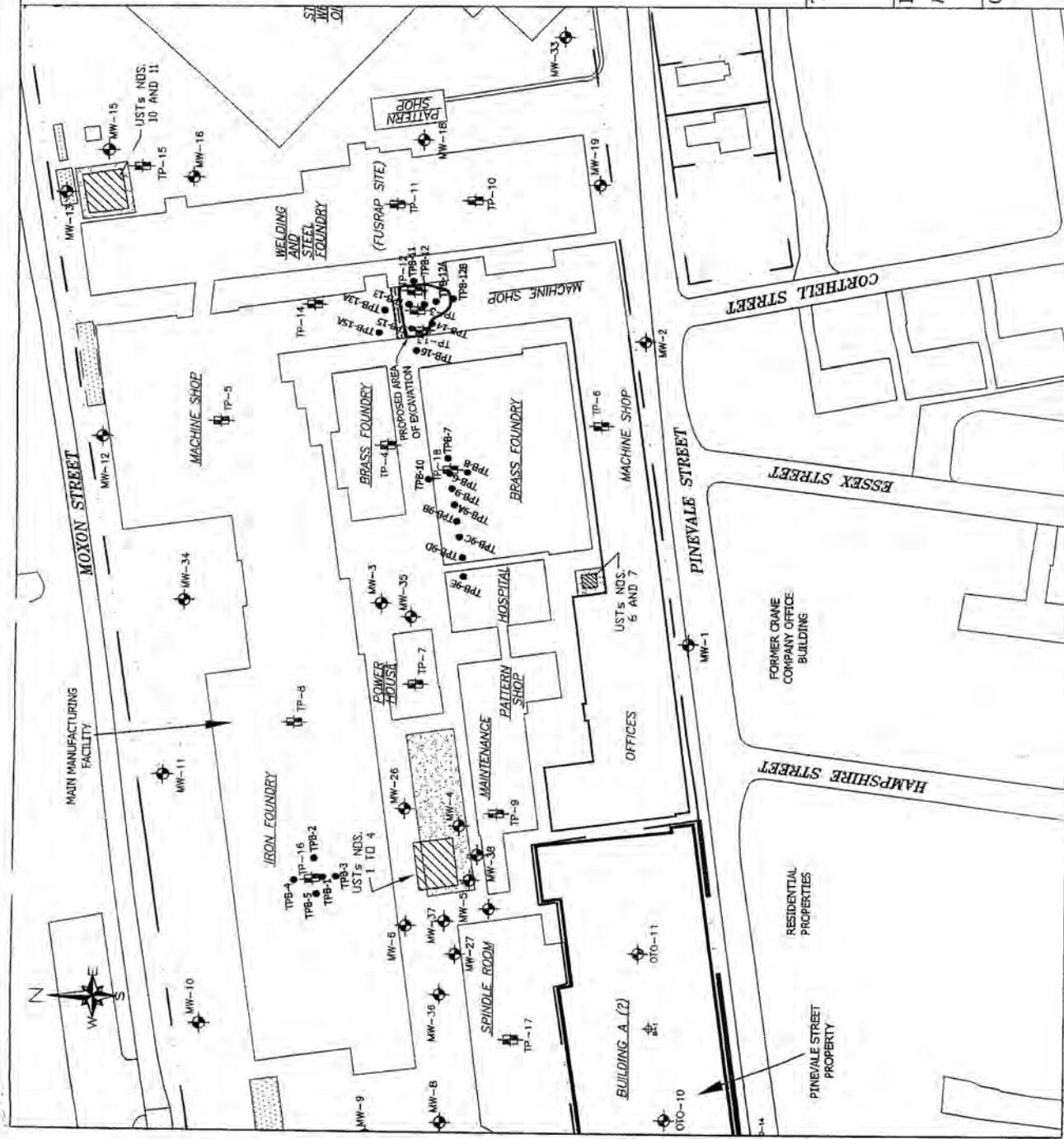
DRAWING #: 1
JOB #: 1673

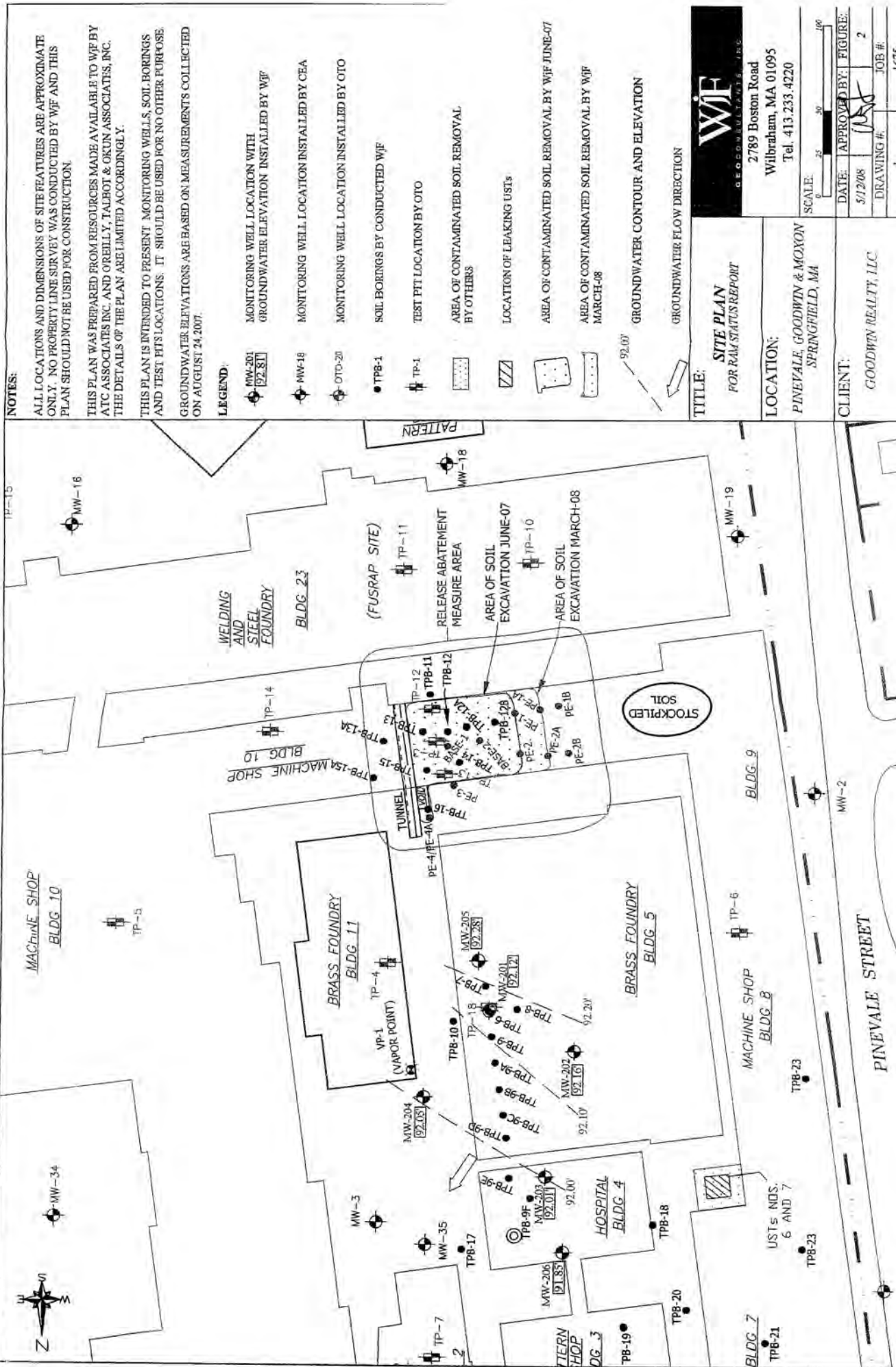
TITLE:
SITE PLAN
FOR RAM STATUS REPORT

LOCATION:
PINEVALE, GOODWIN, MOXON ST.
SPRINGFIELD, MA

CLIENT:
GOODWIN REALTY, LLC

WJF RAM STATUS 2007





NOTES:

ALL LOCATIONS AND DIMENSIONS OF SITE FEATURES ARE APPROXIMATE ONLY. NO PROPERTY LINE SURVEY WAS CONDUCTED BY WJE AND THIS PLAN SHOULD NOT BE USED FOR CONSTRUCTION.

THIS PLAN WAS PREPARED FROM RESOURCES MADE AVAILABLE TO WJE BY ATC ASSOCIATES INC. AND OREILLY, TALBOT & OKUN ASSOCIATES, INC. THE DETAILS OF THE PLAN ARE LIMITED ACCORDINGLY.

THIS PLAN IS INTENDED TO PRESENT MONITORING WELLS, SOIL BORINGS AND TEST PIT LOCATIONS. IT SHOULD BE USED FOR NO OTHER PURPOSE. GROUNDWATER ELEVATIONS ARE BASED ON MEASUREMENTS COLLECTED ON AUGUST 24, 2007.

LEGEND:

- MW-201 92.81' MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION INSTALLED BY WJE
- MW-18 MONITORING WELL LOCATION INSTALLED BY CEA
- OTO-20 MONITORING WELL LOCATION INSTALLED BY OTO
- TPB-1 SOIL BORINGS BY CONDUCTED WJE
- TP-1 TEST PIT LOCATION BY OTO
- AREA OF CONTAMINATED SOIL REMOVAL BY OTHERS
- LOCATION OF LEAKING USTs
- AREA OF CONTAMINATED SOIL REMOVAL BY WJE JUNE-07
- AREA OF CONTAMINATED SOIL REMOVAL BY WJE MARCH-08

GROUNDWATER CONTOUR AND ELEVATION
92.00'

GROUNDWATER FLOW DIRECTION

TITLE: SITE PLAN FOR RAI STATUS REPORT	
LOCATION: PINEVALE, GOODWIN & MOXON SPRINGFIELD, MA	
CLIENT: GOODWIN REALTY, LLC	
SCALE: 0 30 60 FEET	DATE: 5/12/08
APPROVED BY: 	FIGURE: 2
DRAWING #: 1	
JOB #: 1675	

WJE
GEOSCIENCE INC.

2789 Boston Road
 Wilbraham, MA 01095
 Tel. 413.233.4220

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-15

Page 1 OF 2

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/22/09	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/22/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 34.5'	
CASING		No. Samples 8		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		TIME		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		WEIGHT 140 lbs.		FIRST 10'	
SAMPLER Safety		DROP 30" (Wire Line)		COMPL.	
HAMMER		BORING North end of former iron foundry		HR.	
		LOCATION		ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		10/14/13/16	6/24	S-1 (1'-3')	8" CONCRETE Medium dense, brown, medium to coarse SAND, little sub-angular fine gravel, trace fine sand, trace silt, dry	0.0	CONCRETE FILL	
	5	5/4/4/6	13/24	S-2 (5'-7')	Loose, black, fine to medium SAND, little silt, trace coarse sand, dry	0.0		
	10	7/7/13/14	16/24	S-3 (10'-12')	Top 6": Medium dense, brown, medium to fine SAND, little silt, trace coarse sand, wet Bottom 10": Medium dense, brown, medium to coarse SAND, trace fine sand, trace silt, wet	0.0	11' SAND	
	15	4/4/6/11	15/24	S-4 (15'-17')	Medium dense, brown, coarse SAND, little medium sand, trace (-) fine sand trace (-) silt, wet	0.0		
	20	6/14/13/11	18/24	S-5 (20'-22')	Medium dense, brown, coarse SAND and fine GRAVEL, trace medium sand, trace (-) fine sand, trace (-) silt, wet	0.0	20' SAND AND GRAVEL	
	25	12/13/20/20	17/24	S-6 (25'-27')	Dense, brown-red, medium to fine SAND, little fine sub-angular gravel, little silt, wet	0.0	25' GLACIAL TILL	

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-15

Sheet 2 of 2

Project No. 0076-22-04

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6IN.	REC. IN.	TYPE/ NO.				
							GLACIAL TILL	
	30	34/40/24/26	22/24	S-7 (30'-32')	Very dense, brown-red, medium to fine SAND, some fine sub-angular gravel, some silt, wet	0.0		
	35	44/ 50 for 5"	2/24	S-8 (34'-36')	Very dense, brown-red, fine to medium SAND, some silt, little weathered rock, dry Auger refusal at 34.5' End of exploration at 34.5'	0.0		
	40							
	45							
	50							
	55							
	60							

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-16

Page 1 OF 1

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/22/09	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/22/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 13'	
CASING		No. Samples 6		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		TIME		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		WEIGHT		FIRST	
SAMPLER Safety		DROP		COMPL.	
HAMMER		30" (Wire Line)		HR.	
		WATER LEVEL (FT.) 10.5'			
		BORING LOCATION Northwest corner of former iron foundry on pavement			
		ENGINEER/GEOLOGIST Brin Thompson			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		11/12/14/13	22/24	S-1 (1'-3')	3": ASPHALT Top 14": Medium dense, brown, medium to coarse SAND, little silt, little fine gravel, dry Bottom 8": Medium dense, black, fine to medium SAND, little coal ash, trace silt, dry	0.0	ASPHALT FILL	
		12/8/4/3	14/24	S-2 (3'-5')	Medium dense, black, fine to medium SAND, some coal ash, trace silt, dry	0.0		
	5	20/19/17/14	NR	S-3 (5'-7')	No Recovery	-		
		16/8/8/10	4/24	S-4 (7'-9')	Medium dense, brown-black, medium to coarse SAND, little fine sand, trace silt, trace coal ash, dry	0.0		
	10	16/17/20/31	10/24	S-5 (9'-11')	Dense, brown, medium to fine SAND, some silt, trace coarse sand, trace coal ash, dry to wet at 10.5'	0.0	10.5'	
		22/13/20/27	24/24	S-6 (11'-13')	Dense, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace silt, wet	0.0	SAND	
					End of exploration at 13'			
	15							
	20							
	25							

Remarks:

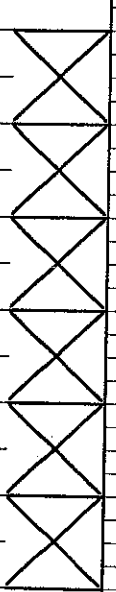
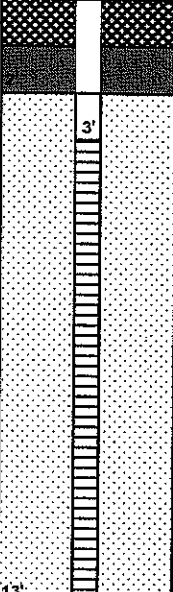
1. Soil headspace screened in field using TEI model 580B photolionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-17

Page 1 OF 1

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/22/09	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/22/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 13'	
CASING		No. Samples 6		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT Rod A 1 5/8" O.D.		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		DROP 30" (Wire Line)		TIME 10'	
SAMPLER HAMMER		WEIGHT 140 lbs.		WATER LEVEL (FT.) 10'	
Safety		DROP		BORING LOCATION North end of site on pavement near pet supply building	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		9/13/11/10	6/24	S-1 (1'-3')	4": ASPHALT Medium dense, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace silt, dry	0.0	ASPHALT FILL	
		4/3/4/5	10/24	S-2 (3'-5')	Top 5": Loose, black, fine to medium SAND, some coal ash, trace silt, dry Bottom 5": Loose, brown, fine to medium SAND, little coarse sand, trace silt, dry	0.0		
	5	8/9/10/12	NR	S-3 (5'-7')	Rock in tip	-		
		12/12/14/16	18/24	S-4 (7'-9')	Medium dense, brown, medium to coarse SAND, little fine gravel, trace (-) fine sand, trace (-) silt, dry	0.0	7' SAND AND GRAVEL	
	10	21/26/30/32	14/24	S-5 (9'-11')	Very dense, brown, coarse SAND, some fine gravel, little medium sand, trace fine sand, trace (-) silt, wet	0.0		
		39/36/32/37	8/24	S-6 (11'-13')	Very dense, brown, coarse SAND, some gravel, little medium sand, trace fine sand, trace (-) silt, wet	0.0		
					End of exploration at 13'			
	15							
	20							
	25							

Remarks:

- Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
- Well at 13' below ground surface, screen 13'-3', solid PVC riser 3' to above ground surface. Sand pack 13'-2', bentonite clay 2'-1', standpipe cemented in place.

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-18

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/22/09	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/22/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 13.5'	
CASING		No. Samples 6		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		DROP		TIME	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		WATER LEVEL (FT.) 10'	
SAMPLER Safety		WEIGHT 140 lbs.		BORING North of former iron foundry	
HAMMER		DROP 30" (Wire Line)		LOCATION ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
					4": ASPHALT GRAVEL to 2' (Asphalt base)		ASPHALT FILL	
		6/7/10/8	22/24	S-1 (2'-4')	Medium dense, brown, medium to coarse SAND, some fine sand, little fine gravel, trace silt, dry	0.0		
	5	8/7/9/12	13/24	S-2 (4'-6')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry	0.0		
		5/6/6/9	8/24	S-3 (6'-8')	Medium dense, brown, fine to medium SAND, little silt, trace coarse sand, trace(-) fine gravel, moist	0.0		
		31/45/ 50 for 5"	10/24	S-4 (8'-10')	Top 2": Very dense, brown, medium to coarse SAND, some fine sand, trace fine gravel, trace silt Middle 2": CONCRETE	0.0	9'	
	10	31/40/33/32	18/24	S-5 (10'-12')	Bottom 6": Very dense, amber-brown, medium to coarse SAND, little fine gravel, trace (-) fine sand, trace (-) silt, dry Very dense, amber-brown, medium to coarse SAND, little fine gravel, trace fine sand, trace(-) silt, wet	0.0	SAND	
		26/ 50 for 5"	8/24	S-6 (12'-14')	Very dense, amber-brown, medium to coarse SAND, little fine gravel, trace fine sand, trace(-) silt, wet Refusal at 13.5'	0.0		
	15				End of exploration at 13.5'			
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-19

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN: Rob		DATE STARTED 09/23/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER: Ronnie		DATE FINISHED 09/23/2009	
TYPE BIT: Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 12'	
CASING		No. Samples 5		GROUND SURFACE ELEV. UNDIST.	
CASING HAMM.		WEIGHT Rod A 1.5/8" O.D.		TIME FIRST	
SAMPLER: 2" O.D. Split Spoon		DROP 30" (Wire Line)		WATER LEVEL (FT.) 6'	
SAMPLER HAMMER		WEIGHT 140 lbs.		BORING LOCATION	
Safety		DROP 30" (Wire Line)		Southeast corner of property, near Moxon Street entrance	
				ENGINEER/GEOLOGIST: Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
					2": ASPHALT 2": ASPHALT base 8": CONCRETE		ASPHALT 1" CONCRETE FILL	
		14/ 50 for 5"	8/24	S-1 (2'-4')	Very dense, brown, fine to medium SAND, some silt, little fine gravel, little concrete, dry	0.1		
	5	17/19/15/14	15/24	S-2 (4'-6')	Dense, brown-red, fine to medium SAND, some silt, little fine gravel, moist	0.3	4' ↓ SAND	
		8/8/8/9	18/24	S-3 (6'-8')	Medium dense, brown-red, fine to medium SAND, some silt, little fine gravel, wet	0.0		
	10	6/7/11/14	20/24	S-4 (8'-10')	Medium dense, brown-red, fine to medium SAND, some silt, little fine gravel, wet	0.0		
		8/13/14/23	22/24	S-5 (10'-12')	Medium dense, brown-red, fine to medium SAND, some silt, little fine gravel, wet	0.0		
					End of exploration at 12'			
	15							
	20							
	25							

Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-20

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR		FOREMAN Rob	DATE STARTED		DATE FINISHED
Seaboard Environmental Drilling		HELPER Ronnie	09/23/2009		09/23/2009
DRILLING EQUIPMENT		COMPLETION DEPTH		GROUND SURFACE ELEV.	
Hollow Stem Auger Rig		10'		DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL		No. Samples	
Hollow Stem Auger				5	
CASING				TIME	
				UNDIST.	
CASING HAMM.		DROP		FIRST	
				COMPL.	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		6'	
SAMPLER		WEIGHT		BORING	
Safety		DROP		LOCATION	
HAMMER		140 lbs.		Southeast corner of property,	
		30" (Wire Line)		near Moxon Street entrance	
				ENGINEER/GEOLOGIST	
				Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5	8/13/20/16	12/24	S-1 (0'-2')	Top 4": Dense, brown, fine to medium SAND, little silt, dry Bottom 8": Dense, brown, fine to medium SAND, some silt, trace fine gravel, dry	0.0	FILL	
		21/20/19/20	16/24	S-2 (2'-4')	Dense, brown-red, fine to medium SAND, some silt, little fine gravel, dry	0.0	1' GLACIAL TILL	
		26/31/35/41	14/24	S-3 (4'-6')	Dense, brown-red, fine to medium SAND, some silt, little fine gravel, dry	0.0		
		27/30/37/31	16/24	S-4 (6'-8')	Dense, brown-red, fine to medium SAND, some silt, little fine gravel, wet at 6'	0.0		
		20/21/32/42	17/24	S-5 (8'-10')	Dense, brown-red, fine to medium SAND, some silt, little fine gravel, wet	0.0		
	10	End of exploration 10'						
	15							
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-21

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/24/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/24/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 26.5'	
CASING		No. Samples 8		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT		TIME	
SAMPLER: 2" O.D. Split Spoon		DROP		WATER LEVEL (FT.)	
SAMPLER HAMMER		WEIGHT 140 lbs.		BORING LOCATION	
		DROP 30" (Wire Line)		Southwest portion of property, in former Machine Shop	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.			
X		4/ 50 for 1"	4/24	S-1 (0'-1')	Very dense, brown, fine to medium SAND, some silt, trace fine sub-angular gravel, trace debris (concrete in tip), dry	SOIL	
X		17/10/11/9	5/24	S-2 (1'-3')	Medium dense, brown, fine to medium SAND, some debris (concrete), little silt, dry	1' CONCRETE FILL	
X	5	3/4/3/4	10/24	S-3 (5'-7')	Loose, brown, medium to coarse SAND, little fine sub-angular gravel		
X	10	8/18/35/38	3/24	S-4 (10'-12')	Very dense, brown, fine to medium SAND, some concrete, little red rock, dry		
X	15	10/10/12/13	NR	S-5 (15'-17')	No Recovery	12' GLACIAL TILL	
X		25/24/14/20	12/24	S-6 (17'-19')	Dense, brown-red, fine to medium SAND, some silt, little fine sub-angular gravel, trace coarse sand, wet		
X	20	9/6/10/10	12/24	S-7 (20'-22')	Medium dense, brown-red, medium to coarse SAND, some fine sub-angular gravel, little fine sand, little silt, wet		
X	25	10/ 50 for 5"	2/24	S-8 (25'-27')	Very dense, quartz, dry		
X					Auger refusal at 26.5'		
X					End of exploration at 26.5'		

Remarks:

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-22

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/24/2002	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/24/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 18'	
CASING		No. Samples 9		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT		TIME	
SAMPLER: 2" O.D. Split Spoon		DROP		WATER LEVEL (FT.) 12'	
SAMPLER Safety		WEIGHT 140 lbs.		BORING South central portion of property, in former Machine Shop	
HAMMER		DROP 30" (Wire Line)		LOCATION ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		6/10/8/7	12/24	S-1 (1'-3')	4": Brown, fine to medium SAND, dry 8": CONCRETE Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry	0.0	TOPSOIL 1" CONCRETE FILL	
	5	3/1/2/3	14/24	S-2 (3'-5')	Top 6": Loose, black, fine to medium SAND, little silt, dry Bottom 8": Loose, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace silt,	0.0		
		6/8/9/15	NR	S-3 (5'-7')	Rock in tip	0.0		
		6/7/11/17	24/24	S-4 (7'-9')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace (-) fine sand, trace (-) silt, dry	0.0		
	10	20/23/27/25	18/24	S-5 (9'-11')	Dense, brown, medium to coarse SAND, some fine gravel, trace(-) fine sand, trace(-) silt, moist	0.0	9' SAND AND GRAVEL	
		17/ 50 for 5"	3/24	S-6 (11'-13')	Very dense, brown, medium to coarse SAND, some fine gravel, trace (-) fine sand, trace (-) silt, wet at 12'	0.0		
	15	6/16/26/27	14/24	S-7 (13'-15')	Dense, gray, medium to coarse SAND, some gravel, little fine sand, little silt, wet	36.8		
		20/24/ 50 for 4"	24/24	S-8 (15'-17')	Dense, gray, medium to coarse SAND, some gravel, little fine sand, little silt, wet	92.1		
		50 for 1"	1/24	S-9 (17'-19')	Very dense, brown-red, medium to coarse SAND, some silt, little fine gravel, little fine sand, wet End of exploration at 18'	136.0	17' GLACIAL TILL	
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
2. Well at 18' below ground surface, screen 18'-8', solid PVC riser 8' -2.5' above ground surface. Sand pack 18'-6', bentonite clay 6'-4', standpipe cemented in place

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ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-23

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PROJECT: Crane Manufacturing			LOCATION: Springfield, MA			PROJECT NO.: 0076-22-04		
DRILLING CONTRACTOR Seaboard Environmental Drilling			FOREMAN Rob HELPER Ronnie			DATE STARTED 09/24/2009		
DRILLING EQUIPMENT Hollow Stem Auger Rig			COMPLETION DEPTH 14.5'			DATE FINISHED 09/24/2009		
TYPE BIT: Hollow Stem Auger			SIZE & TYPE OF CORE BARREL			GROUND SURFACE ELEV. DATUM		
CASING			No. Samples 7			UNDIST.		
CASING HAMM.			DROP			TIME		
SAMPLER: 2" O.D. Split Spoon			Rod A 1 5/8" O.D.			WATER LEVEL (FT.)		
SAMPLER Safety			WEIGHT 140 lbs.			FIRST NE		
HAMMER			DROP 30" (Wire Line)			COMPL.		
						HR.		
						BORING LOCATION Northern corner of former Steel Shop, at southern end of site		
						ENGINEER/GEOLOGIST Brin Thompson		

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		6/4/4/6	4/24	S-1 (1'-3')	4": TOPSOIL 8": CONCRETE Loose, red, BRICK, dry	0.0	TOPSOIL 1" CONCRETE FILL	
	5	12/16/17/30	14/24	S-2 (3'-5')	Dense, black, fine to medium SAND, some silt, some red brick, dry	0.0		
		18/34/20/17	18/24	S-3 (5'-7')	Top 8": Very dense, red, BRICK, dry Bottom 10": Very dense, brown, medium to coarse SAND, some fine gravel, trace (-) fine sand, trace (-) silt, moist	0.0	6'	
		20/21/23/20	20/24	S-4 (7'-9')	Dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, moist (No odor, sticky)*	2.4	SAND AND GRAVEL	
	10	19/31 50 for 3"	8/24	S-5 (9'-11')	Very dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, moist (sticky)*	1.3		
		9/21/ 50 for 5"	4/24	S-6 (11'-13')	Very dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, moist (sticky)*	0.4		
	15	4/9/17/ 50 for 4"	10/24	S-7 (13'-15')	Medium dense, brown-red, fine to medium SAND, some silt, little fine gravel, trace coarse sand, moist (Odor) Auger refusal at 14.5' End of exploration at 14.5'	9.7	13' GLACIAL TILL	
20								
25								


Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
 * Sticky like brown sugar.

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-23A

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO. : 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob HELPER Ronnie		DATE STARTED 10/27/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		COMPLETION DEPTH 5'		DATE FINISHED 10/27/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		GROUND SURFACE ELEV. DATUM	
CASING		No. Samples 2		UNDIST.	
CASING HAMM.		TIME		FIRST	
WEIGHT		WATER LEVEL (FT.)		COMPL.	
DROP		BORING		HR.	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		NE	
SAMPLER Safety		WEIGHT 140 lbs.		Adjacent to CM-23, Southeast quadrant of site	
HAMMER		DROP 30" (Wire Line)		LOCATION	
		ENGINEER/GEOLOGIST Brin Thompson			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		26/19/14/17	16/24	S-1 (1'-3')	12" CONCRETE Brown, medium to coarse SAND, some brick, some concrete	0.0	CONCRETE	
		17/15/18/21	18/24	S-2 (3'-5')	Red BRICK and CONCRETE	0.0	FILL ↓	
	5				End of exploration at 5'			
	10							
	15							
	20							
	25							

Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
 * Sticky like brown sugar.

LOG OF BORING CM-24

PROJECT: Crane Manufacturing.			LOCATION: Springfield, MA		PROJECT NO. : 0076-22-04		
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob HELPER Ronnie		DATE STARTED 09/25/2008		DATE FINISHED 09/25/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig			COMPLETION DEPTH 15'		GROUND SURFACE ELEV. DATUM		
TYPE BIT: Hollow Stem Auger		SIZE &TYPE OF CORE BARREL		No. Samples 7		UNDIST.	
CASING				TIME		FIRST	
CASING HAMM.		WEIGHT		WATER LEVEL (FT.)		COMPL.	
SAMPLER: 2" O.D. Split Spoon		DROP		12.5'		HR.	
SAMPLER Safety		WEIGHT		BORING Southwest corner of property, near Goodwin St.			
HAMMER		140 lbs.		LOCATION			
		30" (Wire Line)		ENGINEER/GEOLOGIST Brin Thompson			

Remarks:									
1. Soil headspace screened in field using TEI model 580B photolionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)									

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ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-25

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/25/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/25/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 20'	
CASING		No. Samples 9		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		TIME		UNDIST.	
WEIGHT		DROP		FIRST	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		COMPL	
SAMPLER Safety		WEIGHT 140 lbs.		HR.	
HAMMER		DROP 30" (Wire Line)		WATER LEVEL (FT.) 11'	
		BORING LOCATION		South end of site, in Machine Shop, near trench	
		ENGINEER/GEOLOGIST		Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		5/4/3/4	18/24	S-1 (1'-3')	Brown, fine SAND and SILT, dry 6" CONCRETE	0.0	TOPSOIL 1" CONCRETE FILL	
		5/5/5/5	15/24	S-2 (3'-5')	Loose, brown, fine to medium SAND, little silt, trace coarse sand, dry	0.0	3'	
	5	6/7/9/13	20/24	S-3 (5'-7')	Medium dense, brown, fine to medium SAND, some silt, little coarse sand, trace fine gravel, dry	0.0	SAND AND GRAVEL	
		16/21/20/20	19/24	S-4 (7'-9')	Medium dense, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace(-) silt, dry	0.0		
	10	31/29/26/12	24/24	S-5 (9'-11')	Dense, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace(-) silt, dry	0.0		
		36/43/41/45	16/24	S-6 (11'-13')	Very dense, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace(-) silt, moist	118		
		20/23/22/24	16/24	S-7 (13'-15')	Top 8": Very dense, brown, medium to coarse SAND and fine GRAVEL, trace(-) fine sand, trace(-) silt, wet Bottom 8": Very dense, gray, medium to coarse SAND and fine GRAVEL, trace(-) fine sand, trace(-) silt, wet (Odor)	82.3		
	15	5/6/36/42	5/24	S-8 (15'-17')	Dense, gray, medium to coarse SAND and fine GRAVEL, trace(-) fine sand, trace(-) silt, wet	51.2	15'	
		4/4/4/50 for 3"	4/24	S-9 (17'-19')	Dense, brown-red, fine to medium SAND, little gravel, little silt, trace coarse sand, wet	1.8	GLACIAL TILL	
	20				Loose, brown-red, fine to medium sand, some silt, little fine gravel, trace coarse sand, wet			18'
					End of exploration at 20'			
	25							

Remarks:

- Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
- Well at 18' below ground surface, screen 18'-8", solid PVC riser 8' -2.5' above ground surface. Sand pack 18'-6", bentonite clay 6'-4", standpipe cemented in place

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-26

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PROJECT: Crane Manufacturing			LOCATION: Springfield, MA		PROJECT NO. : 0076-22-04			
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/25/2009		DATE FINISHED 09/25/2009		
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		COMPLETION DEPTH 10'		GROUND SURFACE ELEV. DATUM		
TYPE BIT... Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		No. Samples 5		UNDIST.		
CASING				TIME		FIRST		
CASING HAMM.		WEIGHT		DROP		3'		
SAMPLER: 2" O.D. Split Spoon		Rod A 1.5/8" O.D.		BORING		Southeast corner of property,		
Safety		WEIGHT		DROP		near Moxon Street entrance		
HAMMER		140 lbs.		30" (Wire Line)		ENGINEER/GEOLOGIST Brin Thompson		
SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5	11/16/20/13	14/24	S-1 (0-2')	Top 10": Dense, brown, medium to coarse SAND, little fine sand, trace silt, dry Bottom 4": Dense, brown-red, fine to medium SAND, some silt, little rock, dry	0.0	FILL GLACIAL TILL ↓	
		16/18/13/14	18/24	S-2 (2'-4')	Dense, brown-red, fine to medium SAND, some fine gravel, some silt, wet at 3'	0.0		
		18/21/12/16	16/24	S-3 (4'-6')	Dense, brown-red, fine to medium SAND, some silt, some fine gravel, wet	0.0		
		24/26/40/47	8/24	S-4 (6'-8')	Very dense, brown-red, fine to medium SAND, some silt, some fine gravel, wet	0.0		
		19/20/21/40	12/24	S-5 (8'-10')	Top 5": Dense, brown-red, coarse SAND, wet Bottom 7": Dense, brown-red, fine to medium SAND, some silt, some fine gravel, wet	0.0		
	10				End of exploration at 10'			
	15							
	20							
	25							
Remarks: 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)								

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-27

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN: Rob		DATE STARTED 09/25/2009	
		HELPER: Ronnie		DATE FINISHED 09/25/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		COMPLETION DEPTH 14'		GROUND SURFACE ELEV. DATUM	
TYPE BIT: Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		No. Samples: 7	
CASING		DROP		TIME	
CASING HAMM.		WEIGHT		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		WATER LEVEL (FT.)	
SAMPLER Safety		WEIGHT 140 lbs.		FIRST 10'	
HAMMER		DROP 30" (Wire Line)		COMPL. HR.	
		BORING LOCATION: Southeast corner of property, near Moxon Street entrance		ENGINEER/GEOLOGIST: Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5	4/11/17/14	12/24	S-1 (0'-2')	Medium dense, brown, fine to coarse SAND, little silt, little fine gravel, dry	0.0	FILL ↓ 8' SAND ↓	
		8/8/8/8	NR	S-2 (2'-4')	Rock in tip	-		
		6/5/5/8	8/24	S-3 (4'-6')	Medium dense, brown, fine to medium SAND and SILT, little fine gravel, dry	0.0		
		26/39/50/45	10/24	S-4 (6'-8')	Very dense, brown, fine to medium SAND, some silt, little fine gravel, little debris (concrete), dry	0.0		
		12/13/14/14	12/24	S-5 (8'-10')	Medium dense, brown-red, fine to medium SAND, some fine gravel, some silt, little coarse sand, wet at 10'	0.0		
		6/9/12/15	18/24	S-6 (10'-12')	Medium dense, brown, fine to medium SAND, little coarse sand, little silt, wet	0.0		
		13/13/15/20	20/24	S-7 (12'-14')	Medium dense, brown, fine to medium SAND, little coarse sand, little silt, wet	0.0		
	15	End of exploration at 14'						
	20							
	25							


Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-28

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PROJECT: Crane Manufacturing			LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04		
DRILLING CONTRACTOR		FOREMAN Rob		DATE STARTED		DATE FINISHED	
Seaboard Environmental Drilling		HELPER Ronnie		09/28/2009		09/28/2009	
DRILLING EQUIPMENT			COMPLETION DEPTH		GROUND SURFACE ELEV.		
Hollow Stem Auger Rig			5.5'		DATUM		
TYPE BIT		Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		No. Samples	
CASING						2	
CASING HAMM.		WEIGHT		DROP		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		WATER LEVEL (FT.)		FIRST	
SAMPLER Safety		WEIGHT		BORING		NE	
HAMMER		140 lbs.		LOCATION		COMPL.	
		30" (Wire Line)		Center east, in Machine Shop near Moxon St.		HR.	
		SAMPLES		ENGINEER/GEOLOGIST		Brin Thompson	

		SAMPLES			ENGINEER/GEOLOGIST Brin Thompson			
SAMPLES	DEPTH FT.	PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.	DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
					12" CONCRETE		CONCRETE	
		21/23/26/18	14/24	S-1 (1'-3')	Dense, brown-red, fine to medium SAND, some fine gravel, little silt, dry	0.0	GLACIAL TILL	
	5	7/8/31/50 for 2"	12/24	S-2 (3'-5')	Dense, brown-red, fine to medium SAND, some silt, little fine gravel, trace(-) coarse sand, moist	0.0		
					End of exploration at 5.5'			
	10							
	15							
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-29

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/28/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/28/2009	
TYPE BIT: Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 8.5'	
CASING		No. Samples 4		GROUND SURFACE ELEV. DUM	
CASING HAMM.		WEIGHT		TIME	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		WATER LEVEL (FT.)	
SAMPLER Safety		DROP		FIRST	
HAMMER		WEIGHT 140 lbs.		6'	
		DROP 30" (Wire Line)		COMPL.	
				HR.	
				BORING Center east, in former Machine Shop near Moxon St.	
				LOCATION	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		4/5/26/37	11/24	S-1 (1'-3')	10": CONCRETE Top 3": Dense, brown, medium to coarse SAND, trace(-) fine sand, trace(-) silt, dry Bottom 8": Dense, brown-red, fine to medium sand, some silt, little fine gravel, dry	0.0	CONCRETE 1' FILL GLACIAL TILL	
	5	11/12/14/12	8/24	S-2 (3'-5')	Medium dense, brown-red, fine to medium SAND, some silt, little fine gravel, trace(-) coarse sand, dry	0.0		
		13/14/13/14	18/24	S-3 (5'-7')	Top 5": Medium dense, brown, fine to medium SAND, trace silt, trace coarse sand, moist Bottom 13": Medium dense, brown-red medium to fine SAND, some silt, little fine gravel, trace(-) coarse sand, wet at 6'	0.0		
		20/ 50 for 2"	6/24	S-4 (7'-9')	Very dense, brown-red, fine to medium SAND, some silt, little fine gravel, trace(-) coarse sand, wet	0.0		
	10				Auger refusal at 8.5' End of exploration at 8.5'			
	15							
	20							
	25							

Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-30

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/28/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/28/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 13.5'	
CASING		No. Samples 6		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT Rod A 1 5/8" O.D.		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		DROP 30" (Wire Line)		TIME 7'	
SAMPLER HAMMER		WEIGHT 140 lbs.		WATER LEVEL (FT.) 7'	
Safety		DROP		BORING East Central portion of site, adjacent to Moxon Street	
		30" (Wire Line)		LOCATION	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		10/8/7/7	18/24	S-1 (1'-3')	4" CONCRETE Brown, fine to medium SAND, some fine gravel, trace silt, dry Top 5": Brown, fine to medium SAND, some fine gravel, trace silt, dry Bottom 13": Medium dense, brown, medium to coarse SAND, some fine gravel, trace(-) fine sand, trace(-) silt, dry	0.0	CONCRETE FILL	
		8/9/9/9	17/24	S-2 (3'-5')	Medium dense, brown, medium to coarse SAND, little fine gravel, trace(-) fine sand, trace(-) silt, dry	0.0		
	5	9/10/10/11	20/24	S-3 (5'-7')	Medium dense, brown, medium to coarse SAND, little fine gravel, trace(-) fine sand, trace(-) silt, dry	0.0		
		7/10/11/14	6/24	S-4 (7'-9')	Medium dense, brown, medium to coarse SAND, some gravel, trace (-) fine sand, trace(-) silt, wet	0.0		
	10	4/5/8/13	4/24	S-5 (9'-11')	Medium dense, brown, medium to coarse SAND, some gravel, trace(-) fine sand, trace(-) silt, wet	0.0		
		11/8/10/50 for 5"	16/24	S-6 (11'-13')	Top 12": Medium dense, brown, medium to coarse SAND, some gravel, trace(-) fine sand, trace(-) silt, wet Bottom 4": Medium dense, brown-red, fine to medium SAND, some silt, little fine gravel, wet Auger refusal at 13.5'	0.0	12' GLACIAL TILL	
	15				End of exploration at 13.5'			
	20							
	25							

Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-31

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/28/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/28/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 32.5'	
CASING		No. Samples 7		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT Rod A 1 5/8" O.D.		UNDIST.	
SAMPLER 2" O.D. Split Spoon		DROP		FIRST	
SAMPLER Safety		WEIGHT 140 lbs.		COMPL.	
HAMMER		DROP 30" (Wire Line)		HR. 1 hr	
		BORING Inside former Iron Foundry, east central side of property			
		LOCATION			
		ENGINEER/GEOLOGIST Brin Thompson			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.			
	5	4/2/5/10	6/24	S-1 (1'-3')	6" CONCRETE Brown-black, fine to medium SAND and GRAVEL Loose, brown, fine to medium SAND, some fine sub-angular gravel, little silt, trace coarse sand, dry	CONCRETE SAND	
		6/7/11/16	14/24	S-2 (5'-7')	Medium dense, brown, medium to coarse SAND, some fine sub-angular gravel, trace(-) fine sand, trace(-) silt, dry		
	10	4/6/7/17	16/24	S-3 (10'-12')	Medium dense, brown, coarse SAND, some fine sub-angular gravel, trace(-) fine to medium sand, trace(-) silt, wet		
	15	2/3/12/10	8/24	S-4 (15'-17')	Medium dense, brown, coarse SAND, some fine sub-angular gravel, trace(-) fine to medium sand, trace(-) silt, wet (rock in tip)		
	20	2/9/5/11	14/24	S-5 (20'-22')	Medium dense, brown, coarse SAND and fine GRAVEL, trace(-) fine to medium sand, trace(-) silt, wet	20' SAND AND GRAVEL	
	25	2/2/5/6	16/24	S-6 (25'-27')	Loose, brown, medium to coarse SAND, some fine sub-angular gravel, trace(-) fine sand, trace(-) silt, wet		


Remarks:

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-31

Sheet 2 of 2

Project No. 0076-22-04

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6IN.	REC. IN.	TYPE/ NO.			
	30	2/7/17/19	15/24	S-7 (30'-32')	Medium dense, brown, medium to coarse SAND, little fine sub-angular gravel, trace(-) fine sand, trace(-) silt, wet	GLACIAL TILL ↓	
					End of exploration at 32.5'		
	35						
	40						
	45						
	50						
	55						
	60						

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO. : 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/29/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/29/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 7.5'	
CASING		No. Samples 3		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		DROP		FIRST 3'	
SAMPLER Safety		WEIGHT 140 lbs.		BORING Center east, in Machine Shop near Moxon St.	
HAMMER		DROP 30" (Wire Line)		LOCATION	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5	4/3/2/6	8/24	S-1 (1'-3')	6": Black, fine to medium SAND, coal, ash, fine gravel 6": CONCRETE Loose, brown-red, fine to medium SAND, some silt, little fine gravel, wet at 3'	0.3 0.0	FILL 1' CONCRETE GLACIAL TILL	
		5/5/5/5	20/24	S-2 (3'-5')	Loose, brown-red, fine to medium SAND, some silt, little fine gravel, trace coarse sand, wet	0.0		
		17/25/31/ 50 for 3"	14/24	S-3 (5'-7')	Top 4": Dense, brown-red, fine to medium SAND, some silt, little fine gravel, trace coarse sand, wet Bottom 10": Very dense, brown, fine to medium SAND, little silt, trace coarse sand, wet Auger refusal at 7.5' End of exploration at 7.5'	0.0	6' SAND	
	10							
	15							
	20							
	25							

Remarks:
 1. Soil headspace screened in field using TEI model 580B photolionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-33

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO. : 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/29/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/29/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 13'	
CASING		No. Samples 6		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		TIME		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		WEIGHT		WATER LEVEL (FT.) 6.5'	
SAMPLER Safety		DROP		BORING Machine Shop near Iron Foundry	
HAMMER		30" (Wire Line)		LOCATION	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		7/10/5/5	10/24	S-1 (1'-3')	4": CONCRETE 8": Brown, fine to medium SAND, fine gravel, dry Top 6": Medium dense, brown, medium to coarse SAND, some fine gravel, trace(-) fine sand, trace(-) silt, dry Bottom 4": Medium dense, dark brown, fine to medium SAND, some silt, trace wood, dry	0.0	CONCRETE FILL	
	5	5/5/6/7	14/24	S-2 (3'-5')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, moist	0.0	3' SAND AND GRAVEL	
		9/13/20/24	16/24	S-3 (5'-7')	Dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, moist to wet at 6.5'	0.0		
		17/20/23/39	6/24	S-4 (7'-9')	Dense, brown, coarse SAND and fine GRAVEL, little fine to medium sand, trace silt, wet	0.0		
	10	6/8/11/13	14/24	S-5 (9'-11')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace(-) fine sand, trace(-) silt, dry	0.0		
		9/11/16/17	24/24	S-6 (11'-13')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace(-) fine sand, trace(-) silt, wet	0.0		
	15				End of exploration at 13'			
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

LOG OF BORING CM-34

PROJECT: Crane Manufacturing			LOCATION: Springfield, MA		PROJECT NO. : 0076-22-04		
DRILLING CONTRACTOR		FOREMAN Rob		DATE STARTED		DATE FINISHED	
Seaboard Environmental Drilling		HELPER Ronnie		09/29/2009		09/29/2009	
DRILLING EQUIPMENT			COMPLETION DEPTH		GROUND SURFACE ELEV.		
Hollow Stem Auger Rig			13'		DATUM		
TYPE BIT		SIZE &TYPE OF CORE BARREL		No. Samples		UNDIST.	
Hollow Stem Auger				6			
CASING				TIME		FIRST	
CASING HAMM.		WEIGHT		WATER LEVEL (FT.)		COMPL.	
		DROP		7'		HR.	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		BORING			
SAMPLER Safety		WEIGHT		East central portion of site, in former			
HAMMER		140 lbs.		LOCATION			
		DROP		Machine shop near former iron foundry and Moxon Street			
		30" (Wire Line)		ENGINEER/GEOLOGIST		Brin Thompson	

Remarks:

2. Well at 13' below ground surface, screen 13'-3', solid PVC riser 3' to above ground surface. Sand pack 13'-2', bentonite clay 2'-1', standpipe cemented in place.

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 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-35

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PROJECT: Crane Manufacturing				LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling				FOREMAN Rob		DATE STARTED 09/29/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig				HELPER Ronnie		DATE FINISHED 09/29/2009	
TYPE BIT: Hollow Stem Auger				SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 15'	
CASING				No. Samples 7		GROUND SURFACE ELEV. DATUM	
CASING HAMM.				WEIGHT		UNDIST.	
SAMPLER: 2" O.D. Split Spoon				DROP		TIME	
Rod A 1 5/8" O.D.				WATER LEVEL (FT.)		FIRST 9'	
SAMPLER Safety				BORING		COMPL.	
HAMMER				LOCATION		HR.	
140 lbs.				East central portion of site			
30" (Wire Line)				ENGINEER/GEOLOGIST		Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		4/7/11/16	8/24	S-1 (1'-3')	14" CONCRETE		CONCRETE	
		19/20/20/20	10/24	S-2 (3'-5')	Medium dense, brown, medium to coarse SAND, some fine gravel, little coarse gravel, trace(-) fine sand, trace(-) silt, dry	0.0	↓ SAND AND GRAVEL	
	5	20/26/27/30	10/24	S-3 (5'-7')	Dense, brown, medium to coarse SAND, some fine gravel, little coarse gravel, trace(-) fine sand, trace(-) silt, dry	0.0		
		27/ 50 for 4"	15/24	S-4 (7'-9')	Very dense, brown, medium to coarse SAND, some fine gravel, little coarse sand, trace(-) silt, dry	0.0		
	10	4/7/11/12	18/24	S-5 (9'-11')	Very dense, brown, fine to medium SAND, some gravel, little coarse sand, trace(-) silt, dry	0.0		
		7/4/5/5	20/24	S-6 (11'-13')	Medium dense, brown, medium to coarse SAND, some fine gravel, little coarse gravel, trace(-) fine sand, trace(-) silt, wet	0.0		
		7/8/11/13	20/24	S-7 (13'-15')	Loose, brown, medium to coarse SAND, some fine gravel, little fine sand, trace silt, wet	0.0		
	15				End of exploration at 15'			
	20							
	25							

Remarks:


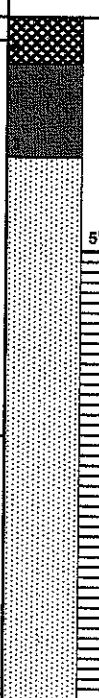
1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-36

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PROJECT: Crane Manufacturing				LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling				FOREMAN Rob		DATE STARTED 09/30/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig				HELPER Ronnie		DATE FINISHED 09/30/2009	
TYPE BIT Hollow Stem Auger				SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 15'	
CASING				No. Samples 7		GROUND SURFACE ELEV. DATUM	
CASING HAMM.				WEIGHT Rod A 1 5/8" O.D.		UNDIST.	
SAMPLER: 2" O.D. Split Spoon				DROP		FIRST 9'	
SAMPLER HAMMER				WEIGHT 140 lbs.		COMPL.	
				DROP 30" (Wire Line)		HR.	
				BORING Northeast of former Iron Foundry, LOCATION between building and roadway			
				ENGINEER/GEOLOGIST Brin Thompson			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		4/5/13/20	14/24	S-1 (1'-3')	4": ASPHALT Brown-black, fine to medium SAND, fine gravel, dry Top 4": Medium dense, brown-black, fine to medium SAND, some silt, trace wood, dry Bottom 10": Medium dense, brown, fine to medium SAND, some silt, dry	0.0	ASPHALT FILL	
	5	16/16/16/10	16/24	S-2 (3'-5')	Top 8": Medium dense, brown, fine to medium SAND, some silt, dry Bottom 8": Medium dense, brown-black, fine to medium SAND, some coal ash, some silt, dry	0.0		
		9/10/13/21	8/24	S-3 (5'-7')	Medium dense, dark brown, fine to medium SAND, some silt, trace coal ash, trace coarse sand, dry	0.0		
		17/16/12/11	14/24	S-4 (7'-9')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace(-) fine sand, trace(-) silt, dry	0.0		
	10	3/4/7/15	3/24	S-5 (9'-11')	Medium dense, brown, medium to coarse SAND, trace fine sand, trace(-) silt, wet	0.0	9' SAND	
		13/17/27/26	12/24	S-6 (11'-13')	Top 4": Medium dense, brown, medium to coarse SAND, trace fine sand, trace(-) silt, wet Bottom 8": Dense, gray, medium to coarse SAND, little fine gravel, trace fine sand, trace(-) silt, wet	0.0		
	15	5/6/7/13	16/24	S-7 (13'-15')	Medium dense, brown-gray, medium to coarse SAND, trace(-) fine sand, trace(-) silt, wet	0.0		
				End of exploration at 15'				
	20							
	25							

Remarks:


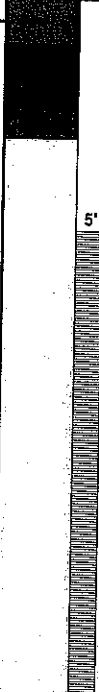
- Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
- Coarse gravel (greater than 1 1/2") observed in auger cuttings from approximately 11'.
- Well at 15' below ground surface, screen 15'-5', solid PVC riser 5' -2.5' above ground surface. Sand pack 15'-3', bentonite clay 3'-1', sand to grade, standpipe cemented in place

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-37

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 09/30/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 09/30/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 15'	
CASING		No. Samples 7		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		TIME	
SAMPLER Safety		DROP		WATER LEVEL (FT.) 8'	
HAMMER		WEIGHT 140 lbs.		BORING Approximate area of former USTs #1-4	
		DROP 30" (Wire Line)		LOCATION	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		7/11/13/17	18/24	S-1 (1'-3')	4": ASPHALT Black, fine to medium SAND, coarse gravel Medium dense, brown, fine to medium SAND, some silt, trace coarse sand, dry	0.0	ASPHALT FILL	
	5	13/13/14/14	4/24	S-2 (3'-5')	Medium dense, brown, medium to coarse SAND, little fine sand, little coal ash, trace silt, dry	0.0		
		9/7/4/3	8/24	S-3 (5'-7')	Medium dense, black, medium to coarse SAND, some coal ash, little fine sand, trace silt, dry	0.0		
		3/2/2/1	14/24	S-4 (7'-9')	Loose, black, medium to coarse SAND, some coal ash, little fine sand, trace silt, wet	0.0		
	10	Weight of rod/24"	18/24	S-5 (9'-11')	Very loose, black, medium to coarse SAND and ORGANICS, little coal ash, little silt, little fine sand, wet	0.0	9' ↓ ORGANICS	
		2/5/7/43	6/24	S-6 (11'-13')	Medium dense, black, medium to coarse SAND and ORGANICS, little silt, little fine sand, wet (wood in tip)	0.0		
	15	7/10/10/10	14/24	S-7 (13'-15')	Medium dense, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace(-) silt, wet	0.0	13' ↓ SAND	
				End of exploration at 15'				
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
2. Well at 15' below ground surface, screen 15'-5', solid PVC riser 5' -2.5' above ground surface. Sand pack 15'-3', bentonite clay 3'-1', sand to grade, standpipe cemented in place

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-38

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PROJECT: Crane Manufacturing			LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling			FOREMAN Rob		DATE STARTED 10/01/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig			HELPER Ronnie		DATE FINISHED 10/01/2009	
TYPE BIT Hollow Stem Auger			SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 17'	
CASING			No. Samples 6'		GROUND SURFACE ELEV. DATUM	
CASING HAMM.			WEIGHT		UNDIST.	
SAMPLER: 2" O.D. Split Spoon			DROP		FIRST	
SAMPLER Safety			WEIGHT 140 lbs.		COMPL.	
HAMMER			DROP 30" (Wire Line)		HR.	
			BORING West central portion of site, near Pinevale Street			
			LOCATION			
			ENGINEER/GEOLOGIST Brin Thompson			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
					4": CONCRETE 6": Black, fine to coarse sand, debris (concrete, brick), fine gravel 12": Brown, medium to coarse SAND, fine gravel, dry 38": Brick	0.0 0.0	CONCRETE FILL	
	5	11/11/13/14	NR	S-1 (5'-7')	Rock in tip	-	SAND AND GRAVEL	
		13/11/11/14	4/24	S-2 (7'-9')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace(-) silt, wet at 9'	0.0		
	10	12/12/12/13	18/24	S-3 (9'-11')	Medium dense, dark gray, fine to medium SAND, little silt, trace coarse sand, wet (Odor)	113	SAND	
		11/12/13/16	24/24	S-4 (11'-13')	Top 14": Medium dense, dark gray, fine to medium SAND, little silt, trace coarse sand, wet (Odor) Bottom 10": Medium dense, brown, fine to medium SAND, little silt, trace coarse sand, wet	120		
	15	9/8/9/11	8/24	S-5 (13'-15')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace(-) fine sand, trace(-) silt, wet	7.6	SAND AND GRAVEL	
		6/9/8/7	14/24	S-6 (15'-17')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, wet	2.0		
					End of exploration at 17'			
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
2. Well at 15' below ground surface, screen 15'-5', solid PVC riser 5' -2.5' above ground surface. Sand pack 15'-3', bentonite clay 3'-1', sand to grade, standpipe cemented in place

ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-39

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PROJECT: Crane Manufacturing			LOCATION: Springfield, MA		PROJECT NO. : 0076-22-04		
DRILLING CONTRACTOR		FOREMAN Rob		DATE STARTED		DATE FINISHED	
Seaboard Environmental Drilling		HELPER Ronnie		10/01/2009		10/01/2009	
DRILLING EQUIPMENT				COMPLETION DEPTH		GROUND SURFACE ELEV.	
Hollow Stem Auger Rig				16'		DATUM	
TYPE BIT		Hollow Stem Auger		SIZE & TYPE OF CORE BARREL			
CASING				No. Samples		7	
CASING HAMM.		WEIGHT		TIME		UNDIST.	
		DROP		WATER LEVEL (FT.)		FIRST	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		7'		COMPL.	
SAMPLER Safety		WEIGHT		BORING		Eastern Machine Shop near Pinevale Street	
HAMMER		140 lbs.		LOCATION			
		30" (Wire Line)		ENGINEER/GEOLOGIST		Brin Thompson	
		SAMPLES					
		1					

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		6/12/16/18	10/24	S-1 (0'-2')	Medium dense, brown-black, fine to medium SAND, some debris (red brick), little silt, little wood, trace silt, dry	0.0	FILL	
		26/21/11/13	4/24	S-2 (2'-4')	Dense, red, BRICK, little wood, dry (Brick to 5')	0.0		
	5	4/2/3/4	NR	S-3 (5'-7')	No Recovery	-		
		6/11/11/26	18/24	S-4 (7'-9')	Medium dense, brown, medium to coarse SAND, little fine sand, trace silt, wet	0.0	7' ↓ SAND	
	10	10/11/11/14	16/24	S-5 (9'-11')	Medium dense, brown, medium to coarse SAND, little fine sand, trace silt, wet	0.0		
		12/13/13/17	24/24	S-6 (11'-13')	Medium dense, brown-orange, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, wet	0.0	11' ↓ SAND AND GRAVEL	
	15	6/8/9/11	24/24	S-7 (14'-16')	Medium dense, brown-orange, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, wet	0.0		14'
		End of exploration at 16'						
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
2. Well at 14' below ground surface, screen 14'-14', solid PVC riser 4' -2.5' above ground surface. Sand pack 14'-2', bentonite clay 2'-0.5', sand to grade, standpipe cemented in place

LOG OF BORING... CM-40

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1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

LOG OF BORING CM-40A

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Remarks:	1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
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O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-41

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 10/02/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 10/02/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 14'	
CASING		No. Samples 7		GROUND SURFACE ELEV. UNDIST.	
CASING HAMM.		WEIGHT Rod A 1 5/8" O.D.		TIME FIRST	
SAMPLER: 2" O.D. Split Spoon		DROP		COMPL.	
SAMPLER Safety		WEIGHT 140 lbs.		HR.	
HAMMER		DROP 30" (Wire Line)		BORING Southeast portion of site near former USTs, near catch basin with visible sheen and a drainpipe in the north direction	
		ENGINEER/GEOLOGIST Bryan Thompson			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		7/8/8/8	16/24	S-1 (1'-3')	8": CONCRETE 4": Brown, medium to coarse SAND, fine gravel Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry	0.0	CONCRETE FILL	
		10/9/7/14	10/24	S-2 (3'-5')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry	0.0		
	5	17/26/31/40	14/24	S-3 (5'-7')	Top 4": Dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry Bottom 10": Very dense, brown-red, fine to medium SAND and SILT, little fine gravel, trace(-) coarse sand, dry	0.0	6' TILL	
		47/32/27/42	14/24	S-4 (7'-9')	Very dense, brown-red, fine to medium SAND and SILT, little fine gravel, trace(-) coarse sand, wet at 8.5'	0.0		
	10	5/6/8/10	18/24	S-5 (9'-11')	Top 6": Medium dense, brown, fine to medium SAND, little silt, wet Bottom 12": Medium dense, brown-red, fine to medium SAND, some silt, little fine gravel, trace coarse sand, wet	0.0	9' SAND	
		12/20/16/18	20/24	S-6 (11'-13')	Dense, brown-red, fine to medium SAND, some silt, little coarse sand, trace fine gravel, wet	0.0	10' GLACIAL TILL	
	15	8/14/ 50 for 1"	5/24	S-7 (13'-15')	Very dense, brown-red, fine to medium SAND, some silt, little coarse sand, trace fine gravel, wet	0.0		
					Auger refusal at 14' End of exploration at 14'			

- Remarks:
- Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
 - Well set at 14' below ground surface, screen from 14'-4', solid PVC riser 4' -2.5' above ground surface. Sand pack 14'-2', bentonite seal 2'-1', sand to grade, standpipe cemented in place

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-42

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO. : 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 10/02/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 10/02/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 14'	
CASING		No. Samples 6		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT Rod A 1 5/8" O.D.		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		DROP 30" (Wire Line)		TIME	
SAMPLER Safety		WEIGHT 140 lbs.		WATER LEVEL (FT.) 7'	
HAMMER		DROP		BORING Central portion of Steel Foundry, near FUSRAP site	
				LOCATION	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
					10" CONCRETE		CONCRETE	
		5/5/5/6	14/24	S-1 (1'-3')	Medium dense, brown, medium to coarse SAND, some fine gravel, little coarse gravel, trace(-) silt, trace(-) fine sand, dry	0.0	1' ↓ SAND AND GRAVEL	
	5	7/11/11/14	12/24	S-2 (3'-5')	Medium dense, brown, medium to coarse SAND, some fine gravel, little coarse gravel, trace(-) silt, trace(-) fine sand, dry	0.0		
		10/14/9/7	8/24	S-3 (5'-7')	Medium dense, brown, medium to coarse SAND, some fine gravel, little coarse gravel, trace(-) silt, trace(-) fine sand, wet at 7'	0.0		
		14/15/17/21	19/24	S-4 (7'-9')	Dense, brown, medium to coarse SAND, some fine gravel, little coarse gravel, trace(-) silt, trace(-) fine sand, wet	0.0		
	10	5/6/8/9	14/24	S-5 (9'-11')	Medium dense, brown, medium to coarse SAND, some fine gravel, little coarse gravel, trace(-) silt, trace(-) fine sand, wet	0.0		
		6/7/10/11	16/24	S-6 (11'-13')	Medium dense, brown, medium to coarse SAND, some fine gravel, little coarse gravel, trace(-) silt, trace(-) fine sand, wet	0.0		
	15				End of exploration at 14'			
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
2. 4' of concrete in first location, moved approximately 20 feet east of original location (possible footing)
3. Well at 14' below ground surface, screen 14'-4', solid PVC riser 4' -2.5' above ground surface. Sand pack 14'-2', bentonite clay 2'-1', sand to grade, standpipe cemented in place

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-43

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PROJECT: Crane Manufacturing				LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling				FOREMAN Rob HELPER Ronnie		DATE STARTED 10/02/2009	
DATE FINISHED 10/02/2009				COMPLETION DEPTH 33'		GROUND SURFACE ELEV. DATUM	
DRILLING EQUIPMENT Hollow Stem Auger Rig				No. Samples 7		UNDIST.	
TYPE BIT Hollow Stem Auger				SIZE & TYPE OF CORE BARREL		TIME	
CASING				WATER LEVEL (FT.) 8'		FIRST	
CASING HAMM.				DROP		COMPL.	
SAMPLER: 2" O.D. Split Spoon				Rod A 1 5/8" O.D.		HR.	
WEIGHT 140 lbs.				DROP 30" (Wire Line)		BORING Southwest corner of former Brass Foundary	
SAMPLER Safety HAMMER				ENGINEER/GEOLOGIST Brin Thompson			


SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		4/6/3/2	12/24	S-1 (1'-3')	10": CONCRETE Loose, black, medium to coarse SAND, some fine to coarse sub-angular gravel, trace(-) fine sand, trace(-) silt, dry	0.0	CONCRETE 1'	
	5	3/4/12/32	14/24	S-2 (5'-7')	Medium dense, brown, fine to medium SAND, little coarse sand, dry	0.0	FINE TO MEDIUM SAND	
	10	8/15/16/18	18/24	S-3 (10'-12')	Dense, gray, medium to coarse SAND, some fine to coarse sub-rounded gravel, trace(-) fine sand, trace(-) silt, wet (Odor)	131	10' SAND AND GRAVEL	
	15	10/16/11/12	18/24	S-4 (15'-17')	Medium dense, gray, medium to coarse sand, some fine sub-angular gravel, trace(-) fine sand, trace(-) silt, wet	84.6		
	20	5/6/7/8	24/24	S-5 (20'-22')	Medium dense, brown, medium to coarse SAND and fine sub-angular GRAVEL, trace(-) fine sand, trace(-) silt, wet	0.0		
	25	6/8/16/18	16/24	S-6 (25'-27')	Medium dense, brown, medium to coarse SAND and fine sub-angular GRAVEL, trace(-) fine sand, trace(-) silt, wet	0.0		

Remarks:

- Soil headspace screened in field using TEI model 580B photolionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
- Well set at 15' on 10/28/2009, Screen from 15'-5', Riser from 5'-2.5' above ground surface. Sand from 15'-3', bentonite seal from 3'-1', native cuttings to grade, stand pipe cemented in place

LOG OF BORING CM-43

Project No. 0076-22-04

		SAMPLES						
SAMPLES	DEPTH FT.	PENETR. RESIST. BL/6IN.	REC. IN.	TYPE/ NO.	DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
	30	25/10/12/16	12/24	S-7 (30'-32')	Medium dense, brown-red, fine to medium SAND and SILT, little coarse sand, trace fine gravel, wet Auger refusal at 33' End of exploration at 33'	0.0	SAND AND GRAVEL ↓ 30' GLACIAL TILL ↓	
	35							
	40							
	45							
	50							
	55							
	60							

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ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 10/02/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 10/02/2009	
TYPE BIT: Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 12'	
CASING		No. Samples 6		GROUND SURFACE ELEV. UNDIST.	
CASING HAMM.		WEIGHT		TIME	
SAMPLER: 2" O.D. Split Spoon		DROPS		WATER LEVEL (FT.) 8'	
Safety		WEIGHT 140 lbs.		BORING East central portion of site, near Pinevale Street	
HAMMER		DROPS 30" (Wire Line)		LOCATION	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		11/7/6/7	3/24	S-1 (0'-2')	Top 1": Medium dense, brown, fine to medium SAND and SILT (TOPSOIL) Bottom 2": Medium dense, black, medium to coarse SAND and COAL ASH, dry	0.0	FILL ↓	
		11/13/12/12	5/24	S-2 (2'-4')	Medium dense, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace(-) silt, dry	0.0	2' ↓ SAND	
	5	11/7/8/9	16/24	S-3 (4'-6')	Medium dense, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace(-) silt, moist	0.0	↓	
		14/18/41/23	8/24	S-4 (6'-8')	Very dense, brown, medium to coarse SAND, some fine gravel, trace(-) fine sand, trace(-) silt, wet at 8'	0.0	6' ↓ SAND AND GRAVEL	
	10	20/20/20/20	13/24	S-5 (8'-10')	Very dense, brown, medium to coarse SAND, some fine gravel, trace(-) fine sand, trace(-) silt, wet	0.0	↓	
		5/5/8/12	14/24	S-6 (10'-12')	Medium dense, brown-gray, medium to coarse SAND, some fine gravel, little fine sand, trace silt, wet	0.0	↓	
					End of exploration at 12'			
	15							
	20							
	25							

Remarks:

- Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-45

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PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 10/27/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 10/27/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 17'	
CASING		No. Samples 7		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT		TIME	
SAMPLER: 2" O.D. Split Spoon		DROP		FIRST	
SAMPLER Safety		WEIGHT 140 lbs.		9'	
HAMMER		DROP 30" (Wire Line)		BORING Maintenance Shop area, north end	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.	DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		3/7/11/26	6/24	S-1 (0'-2')	Top 2": Medium dense, black, medium to coarse, SAND, little fine gravel, trace coal ash, trace silt, dry Bottom 4": Red BRICK	0.0	FILL	
		17/21/8/7	5/24	S-2 (2'-4')	Red BRICK	0.0		
	5				(Drilled through rubble to 5')			
		13/25/13/17	4/24	S-3 (5'-7')	Dense, red BRICK, CONCRETE and WOOD	0.0		
		27/56/17/17	6/24	S-4 (7'-9')	Very dense, red BRICK and CONCRETE, some wood, trace fine to medium sand, trace silt, wet at 9'	0.0		
	10				(drilled through rubble to 10')			
		10/9/7/7	8/24	S-5 (10'-12')	Medium dense, black, fine to medium SAND, little silt, wet	0.0	10' ↓ SAND	
		3/2/4/9	20/24	S-6 (12'-14')	Top 4": Loose, black, fine to medium SAND, little silt, wet Middle 8": Loose, ORGANIC SILT, moist Bottom 8": Loose, gray, medium to coarse SAND, little silt, wet	0.0	12' ↓ PEAT 13' ↓ SAND	
	15	4/5/5/6	18/24	S-7 (15'-17')	Medium dense, gray, medium to coarse SAND, trace fine sand, trace(-) silt, wet	0.0		15'
					End of exploration at 17'			
	20							
	25							

- Remarks:
- Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
 - Well at 15' below ground surface, screen 15'-5', solid PVC riser 5' -2.5' above ground surface. Sand pack 15'-3', bentonite clay 3'-1', native cuttings to grade, standpipe cemented in place

LOG OF BORING CM-46

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob HELPER Ronnie		DATE STARTED 10/27/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		COMPLETION DEPTH 11'		DATE FINISHED 10/27/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		GROUND SURFACE ELEV. DATUM	
CASING		No. Samples 5		UNDIST.	
CASING HAMM.		TIME		FIRST	
WEIGHT		WATER LEVEL (FT.)		COMPL.	
DROPS		BORING LOCATION		HR.	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		South end of site, 20' East of CM-23	
SAMPLER Safety		WEIGHT 140 lbs.		DROPS 30" (Wire Line)	
HAMMER		SAMPLER		ENGINEER/GEOLOGIST Bryn Thompson	

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-47

Page 1 OF 1

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 10/27/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 10/27/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 12'	
CASING		No. Samples 6		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT Rod A 1 5/8" O.D.		TIME UNDIST.	
SAMPLER: 2" O.D. Split Spoon		DROP		WATER LEVEL (FT.) NE	
SAMPLER Safety		WEIGHT 140 lbs.		BORING South end of site, North of CM-23	
HAMMER		DROP 30" (Wire Line)		LOCATION	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5	4/9/11/6	4/24	S-1 (0'-2')	Top 2": Medium dense, brown, fine to medium SAND and SILT (grass)(TOPSOIL) Bottom 2": Red BRICK	0.0	TOPSOIL FILL	
		9/11/7/8	6/24	S-2 (2'-4')	Red BRICK, trace wood	0.0		
		8/13/31/15	16/24	S-3 (4'-6')	Top 6": Red BRICK Bottom 10": Dense, dark brown, medium to coarse SAND, trace fine sand, trace silt, moist	0.0		
		14/15/20/26	15/24	S-4 (6'-8')	Dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace(-) silt, moist	0.0	6' SAND AND GRAVEL	
	10	16/20/17/18	10/24	S-5 (8'-10')	Dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace(-) silt, moist	0.0		
		12/19/24/33	16/24	S-6 (10'-12')	Dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace(-) silt, dry	0.0		
	15				End of exploration at 12'			
	20							
	25							

Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-48

Page 1 OF 1

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob HELPER Ronnie		DATE STARTED 10/27/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		COMPLETION DEPTH 11'		DATE FINISHED 10/27/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		GROUND SURFACE ELEV. DATUM	
CASING CASING HAMM.		WEIGHT Rod A 1 5/8" O.D.		No. Samples 5	
SAMPLER: 2" O.D. Split Spoon SAMPLER Safety HAMMER		DROP 30" (Wire Line)		TIME WATER LEVEL (FT.)	
				FIRST NE	
				UNDIST. COMPL. HR.	
				BORING LOCATION South end of site, West of CM-23	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
					8" CONCRETE		CONCRETE	
		6/17/9/10	8/24	S-1 (1'-3')	Top 2": Red BRICK Bottom 6": Medium dense, brown, medium to coarse SAND, dry	0.0	FILL	
		2/3/3/4	12/24	S-2 (3'-5')	Loose, brown, medium to coarse SAND, little fine gravel, little fine sand, trace silt, dry	0.0		
	5	9/10/10/10	12/24	S-3 (5'-7')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry	0.0	5'	
		12/14/21/29	22/24	S-4 (7'-9')	Dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry	0.0	SAND AND GRAVEL	
	10	18/18/26/46	15/24	S-5 (9'-11')	Dense, brown, medium to coarse SAND and GRAVEL, trace fine sand, trace(-) silt, dry	0.0		
					End of exploration at 11'			
	15							
	20							
	25							

Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-49

Page 1 OF 1

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0078-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob HELPER Ronnie		DATE STARTED 10/27/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		COMPLETION DEPTH 11'		DATE FINISHED 10/27/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		GROUND SURFACE ELEV. DATUM	
CASING		No. Samples 5		UNDIST.	
CASING HAMM.		TIME		FIRST	
SAMPLER: 2" O.D. Split Spoon		WEIGHT 140 lbs.		DROP 30" (Wire Line)	
SAMPLER Safety		WATER LEVEL (FT.)		NE	
HAMMER		BORING South end of site, South of CM-23		COMPL.	
		LOCATION		HR.	
		ENGINEER/GEOLOGIST Brin Thompson			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
					8" CONCRETE		CONCRETE	
		11/7/7/8	5/24	S-1 (1'-3')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry	0.0	SAND AND GRAVEL	
		7/9/7/10	14/24	S-2 (3'-5')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry	0.0		
	5	10/10/10/19	18/24	S-3 (5'-7')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry	0.0		
		15/27/41/37	14/24	S-4 (7'-9')	Very dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, moist	0.0		
	10	42/67/50 for 5"	16/24	S-5 (9'-11')	Very dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, dry	0.0		
					End of exploration at 11'			
	15							
	20							
	25							

Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-50

Page 1 OF 1

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 10/28/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 10/28/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 17'	
CASING		No. Samples 5		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT		UNDIST.	
SAMPLER: 2" O.D. Split Spoon		DROP		TIME	
SAMPLER HAMMER		WATER LEVEL (FT.)		FIRST	
Safety		BORING		COMPL.	
140 lbs.		LOCATION		HR.	
30" (Wire Line)		Central Machine Shop area, north of TP-3			
		ENGINEER/GEOLOGIST		Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
					4" CONCRETE		CONCRETE	
		2/6/26/40	16/24	S-1 (1'-3')	Dense, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace silt, dry	0.0	SAND AND GRAVEL	1'
	5	21/21/37/50 for 2"	14/24	S-2 (3'-5')	Very dense, brown, medium to coarse SAND, some gravel, trace fine sand, trace silt, dry	0.0		
		15/41/50 for 5"	8/24	S-3 (5'-7')	Very dense, brown, medium to coarse SAND, some gravel, trace fine sand, trace silt, dry	0.0		5'
		8/25/42/39	12/24	S-4 (7'-9')	Very dense, brown, coarse SAND and fine GRAVEL, little medium sand, wet at 8'	0.0		
	10	8/14/12/12	12/24	S-5 (9'-11')	Medium dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, wet	0.0		
		8/12/18/23	4/24	S-6 (11'-13')	Dense, brown, medium to coarse SAND, little fine gravel, little fine sand, trace silt, wet	0.0		
	15	3/4/3/3	14/24	S-7 (15'-17')	Loose, brown, medium to coarse SAND, some fine gravel, little fine sand, trace silt, wet	0.0		15'
					End of exploration at 17'			
	20							
	25							

- Remarks:
- Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
 - Well at 15' below ground surface, screen 15'-5', solid PVC riser 5' -2.5' above ground surface. Sand pack 15'-3', bentonite clay 3'-1', native cuttings to grade, standpipe cemented in place

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-51

Page 1 OF 1

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob HELPER Ronnie		DATE STARTED 10/28/2009	
DATE FINISHED 10/28/2009		COMPLETION DEPTH 11'		GROUND SURFACE ELEV. DATUM	
DRILLING EQUIPMENT Hollow Stem Auger Rig		TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL	
CASING		WEIGHT Rod A 1 5/8" O.D.		DROP 30" (Wire Line)	
CASING HAMM.		SAMPLER: 2" O.D. Split Spoon		SAMPLER Safety	
SAMPLER HAMMER		WEIGHT 140 lbs.		DROP 30" (Wire Line)	
BORING LOCATION		Central Machine Shop area, east of TP-3			
ENGINEER/GEOLOGIST		Brin Thompson			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
					4" CONCRETE		CONCRETE	
		4/3/9/17	14/24	S-1 (1'-3')	Medium dense, dark brown, fine to coarse SAND, little silt, trace fine gravel, dry	0.0	FILL	
		2/3/4/4	0/24	S-2 (3'-5')	No Recovery			
	5	6/10/17/20	16/24	S-3 (5'-7')	Medium dense, brown, medium to coarse SAND, little fine gravel, trace fine sand, trace silt, wet at 6.5'	0.0	5'	
		17/14/12/12	18/24	S-4 (7'-9')	Medium dense, brown-gray, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, wet	0.0	SAND AND GRAVEL	
	10	11/8/7/8	24/24	S-5 (9'-11')	Medium dense, brown-gray, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, wet	0.0		
					End of exploration at 11'			
	15							
	20							
	25							

Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-52

Page 1 OF 1

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 10/28/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 10/28/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 11'	
CASING		No. Samples 5		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		DROP		TIME	
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.		WATER LEVEL (FT.) 6.5'	
SAMPLER Safety		WEIGHT 140 lbs.		UNDIST.	
HAMMER		DROP 30" (Wire Line)		BORING Central Machine Shop area, west of TP-3	
				ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
					4" CONCRETE		CONCRETE	
		11/7/20/18	6/24	S-1 (1'-3')	Medium dense, black, medium to coarse SAND, some fine gravel, little fine sand, trace silt, dry	0.0	FILL	
		6/9/9/3	12/24	S-2 (3'-5')	Medium dense, brown, medium to coarse SAND, trace (-) fine sand, trace (-) silt, dry	0.0		
	5	21/17/16/26	14/24	S-3 (5'-7')	Dense, brown, medium to coarse SAND, some fine gravel, trace fine sand, trace (-) silt, moist to wet at 6.5'	0.0	5'	
		7/9/9/8	10/24	S-4 (7'-9')	Medium dense, dark brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, wet	0.0	SAND AND GRAVEL	
	10	7/7/7/7	24/24	S-5 (9'-11')	Medium dense, dark brown, medium to coarse SAND, some fine gravel, trace fine sand, trace silt, wet	0.0		
					End of exploration at 11'			
	15							
	20							
	25							

Remarks:
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-53

Page 1 OF 1

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO.: 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob HELPER Ronnie		DATE STARTED 10/28/2009	
DATE FINISHED 10/28/2009		COMPLETION DEPTH 11'		GROUND SURFACE ELEV. DATUM	
DRILLING EQUIPMENT Hollow Stem Auger Rig		TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL	
CASING CASING HAMM.		WEIGHT Rod A 1 5/8" O.D.		DROP	
SAMPLER: 2" O.D. Split Spoon		SAMPLER Safety		WEIGHT 140 lbs.	
HAMMER		DROP 30" (Wire Line)		BORING LOCATION North of CM-40, former UST 10-11 area	
		ENGINEER/GEOLOGIST Brin Thompson			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
		14/8/14/13	14/24	S-1 (0-2')	Top 2": MULCH Bottom 12": Red BRICK	0.0	FILL	1'
		15/17/11/20	12/24	S-2 (2'-4')	Medium dense, red BRICK, trace brown fine to medium sand, trace concrete, dry	0.0		
	5	14/15/16/13	14/24	S-3 (4'-6')	Dense, red, BRICK, trace concrete, dry	0.0		4'
		11/13/7/42	16/24	S-4 (6'-8')	Medium dense, red BRICK, trace wood, trace gray fine to medium sand, trace silt, wet at 7'	0.0		
	10	14/18/26/50 for 2"	5/24	S-5 (8'-10')	Dense, ash, wet	0.0		
		11/50 for 5"	5/24	S-6 (10'-12')	Very dense, black, medium to coarse SAND, some ash, trace brick, wet	0.0		11'
					Auger refusal at 11' End of Exploration			
	15							
	20							
	25							

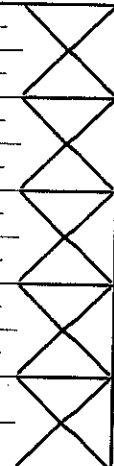
- Remarks:
- Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
 - Well set at 11' below ground surface, screen 11'-4', solid PVC riser 4' -2' above ground surface. Sand pack 11'-2', bentonite clay 2'-1', native cuttings to grade, standpipe cemented in place

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-54

Page 1 OF 1

PROJECT: Crane Manufacturing		LOCATION: Springfield, MA		PROJECT NO. : 0076-22-04	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Rob		DATE STARTED 10/28/2009	
DRILLING EQUIPMENT Hollow Stem Auger Rig		HELPER Ronnie		DATE FINISHED 10/28/2009	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL		COMPLETION DEPTH 10'	
CASING		No. Samples 5		GROUND SURFACE ELEV. DATUM	
CASING HAMM.		WEIGHT		TIME	
SAMPLER: 2" O.D. Split Spoon		DROP		WATER LEVEL (FT.) 8'	
SAMPLER Safety		WEIGHT 140 lbs.		BORING west of CM-40, in former UST 10-11 area	
HAMMER		DROP 30" (Wire Line)		LOCATION ENGINEER/GEOLOGIST Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5	4/5/6/3	6/24	S-1 (0'-2')	Top 2": MULCH Bottom 4": Red BRICK, dry	0.0	FILL	
		17/12/11/8	14/24	S-2 (2'-4')	Medium dense, red, BRICK and CONCRETE, dry	0.0		
		7/8/8/9	10/24	S-3 (4'-6')	Medium dense, red, BRICK, trace concrete, dry	0.0		
		21/20/26/28	12/24	S-4 (6'-8')	Dense, red, BRICK, wet at 8'	0.0		
		18/50 for 3"	7/24	S-5 (8'-10')	Top 6": Very dense, red, BRICK, wet Bottom 1": Very dense, COAL ASH, wet	0.0		
	10	Auger refusal at 10' End of Exploration						
	15							
	20							
	25							

Remarks:
1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

O'REILLY, TALBOT & OKUN ASSOCIATES, INC.
ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

LOG OF BORING CM-55

Page 1 OF 1

PROJECT: Crane Manufacturing			LOCATION: Springfield, MA		PROJECT NO. : 0076-22-04		
DRILLING CONTRACTOR		FOREMAN Rob	DATE STARTED		DATE FINISHED		
Seaboard Environmental Drilling		HELPER Ronnie	10/28/2009		10/28/2009		
DRILLING EQUIPMENT			COMPLETION DEPTH		GROUND SURFACE ELEV.		
Hollow Stem Auger Rig			10'		DATUM		
TYPE BIT		Hollow Stem Auger	SIZE & TYPE OF CORE BARREL		No. Samples		
CASING					5		
CASING HAMM.		WEIGHT	DROP		UNDIST.		
SAMPLER: 2" O.D. Split Spoon		Rod A 1 5/8" O.D.			TIME		
SAMPLER Safety		WEIGHT	DROP		WATER LEVEL (FT.)		
HAMMER		140 lbs.	30" (Wire Line)		8'		
SAMPLER			BORING				
			East of CM-40 in former UST 10-11 area				
			LOCATION				
			ENGINEER/GEOLOGIST Brin Thompson				

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5	2/3/3/3	6/24	S-1 (0-2')	Top 4": MULCH, wet Bottom 2": Red, BRICK, dry	0.0	FILL 	
		4/5/5/19	0/24	S-2 (2'-4')	No Recovery	—		
		6/11/13/21	6/24	S-3 (4'-6')	Medium dense, red, BRICK, dry	0.0		
		10/12/19/8	8/24	S-4 (6'-8')	Dense, red, BRICK, trace wood, trace concrete, trace brown fine to medium SAND, wet at 8'	0.0		
		11/50 for 5"	4/24	S-5 (8'-10')	Very dense, red, BRICK, trace wood, trace concrete, trace brown fine to medium SAND, wet	0.0		
	10				Auger refusal at 10' End of Exploration			
	15							
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

October 13, 2009

Valerie Tillinghast
OTO Associates
293 Bridge St. Suite 500
Springfield, MA 01103

Project Location: Crane Manufacturing, Springfield, MA
Client Job Number:
Project Number: 76-22-04
Laboratory Work Order Number: 09J0115

Enclosed are results of analyses for samples received by the laboratory on October 5, 2009. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Susan M. Burney
Project Manager



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

OTO Associates
293 Bridge St. Suite 500
Springfield, MA 01103
ATTN: Valerie Tillinghast

REPORT DATE: 10/13/2009

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 76-22-04

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 09J0115

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Crane Manufacturing, Springfield, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
CM-17	09J0115-01	Ground Water		MADEP-EPH-04-1.1 MADEP-VPH-04-1.1 SW-846 6020A SW-846 7470A SW-846 8260B	
CM-36	09J0115-02	Ground Water		MADEP-EPH-04-1.1 MADEP-VPH-04-1.1 SW-846 6020A SW-846 7470A SW-846 8260B	
CM-42	09J0115-03	Ground Water		MADEP-EPH-04-1.1 MADEP-VPH-04-1.1 SW-846 6020A SW-846 7470A SW-846 8260B	
CM-34	09J0115-04	Ground Water		MADEP-EPH-04-1.1 MADEP-VPH-04-1.1 SW-846 6020A SW-846 7470A SW-846 8260B	
CM-39	09J0115-05	Ground Water		MADEP-EPH-04-1.1 MADEP-VPH-04-1.1 SW-846 6020A SW-846 7470A SW-846 8260B	
MW-35	09J0115-06	Ground Water		MADEP-EPH-04-1.1 MADEP-VPH-04-1.1 SW-846 6020A SW-846 7470A SW-846 8260B	
Existing-1	09J0115-07	Ground Water		MADEP-EPH-04-1.1 MADEP-VPH-04-1.1 SW-846 6020A SW-846 7470A SW-846 8260B	
Existing-2	09J0115-08	Ground Water		MADEP-EPH-04-1.1 MADEP-VPH-04-1.1 SW-846 6020A SW-846 7470A SW-846 8260B	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

OTO Associates
293 Bridge St. Suite 500
Springfield, MA 01103
ATTN: Valerie Tillinghast

REPORT DATE: 10/13/2009

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 76-22-04

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 09J0115

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Crane Manufacturing, Springfield, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
CM-37	09J0115-09	Ground Water		MADEP-EPH-04-1.1	
				MADEP-VPH-04-1.1	
				SW-846 6020A	
				SW-846 7470A	
Existing-3	09J0115-10	Ground Water		SW-846 8260B	
				MADEP-EPH-04-1.1	
				MADEP-VPH-04-1.1	
				SW-846 6020A	
				SW-846 7470A	
				SW-846 8260B	



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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8260B

Qualifications:

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:

1,4-Dioxane

B005943-BS1

Continuing calibration did not meet method specifications and was biased on the high side for this compound. Significant uncertainty is associated with the reported value which is likely to be biased on the high side.

Analyte & Samples(s) Qualified:

1,2,4-Trichlorobenzene, 2-Hexanone (MBK), 4-Methyl-2-pentanone (MIBK), Bromomethane, Hexachlorobutadiene, Methylene Chloride, Naphthalene

B005880-BS1, B005880-BSD1, B005943-BS1, B005943-BSD1, 09J0115-05[CM-39], 09J0115-06[MW-35]

Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy are associated with reported result.

Analyte & Samples(s) Qualified:

1,4-Dioxane

09J0115-01[CM-17], 09J0115-02[CM-36], 09J0115-03[CM-42], 09J0115-04[CM-34], 09J0115-05[CM-39], 09J0115-06[MW-35], 09J0115-07[Existing-1], 09J0115-08[Existing-2], 09J0115-09[CM-37], 09J0115-10[Existing-3], B005880-BLK1, B005880-BS1, B005880-BSD1, B005943-BLK1, B005943-BS1, B005943-BSD1

MADEP-EPH-04-1.1

SPE cartridge contamination with non-petroleum compounds, if present, is verified by GC/MS in each method blank per extraction batch and excluded from C11-C22 aromatic range fraction in all samples in the batch. No significant modifications were made to the method.

MADEP-VPH-04-1.1

No significant modifications were made to the method. All VPH samples were received preserved properly at pH <2 in the proper containers as specified on the chain-of-custody form unless specified in this narrative.

SW-846 8260B

Laboratory control sample recoveries for required MCP Data Enhancement 8260 compounds were all within limits specified by the method except for "difficult analytes" where recovery control limits somewhere between 40-160% are used and/or unless otherwise listed in this narrative. Difficult analytes: MIBK, MEK, acetone, 1,4-dioxane, vinyl chloride, chloromethane, dichlorodifluoromethane, 2-hexanone, naphthalene, bromomethane, 2,2-dichloropropane and tetrachloroethylene

Duplicate laboratory fortified blank RPDs were all within control limits specified by the method except for "difficult analytes" where RPDs of 50% are used and/or unless otherwise listed in this narrative. Difficult analyte: 1,4-dioxane

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Daren J. Damboragian
Laboratory Manager



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-17

Sampled: 10/5/2009 11:40

Sample ID: 09J0115-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF



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Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-17

Sampled: 10/5/2009 11:40

Sample ID: 09J0115-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 17:42	MFF

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	106	70-130	10/7/09 17:42
Toluene-d8	96.7	70-130	10/7/09 17:42
4-Bromofluorobenzene	101	70-130	10/7/09 17:42



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Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-17

Sampled: 10/5/2009 11:40

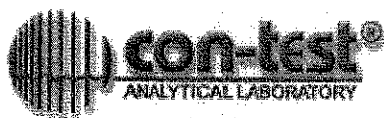
Sample ID: 09J0115-01

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Unadjusted C11-C22 Aromatics	ND	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
C11-C22 Aromatics	ND	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Acenaphthylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Fluorene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
2-Methylnaphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Naphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 13:55	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	70.1	40-140	10/8/09 13:55
o-Terphenyl (OTP)	82.2	40-140	10/8/09 13:55
2-Bromonaphthalene	93.1	40-140	10/8/09 13:55
2-Fluorobiphenyl	97.8	40-140	10/8/09 13:55



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Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-17

Sampled: 10/5/2009 11:40

Sample ID: 09J0115-01

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
Unadjusted C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
C9-C10 Aromatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 13:59	EEH
Surrogates	% Recovery	Recovery Limits	Flag						
2,5-Dibromotoluene (FID)	106	70-130							
2,5-Dibromotoluene (PID)	87.3	70-130							



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Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-17

Sampled: 10/5/2009 11:40

Sample ID: 09J0115-01

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:24	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:24	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:24	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:24	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:24	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:16	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:24	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:24	KMT



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Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-36

Sampled: 10/5/2009 12:45

Sample ID: 09J0115-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-36

Sampled: 10/5/2009 12:45

Sample ID: 09J0115-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:12	MFF
Surrogates	% Recovery	Recovery Limits	Flag						
1,2-Dichloroethane-d4	105	70-130							
Toluene-d8	97.8	70-130							
4-Bromofluorobenzene	99.6	70-130							



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-36

Sampled: 10/5/2009 12:45

Sample ID: 09J0115-02

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Unadjusted C11-C22 Aromatics	ND	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
C11-C22 Aromatics	ND	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Acenaphthylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Fluorene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
2-Methylnaphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Naphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:17	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	70.0	40-140	10/8/09 14:17
o-Terphenyl (OTP)	82.1	40-140	10/8/09 14:17
2-Bromonaphthalene	94.0	40-140	10/8/09 14:17
2-Fluorobiphenyl	99.0	40-140	10/8/09 14:17



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-36

Sampled: 10/5/2009 12:45

Sample ID: 09J0115-02

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
Unadjusted C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
C9-C10 Aromatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 14:47	EEH

Surrogates	% Recovery	Recovery Limits	Flag
2,5-Dibromotoluene (FID)	103	70-130	
2,5-Dibromotoluene (PID)	84.7	70-130	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-36

Sampled: 10/5/2009 12:45

Sample ID: 09J0115-02

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:27	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:27	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:27	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:27	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:27	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:18	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:27	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:27	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-8405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-42

Sampled: 10/5/2009 12:30

Sample ID: 09J0115-03

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Bromoforn	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-42

Sampled: 10/5/2009 12:30

Sample ID: 09J0115-03

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 18:42	MFF

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	105	70-130	10/7/09 18:42
Toluene-d8	98.2	70-130	10/7/09 18:42
4-Bromofluorobenzene	98.2	70-130	10/7/09 18:42



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-42

Sampled: 10/5/2009 12:30

Sample ID: 09J0115-03

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Unadjusted C11-C22 Aromatics	ND	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
C11-C22 Aromatics	ND	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Acenaphthylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Fluorene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
2-Methylnaphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Naphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:38	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	77.9	40-140	10/8/09 14:38
o-Terphenyl (OTP)	83.0	40-140	10/8/09 14:38
2-Bromonaphthalene	93.9	40-140	10/8/09 14:38
2-Fluorobiphenyl	98.7	40-140	10/8/09 14:38



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-42

Sampled: 10/5/2009 12:30

Sample ID: 09J0115-03

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
Unadjusted C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
C9-C10 Aromatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 15:57	EEH
Surrogates	% Recovery	Recovery Limits	Flag						
2,5-Dibromotoluene (FID)	104	70-130							
2,5-Dibromotoluene (PID)	87.8	70-130							



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-8405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-42

Sampled: 10/5/2009 12:30

Sample ID: 09J0115-03

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:41	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:41	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:41	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:41	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:41	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:19	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:41	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:41	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-34

Sampled: 10/5/2009 13:08

Sample ID: 09J0115-04

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-34

Sampled: 10/5/2009 13:08

Sample ID: 09J0115-04

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:12	MFF

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	103	70-130	
Toluene-d8	98.2	70-130	
4-Bromofluorobenzene	98.2	70-130	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-34

Sampled: 10/5/2009 13:08

Sample ID: 09J0115-04

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Unadjusted C11-C22 Aromatics	ND	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
C11-C22 Aromatics	ND	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Acenaphthylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Fluorene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
2-Methylnaphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Naphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 14:59	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	59.7	40-140	
o-Terphenyl (OTP)	79.5	40-140	
2-Bromonaphthalene	91.6	40-140	
2-Fluorobiphenyl	96.1	40-140	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-34

Sampled: 10/5/2009 13:08

Sample ID: 09J0115-04

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
Unadjusted C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
C9-C10 Aromatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 16:46	EEH
Surrogates	% Recovery		Recovery Limits		Flag				
2,5-Dibromotoluene (FID)	109		70-130				10/7/09 16:46		
2,5-Dibromotoluene (PID)	88.7		70-130				10/7/09 16:46		



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-34

Sampled: 10/5/2009 13:08

Sample ID: 09J0115-04

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:44	KMT
Barium	290	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:44	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:44	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:44	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:44	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:21	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:44	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:44	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-39

Sampled: 10/5/2009 15:10

Sample ID: 09J0115-05

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-39

Sampled: 10/5/2009 15:10

Sample ID: 09J0115-05

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Naphthalene	33	2.0	µg/L	1	V-06	SW-846 8260B	10/7/09	10/7/09 19:42	MFF
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 19:42	MFF

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	105	70-130	10/7/09 19:42
Toluene-d8	98.2	70-130	10/7/09 19:42
4-Bromofluorobenzene	100	70-130	10/7/09 19:42



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-39

Sampled: 10/5/2009 15:10

Sample ID: 09J0115-05

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Unadjusted C11-C22 Aromatics	140	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
C11-C22 Aromatics	110	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Acenaphthylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Fluorene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
2-Methylnaphthalene	4.4	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Naphthalene	16	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Phenanthrene	5.5	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:20	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	58.6	40-140	10/8/09 15:20
o-Terphenyl (OTP)	77.4	40-140	10/8/09 15:20
2-Bromonaphthalene	88.1	40-140	10/8/09 15:20
2-Fluorobiphenyl	94.5	40-140	10/8/09 15:20



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-39

Sampled: 10/5/2009 15:10

Sample ID: 09J0115-05

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
Unadjusted C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
C9-C10 Aromatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
Naphthalene	29	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 17:34	EEH
Surrogates	% Recovery	Recovery Limits	Flag						
2,5-Dibromotoluene (FID)	117	70-130							
2,5-Dibromotoluene (PID)	93.8	70-130							



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-39

Sampled: 10/5/2009 15:10

Sample ID: 09J0115-05

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:48	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:48	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:48	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:48	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:48	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:23	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:48	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 15:48	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: MW-35

Sampled: 10/5/2009 13:56

Sample ID: 09J0115-06

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
n-Butylbenzene	1.9	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
sec-Butylbenzene	1.2	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Ethylbenzene	1.2	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: MW-35

Sampled: 10/5/2009 13:56

Sample ID: 09J0115-06

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
p-Isopropyltoluene (p-Cymene)	1.5	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Naphthalene	7.2	2.0	µg/L	1	V-06	SW-846 8260B	10/7/09	10/7/09 22:12	MFF
n-Propylbenzene	1.8	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,2,4-Trimethylbenzene	15	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
1,3,5-Trimethylbenzene	3.7	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF
o-Xylene	2.8	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:12	MFF

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	101	70-130	10/7/09 22:12
Toluene-d8	99.4	70-130	10/7/09 22:12
4-Bromofluorobenzene	101	70-130	10/7/09 22:12



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: MW-35

Sampled: 10/5/2009 13:56

Sample ID: 09J0115-06

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Unadjusted C11-C22 Aromatics	430	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
C11-C22 Aromatics	410	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Acenaphthene	2.4	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Acenaphthylene	7.8	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Fluorene	3.7	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
2-Methylnaphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Naphthalene	4.4	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Phenanthrene	2.8	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 15:42	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	76.3	40-140	
o-Terphenyl (OTP)	85.2	40-140	
2-Bromonaphthalene	90.5	40-140	
2-Fluorobiphenyl	98.5	40-140	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: MW-35

Sampled: 10/5/2009 13:56

Sample ID: 09J0115-06

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
Unadjusted C9-C12 Aliphatics	290	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
C9-C12 Aliphatics	130	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
C9-C10 Aromatics	160	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
Ethylbenzene	1.3	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
o-Xylene	2.8	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 3:13	EEH
Surrogates	% Recovery		Recovery Limits		Flag				
2,5-Dibromotoluene (FID)	129		70-130				10/8/09 3:13		
2,5-Dibromotoluene (PID)	102		70-130				10/8/09 3:13		



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: MW-35

Sampled: 10/5/2009 13:56

Sample ID: 09J0115-06

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:05	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:05	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:05	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:05	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:05	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:24	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:05	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:05	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-1

Sampled: 10/5/2009 14:33

Sample ID: 09J0115-07

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
n-Butylbenzene	1.2	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-1

Sampled: 10/5/2009 14:33

Sample ID: 09J0115-07

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 14:17	LBD

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	104	70-130	10/12/09 14:17
Toluene-d8	92.4	70-130	10/12/09 14:17
4-Bromofluorobenzene	104	70-130	10/12/09 14:17



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-1

Sampled: 10/5/2009 14:33

Sample ID: 09J0115-07

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Unadjusted C11-C22 Aromatics	360	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
C11-C22 Aromatics	340	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Acenaphthylene	5.3	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Fluorene	4.7	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
2-Methylnaphthalene	2.7	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Naphthalene	8.1	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:03	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	73.2	40-140	10/8/09 16:03
o-Terphenyl (OTP)	87.0	40-140	10/8/09 16:03
2-Bromonaphthalene	90.8	40-140	10/8/09 16:03
2-Fluorobiphenyl	96.4	40-140	10/8/09 16:03



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-1

Sampled: 10/5/2009 14:33

Sample ID: 09J0115-07

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
Unadjusted C9-C12 Aliphatics	270	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
C9-C12 Aliphatics	120	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
C9-C10 Aromatics	150	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 18:22	EEH
Surrogates	% Recovery	Recovery Limits	Flag						
2,5-Dibromotoluene (FID)	106	70-130							
2,5-Dibromotoluene (PID)	94.9	70-130							



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-1

Sampled: 10/5/2009 14:33

Sample ID: 09J0115-07

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:08	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:08	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:08	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:08	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:08	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:33	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:08	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:08	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-2

Sampled: 10/5/2009 15:10

Sample ID: 09J0115-08

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
sec-Butylbenzene	2.2	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-2

Sampled: 10/5/2009 15:10

Sample ID: 09J0115-08

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 20:42	MFF
Surrogates	% Recovery	Recovery Limits	Flag						
1,2-Dichloroethane-d4	101	70-130							
Toluene-d8	98.4	70-130							
4-Bromofluorobenzene	102	70-130							



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-2

Sampled: 10/5/2009 15:10

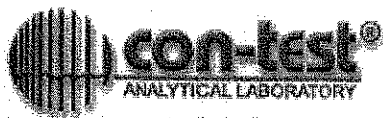
Sample ID: 09J0115-08

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Unadjusted C11-C22 Aromatics	170	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
C11-C22 Aromatics	170	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Acenaphthylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Fluorene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
2-Methylnaphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Naphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:24	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	70.2	40-140	
o-Terphenyl (OTP)	80.7	40-140	
2-Bromonaphthalene	93.2	40-140	
2-Fluorobiphenyl	97.7	40-140	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-2

Sampled: 10/5/2009 15:10

Sample ID: 09J0115-08

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
Unadjusted C9-C12 Aliphatics	170	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
C9-C12 Aliphatics	170	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
C9-C10 Aromatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:11	EEH
Surrogates	% Recovery	Recovery Limits	Flag						
2,5-Dibromotoluene (FID)	114	70-130							
2,5-Dibromotoluene (PID)	91.6	70-130							



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-2

Sampled: 10/5/2009 15:10

Sample ID: 09J0115-08

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:12	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:12	KMT
Cadmium	8.4	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:12	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:12	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:12	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:35	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:12	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:12	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-37

Sampled: 10/5/2009 15:35

Sample ID: 09J0115-09

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-37

Sampled: 10/5/2009 15:35

Sample ID: 09J0115-09

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:12	MFF

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	103	70-130	
Toluene-d8	100	70-130	
4-Bromofluorobenzene	99.1	70-130	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-37

Sampled: 10/5/2009 15:35

Sample ID: 09J0115-09

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Unadjusted C11-C22 Aromatics	ND	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
C11-C22 Aromatics	ND	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Acenaphthylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Fluorene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
2-Methylnaphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Naphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 16:45	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	55.8	40-140	10/8/09 16:45
o-Terphenyl (OTP)	88.0	40-140	10/8/09 16:45
2-Bromonaphthalene	113	40-140	10/8/09 16:45
2-Fluorobiphenyl	120	40-140	10/8/09 16:45



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-37

Sampled: 10/5/2009 15:35

Sample ID: 09J0115-09

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
Unadjusted C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
C9-C10 Aromatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 19:59	EEH
Surrogates	% Recovery	Recovery Limits	Flag						
2,5-Dibromotoluene (FID)	104	70-130						10/7/09 19:59	
2,5-Dibromotoluene (PID)	88.0	70-130						10/7/09 19:59	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: CM-37

Sampled: 10/5/2009 15:35

Sample ID: 09J0115-09

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:15	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:15	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:15	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:15	KMT
Lead	6.1	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:15	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:37	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:15	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:15	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-3

Sampled: 10/5/2009 15:50

Sample ID: 09J0115-10

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
sec-Butylbenzene	1.1	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-3

Sampled: 10/5/2009 15:50

Sample ID: 09J0115-10

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 21:42	MFF
Surrogates	% Recovery	Recovery Limits	Flag						
1,2-Dichloroethane-d4	99.7	70-130							
Toluene-d8	97.6	70-130							
4-Bromofluorobenzene	99.2	70-130							



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-8405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-3

Sampled: 10/5/2009 15:50

Sample ID: 09J0115-10

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Unadjusted C11-C22 Aromatics	180	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
C11-C22 Aromatics	180	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Acenaphthylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Fluorene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
2-Methylnaphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Naphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 17:06	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	64.6	40-140	10/8/09 17:06
o-Terphenyl (OTP)	95.1	40-140	10/8/09 17:06
2-Bromonaphthalene	105	40-140	10/8/09 17:06
2-Fluorobiphenyl	111	40-140	10/8/09 17:06



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-3

Sampled: 10/5/2009 15:50

Sample ID: 09J0115-10

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
Unadjusted C9-C12 Aliphatics	150	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
C9-C12 Aliphatics	150	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
C9-C10 Aromatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/7/09 20:47	EEH
Surrogates	% Recovery		Recovery Limits		Flag				
2,5-Dibromotoluene (FID)	118		70-130				10/7/09 20:47		
2,5-Dibromotoluene (PID)	95.9		70-130				10/7/09 20:47		



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing,

Sample Description:

Work Order: 09J0115

Date Received: 10/5/2009

Field Sample #: Existing-3

Sampled: 10/5/2009 15:50

Sample ID: 09J0115-10

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	7.5	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:19	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:19	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:19	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:19	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:19	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:38	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:19	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:19	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 3510C-MADEP-EPH-04-1.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
09J0115-01 [CM-17]	B005843	1000	2	10/07/09
09J0115-02 [CM-36]	B005843	1000	2	10/07/09
09J0115-03 [CM-42]	B005843	1000	2	10/07/09
09J0115-04 [CM-34]	B005843	1000	2	10/07/09
09J0115-05 [CM-39]	B005843	1000	2	10/07/09
09J0115-06 [MW-35]	B005843	1000	2	10/07/09
09J0115-07 [Existing-1]	B005843	1000	2	10/07/09
09J0115-08 [Existing-2]	B005843	1000	2	10/07/09
09J0115-09 [CM-37]	B005843	1000	2	10/07/09
09J0115-10 [Existing-3]	B005843	1000	2	10/07/09

Prep Method: MA VPH-MADEP-VPH-04-1.1

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
09J0115-01 [CM-17]	B005829	5	5	10/07/09
09J0115-02 [CM-36]	B005829	5	5	10/07/09
09J0115-03 [CM-42]	B005829	5	5	10/07/09
09J0115-04 [CM-34]	B005829	5	5	10/07/09
09J0115-05 [CM-39]	B005829	5	5	10/07/09
09J0115-06 [MW-35]	B005829	5	5	10/07/09
09J0115-07 [Existing-1]	B005829	5	5	10/07/09
09J0115-08 [Existing-2]	B005829	5	5	10/07/09
09J0115-09 [CM-37]	B005829	5	5	10/07/09
09J0115-10 [Existing-3]	B005829	5	5	10/07/09

Prep Method: SW-846 3005A-SW-846 6020A

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
09J0115-01 [CM-17]	B005862	50	50	10/07/09
09J0115-02 [CM-36]	B005862	50	50	10/07/09
09J0115-03 [CM-42]	B005862	50	50	10/07/09
09J0115-04 [CM-34]	B005862	50	50	10/07/09
09J0115-05 [CM-39]	B005862	50	50	10/07/09
09J0115-06 [MW-35]	B005862	50	50	10/07/09
09J0115-07 [Existing-1]	B005862	50	50	10/07/09
09J0115-08 [Existing-2]	B005862	50	50	10/07/09
09J0115-09 [CM-37]	B005862	50	50	10/07/09
09J0115-10 [Existing-3]	B005862	50	50	10/07/09

Prep Method: SW-846 7470A Prep-SW-846 7470A

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
09J0115-01 [CM-17]	B005873	6	6	10/07/09
09J0115-02 [CM-36]	B005873	6	6	10/07/09
09J0115-03 [CM-42]	B005873	6	6	10/07/09
09J0115-04 [CM-34]	B005873	6	6	10/07/09
09J0115-05 [CM-39]	B005873	6	6	10/07/09
09J0115-06 [MW-35]	B005873	6	6	10/07/09
09J0115-07 [Existing-1]	B005873	6	6	10/07/09
09J0115-08 [Existing-2]	B005873	6	6	10/07/09
09J0115-09 [CM-37]	B005873	6	6	10/07/09



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 7470A Prep-SW-846 7470A

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
09J0115-10 [Existing-3]	B005873	6	6	10/07/09

Prep Method: SW-846 5030B-SW-846 8260B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
09J0115-01 [CM-17]	B005880	5	5	10/07/09
09J0115-02 [CM-36]	B005880	5	5	10/07/09
09J0115-03 [CM-42]	B005880	5	5	10/07/09
09J0115-04 [CM-34]	B005880	5	5	10/07/09
09J0115-05 [CM-39]	B005880	5	5	10/07/09
09J0115-06 [MW-35]	B005880	5	5	10/07/09
09J0115-08 [Existing-2]	B005880	5	5	10/07/09
09J0115-09 [CM-37]	B005880	5	5	10/07/09
09J0115-10 [Existing-3]	B005880	5	5	10/07/09

Prep Method: SW-846 5030B-SW-846 8260B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
09J0115-07 [Existing-1]	B005943	5	5	10/12/09



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005880 - SW-846 5030B										
Blank (B005880-BLK1)										
Prepared & Analyzed: 10/07/09										
Acetone	ND	50	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L							
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	µg/L							
Bromochloromethane	ND	1.0	µg/L							
Bromodichloromethane	ND	1.0	µg/L							
Bromoform	ND	5.0	µg/L							
Bromomethane	ND	5.0	µg/L							
2-Butanone (MEK)	ND	20	µg/L							
n-Butylbenzene	ND	1.0	µg/L							
sec-Butylbenzene	ND	1.0	µg/L							
tert-Butylbenzene	ND	1.0	µg/L							
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L							
Carbon Disulfide	ND	3.0	µg/L							
Carbon Tetrachloride	ND	1.0	µg/L							
Chlorobenzene	ND	1.0	µg/L							
Chlorodibromomethane	ND	0.50	µg/L							
Chloroethane	ND	2.0	µg/L							
Chloroform	ND	2.0	µg/L							
Chloromethane	ND	2.0	µg/L							
2-Chlorotoluene	ND	1.0	µg/L							
4-Chlorotoluene	ND	1.0	µg/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L							
1,2-Dibromoethane (EDB)	ND	0.50	µg/L							
Dibromomethane	ND	1.0	µg/L							
1,2-Dichlorobenzene	ND	1.0	µg/L							
1,3-Dichlorobenzene	ND	1.0	µg/L							
1,4-Dichlorobenzene	ND	1.0	µg/L							
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L							
1,1-Dichloroethane	ND	1.0	µg/L							
1,2-Dichloroethane	ND	1.0	µg/L							
1,1-Dichloroethylene	ND	1.0	µg/L							
cis-1,2-Dichloroethylene	ND	1.0	µg/L							
trans-1,2-Dichloroethylene	ND	1.0	µg/L							
1,2-Dichloropropane	ND	1.0	µg/L							
1,3-Dichloropropane	ND	0.50	µg/L							
2,2-Dichloropropane	ND	1.0	µg/L							
1,1-Dichloropropene	ND	2.0	µg/L							
cis-1,3-Dichloropropene	ND	5.0	µg/L							
trans-1,3-Dichloropropene	ND	0.50	µg/L							
Diethyl Ether	ND	2.0	µg/L							
Diisopropyl Ether (DIPE)	ND	0.50	µg/L							
1,4-Dioxane	ND	50	µg/L							
Ethylbenzene	ND	1.0	µg/L							
Hexachlorobutadiene	ND	1.0	µg/L							
2-Hexanone (MBK)	ND	10	µg/L							
Isopropylbenzene (Cumene)	ND	1.0	µg/L							
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							
Methylene Chloride	ND	5.0	µg/L							
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L							
Naphthalene	ND	2.0	µg/L							

V-16



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-8405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B005880 - SW-846 5030B

Blank (B005880-BLK1)

Prepared & Analyzed: 10/07/09

n-Propylbenzene	ND	1.0	µg/L							
Styrene	ND	1.0	µg/L							
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L							
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L							
Tetrachloroethylene	ND	1.0	µg/L							
Tetrahydrofuran	ND	10	µg/L							
Toluene	ND	1.0	µg/L							
1,2,3-Trichlorobenzene	ND	5.0	µg/L							
1,2,4-Trichlorobenzene	ND	1.0	µg/L							
1,1,1-Trichloroethane	ND	1.0	µg/L							
1,1,2-Trichloroethane	ND	1.0	µg/L							
Trichloroethylene	ND	1.0	µg/L							
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L							
1,2,3-Trichloropropane	ND	2.0	µg/L							
1,2,4-Trimethylbenzene	ND	1.0	µg/L							
1,3,5-Trimethylbenzene	ND	1.0	µg/L							
Vinyl Chloride	ND	2.0	µg/L							
m+p Xylene	ND	2.0	µg/L							
o-Xylene	ND	1.0	µg/L							
Surrogate: 1,2-Dichloroethane-d4	25.1		µg/L	25.0		100	70-130			
Surrogate: Toluene-d8	24.7		µg/L	25.0		98.9	70-130			
Surrogate: 4-Bromofluorobenzene	25.0		µg/L	25.0		99.9	70-130			

LCS (B005880-BS1)

Prepared & Analyzed: 10/07/09

Acetone	107	50	µg/L	100		107	70-160			†
tert-Amyl Methyl Ether (TAME)	10.6	0.50	µg/L	10.0		106	70-130			
Benzene	9.60	1.0	µg/L	10.0		96.0	70-130			
Bromobenzene	9.49	1.0	µg/L	10.0		94.9	70-130			
Bromochloromethane	11.3	1.0	µg/L	10.0		113	70-130			
Bromodichloromethane	7.49	1.0	µg/L	10.0		74.9	70-130			
Bromoform	7.79	5.0	µg/L	10.0		77.9	70-130			
Bromomethane	5.74	5.0	µg/L	10.0		57.4	40-160			†
2-Butanone (MEK)	106	20	µg/L	100		106	40-160			†
n-Butylbenzene	9.25	1.0	µg/L	10.0		92.5	70-130			
sec-Butylbenzene	9.57	1.0	µg/L	10.0		95.7	70-130			
tert-Butylbenzene	9.94	1.0	µg/L	10.0		99.4	70-130			
tert-Butyl Ethyl Ether (TBEE)	10.8	0.50	µg/L	10.0		108	70-130			
Carbon Disulfide	8.86	3.0	µg/L	10.0		88.6	70-130			
Carbon Tetrachloride	8.53	1.0	µg/L	10.0		85.3	70-130			
Chlorobenzene	9.68	1.0	µg/L	10.0		96.8	70-130			
Chlorodibromomethane	7.36	0.50	µg/L	10.0		73.6	70-130			
Chloroethane	9.14	2.0	µg/L	10.0		91.4	70-130			
Chloroform	10.5	2.0	µg/L	10.0		105	70-130			
Chloromethane	6.99	2.0	µg/L	10.0		69.9	40-160			†
2-Chlorotoluene	9.97	1.0	µg/L	10.0		99.7	70-130			
4-Chlorotoluene	9.85	1.0	µg/L	10.0		98.5	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	7.99	5.0	µg/L	10.0		79.9	70-130			
1,2-Dibromoethane (EDB)	9.92	0.50	µg/L	10.0		99.2	70-130			
Dibromomethane	10.3	1.0	µg/L	10.0		103	70-130			
1,2-Dichlorobenzene	9.89	1.0	µg/L	10.0		98.9	70-130			
1,3-Dichlorobenzene	9.88	1.0	µg/L	10.0		98.8	70-130			
1,4-Dichlorobenzene	9.65	1.0	µg/L	10.0		96.5	70-130			



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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005880 - SW-846 5030B										
LCS (B005880-BS1)				Prepared & Analyzed: 10/07/09						
Dichlorodifluoromethane (Freon 12)	5.88	2.0	µg/L	10.0		58.8	40-160			†
1,1-Dichloroethane	10.1	1.0	µg/L	10.0		101	70-130			
1,2-Dichloroethane	9.87	1.0	µg/L	10.0		98.7	70-130			
1,1-Dichloroethylene	9.50	1.0	µg/L	10.0		95.0	70-130			
cis-1,2-Dichloroethylene	9.69	1.0	µg/L	10.0		96.9	70-130			
trans-1,2-Dichloroethylene	9.91	1.0	µg/L	10.0		99.1	70-130			
1,2-Dichloropropane	9.85	1.0	µg/L	10.0		98.5	70-130			
1,3-Dichloropropane	9.94	0.50	µg/L	10.0		99.4	70-130			
2,2-Dichloropropane	8.61	1.0	µg/L	10.0		86.1	40-130			†
1,1-Dichloropropene	9.82	2.0	µg/L	10.0		98.2	70-130			
cis-1,3-Dichloropropene	8.17	5.0	µg/L	10.0		81.7	70-130			
trans-1,3-Dichloropropene	8.42	0.50	µg/L	10.0		84.2	70-130			
Diethyl Ether	10.3	2.0	µg/L	10.0		103	70-130			
Diisopropyl Ether (DIPE)	11.0	0.50	µg/L	10.0		110	70-130			
1,4-Dioxane	104	50	µg/L	100		104	40-130			V-16 †
Ethylbenzene	9.73	1.0	µg/L	10.0		97.3	70-130			
Hexachlorobutadiene	10.4	1.0	µg/L	10.0		104	70-130			V-06
2-Hexanone (MBK)	112	10	µg/L	100		112	70-160			V-06 †
Isopropylbenzene (Cumene)	10.8	1.0	µg/L	10.0		108	70-130			
p-Isopropyltoluene (p-Cymene)	9.78	1.0	µg/L	10.0		97.8	70-130			
Methyl tert-Butyl Ether (MTBE)	11.5	1.0	µg/L	10.0		115	70-130			
Methylene Chloride	9.48	5.0	µg/L	10.0		94.8	70-130			V-06
4-Methyl-2-pentanone (MIBK)	114	10	µg/L	100		114	70-160			V-06 †
Naphthalene	10.5	2.0	µg/L	10.0		105	40-130			V-06 †
n-Propylbenzene	9.72	1.0	µg/L	10.0		97.2	70-130			
Styrene	9.34	1.0	µg/L	10.0		93.4	70-130			
1,1,1,2-Tetrachloroethane	8.01	1.0	µg/L	10.0		80.1	70-130			
1,1,2,2-Tetrachloroethane	10.5	0.50	µg/L	10.0		105	70-130			
Tetrachloroethylene	9.52	1.0	µg/L	10.0		95.2	70-160			†
Tetrahydrofuran	10.7	10	µg/L	10.0		107	70-130			
Toluene	9.62	1.0	µg/L	10.0		96.2	70-130			
1,2,3-Trichlorobenzene	8.87	5.0	µg/L	10.0		88.7	70-130			
1,2,4-Trichlorobenzene	10.6	1.0	µg/L	10.0		106	70-130			V-06
1,1,1-Trichloroethane	8.67	1.0	µg/L	10.0		86.7	70-130			
1,1,2-Trichloroethane	9.86	1.0	µg/L	10.0		98.6	70-130			
Trichloroethylene	9.65	1.0	µg/L	10.0		96.5	70-130			
Trichlorofluoromethane (Freon 11)	9.60	2.0	µg/L	10.0		96.0	70-130			
1,2,3-Trichloropropane	9.44	2.0	µg/L	10.0		94.4	70-130			
1,2,4-Trimethylbenzene	9.73	1.0	µg/L	10.0		97.3	70-130			
1,3,5-Trimethylbenzene	9.86	1.0	µg/L	10.0		98.6	70-130			
Vinyl Chloride	6.27	2.0	µg/L	10.0		62.7	40-160			†
m+p Xylene	19.7	2.0	µg/L	20.0		98.5	70-130			
o-Xylene	10.3	1.0	µg/L	10.0		103	70-130			
Surrogate: 1,2-Dichloroethane-d4	25.2		µg/L	25.0		101	70-130			
Surrogate: Toluene-d8	24.6		µg/L	25.0		98.6	70-130			
Surrogate: 4-Bromofluorobenzene	25.1		µg/L	25.0		101	70-130			



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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005880 - SW-846 5030B										
LCS Dup (B005880-BSD1)										
Prepared & Analyzed: 10/07/09										
Acetone	102	50	µg/L	100		102	70-160	4.41	25	†
tert-Amyl Methyl Ether (TAME)	10.4	0.50	µg/L	10.0		104	70-130	2.01	25	
Benzene	9.03	1.0	µg/L	10.0		90.3	70-130	6.12	25	
Bromobenzene	9.45	1.0	µg/L	10.0		94.5	70-130	0.422	25	
Bromochloromethane	11.3	1.0	µg/L	10.0		113	70-130	0.531	25	
Bromodichloromethane	7.23	1.0	µg/L	10.0		72.3	70-130	3.53	25	
Bromoform	7.71	5.0	µg/L	10.0		77.1	70-130	1.03	25	
Bromomethane	6.09	5.0	µg/L	10.0		60.9	40-160	5.92	25	†
2-Butanone (MEK)	103	20	µg/L	100		103	40-160	3.40	25	†
n-Butylbenzene	8.73	1.0	µg/L	10.0		87.3	70-130	5.78	25	
sec-Butylbenzene	9.09	1.0	µg/L	10.0		90.9	70-130	5.14	25	
tert-Butylbenzene	9.35	1.0	µg/L	10.0		93.5	70-130	6.12	25	
tert-Butyl Ethyl Ether (TBEE)	10.6	0.50	µg/L	10.0		106	70-130	1.68	25	
Carbon Disulfide	8.16	3.0	µg/L	10.0		81.6	70-130	8.23	25	
Carbon Tetrachloride	7.88	1.0	µg/L	10.0		78.8	70-130	7.92	25	
Chlorobenzene	9.35	1.0	µg/L	10.0		93.5	70-130	3.47	25	
Chlorodibromomethane	7.15	0.50	µg/L	10.0		71.5	70-130	2.89	25	
Chloroethane	8.73	2.0	µg/L	10.0		87.3	70-130	4.59	25	
Chloroform	9.96	2.0	µg/L	10.0		99.6	70-130	4.90	25	
Chloromethane	6.62	2.0	µg/L	10.0		66.2	40-160	5.44	25	†
2-Chlorotoluene	9.31	1.0	µg/L	10.0		93.1	70-130	6.85	25	
4-Chlorotoluene	9.61	1.0	µg/L	10.0		96.1	70-130	2.47	25	
1,2-Dibromo-3-chloropropane (DBCP)	8.10	5.0	µg/L	10.0		81.0	70-130	1.37	25	
1,2-Dibromoethane (EDB)	9.40	0.50	µg/L	10.0		94.0	70-130	5.38	25	
Dibromomethane	9.94	1.0	µg/L	10.0		99.4	70-130	3.27	25	
1,2-Dichlorobenzene	9.65	1.0	µg/L	10.0		96.5	70-130	2.46	25	
1,3-Dichlorobenzene	9.56	1.0	µg/L	10.0		95.6	70-130	3.29	25	
1,4-Dichlorobenzene	9.37	1.0	µg/L	10.0		93.7	70-130	2.94	25	
Dichlorodifluoromethane (Freon 12)	5.64	2.0	µg/L	10.0		56.4	40-160	4.17	25	†
1,1-Dichloroethane	9.61	1.0	µg/L	10.0		96.1	70-130	4.87	25	
1,2-Dichloroethane	10.0	1.0	µg/L	10.0		100	70-130	1.31	25	
1,1-Dichloroethylene	8.85	1.0	µg/L	10.0		88.5	70-130	7.08	25	
cis-1,2-Dichloroethylene	9.37	1.0	µg/L	10.0		93.7	70-130	3.36	25	
trans-1,2-Dichloroethylene	9.22	1.0	µg/L	10.0		92.2	70-130	7.21	25	
1,2-Dichloropropane	9.48	1.0	µg/L	10.0		94.8	70-130	3.83	25	
1,3-Dichloropropane	9.82	0.50	µg/L	10.0		98.2	70-130	1.21	25	
2,2-Dichloropropane	7.98	1.0	µg/L	10.0		79.8	40-130	7.59	25	†
1,1-Dichloropropene	9.31	2.0	µg/L	10.0		93.1	70-130	5.33	25	
cis-1,3-Dichloropropene	7.84	5.0	µg/L	10.0		78.4	70-130	4.12	25	
trans-1,3-Dichloropropene	7.93	0.50	µg/L	10.0		79.3	70-130	5.99	25	
Diethyl Ether	10.6	2.0	µg/L	10.0		106	70-130	2.30	25	
Diisopropyl Ether (DIPE)	10.9	0.50	µg/L	10.0		109	70-130	1.64	25	
1,4-Dioxane	100	50	µg/L	100		100	40-130	4.14	50	V-16 † ‡
Ethylbenzene	9.27	1.0	µg/L	10.0		92.7	70-130	4.84	25	
Hexachlorobutadiene	9.89	1.0	µg/L	10.0		98.9	70-130	4.74	25	V-06
2-Hexanone (MBK)	107	10	µg/L	100		107	70-160	4.51	25	V-06 †
Isopropylbenzene (Cumene)	10.3	1.0	µg/L	10.0		103	70-130	5.30	25	
p-Isopropyltoluene (p-Cymene)	9.03	1.0	µg/L	10.0		90.3	70-130	7.97	25	
Methyl tert-Butyl Ether (MTBE)	11.6	1.0	µg/L	10.0		116	70-130	0.519	25	
Methylene Chloride	8.91	5.0	µg/L	10.0		89.1	70-130	6.20	25	V-06
4-Methyl-2-pentanone (MIBK)	110	10	µg/L	100		110	70-160	3.78	25	V-06 †
Naphthalene	9.77	2.0	µg/L	10.0		97.7	40-130	7.30	25	V-06 †



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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005880 - SW-846 5030B										
LCS Dup (B005880-BSD1)				Prepared & Analyzed: 10/07/09						
n-Propylbenzene	9.21	1.0	µg/L	10.0		92.1	70-130	5.39	25	
Styrene	9.25	1.0	µg/L	10.0		92.5	70-130	0.968	25	
1,1,1,2-Tetrachloroethane	8.01	1.0	µg/L	10.0		80.1	70-130	0.00	25	
1,1,2,2-Tetrachloroethane	10.4	0.50	µg/L	10.0		104	70-130	1.63	25	
Tetrachloroethylene	9.20	1.0	µg/L	10.0		92.0	70-160	3.42	25	
Tetrahydrofuran	10.4	10	µg/L	10.0		104	70-130	2.09	25	†
Toluene	9.16	1.0	µg/L	10.0		91.6	70-130	4.90	25	
1,2,3-Trichlorobenzene	8.53	5.0	µg/L	10.0		85.3	70-130	3.91	25	
1,2,4-Trichlorobenzene	10.2	1.0	µg/L	10.0		102	70-130	4.42	25	V-06
1,1,1-Trichloroethane	8.22	1.0	µg/L	10.0		82.2	70-130	5.33	25	
1,1,2-Trichloroethane	9.99	1.0	µg/L	10.0		99.9	70-130	1.31	25	
Trichloroethylene	9.03	1.0	µg/L	10.0		90.3	70-130	6.64	25	
Trichlorofluoromethane (Freon 11)	9.04	2.0	µg/L	10.0		90.4	70-130	6.01	25	
1,2,3-Trichloropropane	8.98	2.0	µg/L	10.0		89.8	70-130	4.99	25	
1,2,4-Trimethylbenzene	9.43	1.0	µg/L	10.0		94.3	70-130	3.13	25	
1,3,5-Trimethylbenzene	9.38	1.0	µg/L	10.0		93.8	70-130	4.99	25	
Vinyl Chloride	5.95	2.0	µg/L	10.0		59.5	40-160	5.24	25	†
m+p Xylene	18.8	2.0	µg/L	20.0		94.2	70-130	4.41	25	
o-Xylene	9.88	1.0	µg/L	10.0		98.8	70-130	3.77	25	
Surrogate: 1,2-Dichloroethane-d4	25.3		µg/L	25.0		101	70-130			
Surrogate: Toluene-d8	24.6		µg/L	25.0		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	25.5		µg/L	25.0		102	70-130			

Batch B005943 - SW-846 5030B

Blank (B005943-BLK1)				Prepared: 10/09/09 Analyzed: 10/12/09						
Acetone	ND	50	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L							
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	µg/L							
Bromochloromethane	ND	1.0	µg/L							
Bromodichloromethane	ND	1.0	µg/L							
Bromoform	ND	5.0	µg/L							
Bromomethane	ND	5.0	µg/L							
2-Butanone (MEK)	ND	20	µg/L							
n-Butylbenzene	ND	1.0	µg/L							
sec-Butylbenzene	ND	1.0	µg/L							
tert-Butylbenzene	ND	1.0	µg/L							
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L							
Carbon Disulfide	ND	3.0	µg/L							
Carbon Tetrachloride	ND	1.0	µg/L							
Chlorobenzene	ND	1.0	µg/L							
Chlorodibromomethane	ND	0.50	µg/L							
Chloroethane	ND	2.0	µg/L							
Chloroform	ND	2.0	µg/L							
Chloromethane	ND	2.0	µg/L							
2-Chlorotoluene	ND	1.0	µg/L							
4-Chlorotoluene	ND	1.0	µg/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L							
1,2-Dibromoethane (EDB)	ND	0.50	µg/L							
Dibromomethane	ND	1.0	µg/L							
1,2-Dichlorobenzene	ND	1.0	µg/L							
1,3-Dichlorobenzene	ND	1.0	µg/L							



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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005943 - SW-846 5030B										
Blank (B005943-BLK1)										
Prepared: 10/09/09 Analyzed: 10/12/09										
1,4-Dichlorobenzene	ND	1.0	µg/L							
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L							
1,1-Dichloroethane	ND	1.0	µg/L							
1,2-Dichloroethane	ND	1.0	µg/L							
1,1-Dichloroethylene	ND	1.0	µg/L							
cis-1,2-Dichloroethylene	ND	1.0	µg/L							
trans-1,2-Dichloroethylene	ND	1.0	µg/L							
1,2-Dichloropropane	ND	1.0	µg/L							
1,3-Dichloropropane	ND	0.50	µg/L							
2,2-Dichloropropane	ND	1.0	µg/L							
1,1-Dichloropropene	ND	2.0	µg/L							
cis-1,3-Dichloropropene	ND	5.0	µg/L							
trans-1,3-Dichloropropene	ND	0.50	µg/L							
Diethyl Ether	ND	2.0	µg/L							
Diisopropyl Ether (DIPE)	ND	0.50	µg/L							
1,4-Dioxane	ND	50	µg/L							V-16
Ethylbenzene	ND	1.0	µg/L							
Hexachlorobutadiene	ND	1.0	µg/L							
2-Hexanone (MBK)	ND	10	µg/L							
Isopropylbenzene (Cumene)	ND	1.0	µg/L							
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							
Methylene Chloride	ND	5.0	µg/L							
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L							
Naphthalene	ND	2.0	µg/L							
n-Propylbenzene	ND	1.0	µg/L							
Styrene	ND	1.0	µg/L							
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L							
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L							
Tetrachloroethylene	ND	1.0	µg/L							
Tetrahydrofuran	ND	10	µg/L							
Toluene	ND	1.0	µg/L							
1,2,3-Trichlorobenzene	ND	5.0	µg/L							
1,2,4-Trichlorobenzene	ND	1.0	µg/L							
1,1,1-Trichloroethane	ND	1.0	µg/L							
1,1,2-Trichloroethane	ND	1.0	µg/L							
Trichloroethylene	ND	1.0	µg/L							
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L							
1,2,3-Trichloropropane	ND	2.0	µg/L							
1,2,4-Trimethylbenzene	ND	1.0	µg/L							
1,3,5-Trimethylbenzene	ND	1.0	µg/L							
Vinyl Chloride	ND	2.0	µg/L							
m+p Xylene	ND	2.0	µg/L							
o-Xylene	ND	1.0	µg/L							
Surrogate: 1,2-Dichloroethane-d4	26.2		µg/L	25.0		105	70-130			
Surrogate: Toluene-d8	24.6		µg/L	25.0		98.3	70-130			
Surrogate: 4-Bromofluorobenzene	25.2		µg/L	25.0		101	70-130			



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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch B005943 - SW-846 5030B									
LCS (B005943-BS1)				Prepared: 10/09/09 Analyzed: 10/12/09					
Acetone	123	50	µg/L	100	123	70-160			†
tert-Amyl Methyl Ether (TAME)	11.7	0.50	µg/L	10.0	117	70-130			
Benzene	9.79	1.0	µg/L	10.0	97.9	70-130			
Bromobenzene	9.35	1.0	µg/L	10.0	93.5	70-130			
Bromochloromethane	12.2	1.0	µg/L	10.0	122	70-130			
Bromodichloromethane	8.57	1.0	µg/L	10.0	85.7	70-130			
Bromoform	8.95	5.0	µg/L	10.0	89.5	70-130			
Bromomethane	5.13	5.0	µg/L	10.0	51.3	40-160			
2-Butanone (MEK)	115	20	µg/L	100	115	40-160		V-06	†
n-Butylbenzene	8.89	1.0	µg/L	10.0	88.9	70-130			†
sec-Butylbenzene	9.32	1.0	µg/L	10.0	93.2	70-130			
tert-Butylbenzene	9.85	1.0	µg/L	10.0	98.5	70-130			
tert-Butyl Ethyl Ether (TBEE)	11.7	0.50	µg/L	10.0	117	70-130			
Carbon Disulfide	9.89	3.0	µg/L	10.0	98.9	70-130			
Carbon Tetrachloride	10.0	1.0	µg/L	10.0	100	70-130			
Chlorobenzene	9.72	1.0	µg/L	10.0	97.2	70-130			
Chlorodibromomethane	8.37	0.50	µg/L	10.0	83.7	70-130			
Chloroethane	9.58	2.0	µg/L	10.0	95.8	70-130			
Chloroform	11.0	2.0	µg/L	10.0	110	70-130			
Chloromethane	6.35	2.0	µg/L	10.0	63.5	40-160			†
2-Chlorotoluene	9.77	1.0	µg/L	10.0	97.7	70-130			
4-Chlorotoluene	9.93	1.0	µg/L	10.0	99.3	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	9.50	5.0	µg/L	10.0	95.0	70-130			
1,2-Dibromoethane (EDB)	10.3	0.50	µg/L	10.0	103	70-130			
Dibromomethane	10.4	1.0	µg/L	10.0	104	70-130			
1,2-Dichlorobenzene	9.54	1.0	µg/L	10.0	95.4	70-130			
1,3-Dichlorobenzene	9.47	1.0	µg/L	10.0	94.7	70-130			
1,4-Dichlorobenzene	9.28	1.0	µg/L	10.0	92.8	70-130			
Dichlorodifluoromethane (Freon 12)	5.39	2.0	µg/L	10.0	53.9	40-160			†
1,1-Dichloroethane	10.7	1.0	µg/L	10.0	107	70-130			
1,2-Dichloroethane	10.3	1.0	µg/L	10.0	103	70-130			
1,1-Dichloroethylene	10.1	1.0	µg/L	10.0	101	70-130			
cis-1,2-Dichloroethylene	10.2	1.0	µg/L	10.0	102	70-130			
trans-1,2-Dichloroethylene	10.3	1.0	µg/L	10.0	103	70-130			
1,2-Dichloropropane	10.3	1.0	µg/L	10.0	103	70-130			
1,3-Dichloropropane	9.99	0.50	µg/L	10.0	99.9	70-130			
2,2-Dichloropropane	11.1	1.0	µg/L	10.0	111	40-130			†
1,1-Dichloropropene	10.4	2.0	µg/L	10.0	104	70-130			
cis-1,3-Dichloropropene	9.22	5.0	µg/L	10.0	92.2	70-130			
trans-1,3-Dichloropropene	9.73	0.50	µg/L	10.0	97.3	70-130			
Diethyl Ether	10.8	2.0	µg/L	10.0	108	70-130			
Diisopropyl Ether (DIPE)	11.7	0.50	µg/L	10.0	117	70-130			
1,4-Dioxane	138	50	µg/L	100	138	* 40-130		L-07, V-16	†
Ethylbenzene	9.66	1.0	µg/L	10.0	96.6	70-130			
Hexachlorobutadiene	12.0	1.0	µg/L	10.0	120	70-130			
2-Hexanone (MBK)	119	10	µg/L	100	119	70-160			†
Isopropylbenzene (Cumene)	11.0	1.0	µg/L	10.0	110	70-130			
p-Isopropyltoluene (p-Cymene)	9.36	1.0	µg/L	10.0	93.6	70-130			
Methyl tert-Butyl Ether (MTBE)	12.7	1.0	µg/L	10.0	127	70-130			
Methylene Chloride	9.39	5.0	µg/L	10.0	93.9	70-130			
4-Methyl-2-pentanone (MIBK)	117	10	µg/L	100	117	70-160			†
Naphthalene	11.5	2.0	µg/L	10.0	115	40-130			†



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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005943 - SW-846 5030B										
LCS (B005943-BS1)										
Prepared: 10/09/09 Analyzed: 10/12/09										
n-Propylbenzene	9.80	1.0	µg/L	10.0		98.0	70-130			
Styrene	9.13	1.0	µg/L	10.0		91.3	70-130			
1,1,1,2-Tetrachloroethane	8.92	1.0	µg/L	10.0		89.2	70-130			
1,1,2,2-Tetrachloroethane	10.3	0.50	µg/L	10.0		103	70-130			
Tetrachloroethylene	10.4	1.0	µg/L	10.0		104	70-160			†
Tetrahydrofuran	11.4	10	µg/L	10.0		114	70-130			
Toluene	9.91	1.0	µg/L	10.0		99.1	70-130			
1,2,3-Trichlorobenzene	9.14	5.0	µg/L	10.0		91.4	70-130			
1,2,4-Trichlorobenzene	11.3	1.0	µg/L	10.0		113	70-130			
1,1,1-Trichloroethane	10.2	1.0	µg/L	10.0		102	70-130			
1,1,2-Trichloroethane	10.4	1.0	µg/L	10.0		104	70-130			
Trichloroethylene	10.2	1.0	µg/L	10.0		102	70-130			
Trichlorofluoromethane (Freon 11)	10.5	2.0	µg/L	10.0		105	70-130			
1,2,3-Trichloropropane	9.54	2.0	µg/L	10.0		95.4	70-130			
1,2,4-Trimethylbenzene	9.39	1.0	µg/L	10.0		93.9	70-130			
1,3,5-Trimethylbenzene	9.84	1.0	µg/L	10.0		98.4	70-130			
Vinyl Chloride	6.32	2.0	µg/L	10.0		63.2	40-160			†
m+p Xylene	19.6	2.0	µg/L	20.0		97.8	70-130			
o-Xylene	10.3	1.0	µg/L	10.0		103	70-130			
Surrogate: 1,2-Dichloroethane-d4	25.7		µg/L	25.0		103	70-130			
Surrogate: Toluene-d8	24.6		µg/L	25.0		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	26.3		µg/L	25.0		105	70-130			
LCS Dup (B005943-BSD1)										
Prepared: 10/09/09 Analyzed: 10/12/09										
Acetone	127	50	µg/L	100		127	70-160	3.19	25	†
tert-Amyl Methyl Ether (TAME)	11.4	0.50	µg/L	10.0		114	70-130	3.20	25	
Benzene	9.56	1.0	µg/L	10.0		95.6	70-130	2.38	25	
Bromobenzene	9.23	1.0	µg/L	10.0		92.3	70-130	1.29	25	
Bromochloromethane	11.8	1.0	µg/L	10.0		118	70-130	2.58	25	
Bromodichloromethane	8.54	1.0	µg/L	10.0		85.4	70-130	0.351	25	
Bromoform	8.88	5.0	µg/L	10.0		88.8	70-130	0.785	25	
Bromomethane	5.42	5.0	µg/L	10.0		54.2	40-160	5.50	25	V-06 †
2-Butanone (MEK)	116	20	µg/L	100		116	40-160	0.993	25	†
n-Butylbenzene	8.64	1.0	µg/L	10.0		86.4	70-130	2.85	25	
sec-Butylbenzene	9.29	1.0	µg/L	10.0		92.9	70-130	0.322	25	
tert-Butylbenzene	9.60	1.0	µg/L	10.0		96.0	70-130	2.57	25	
tert-Butyl Ethyl Ether (TBEE)	11.6	0.50	µg/L	10.0		116	70-130	1.29	25	
Carbon Disulfide	9.27	3.0	µg/L	10.0		92.7	70-130	6.47	25	
Carbon Tetrachloride	9.50	1.0	µg/L	10.0		95.0	70-130	5.33	25	
Chlorobenzene	9.36	1.0	µg/L	10.0		93.6	70-130	3.77	25	
Chlorodibromomethane	8.33	0.50	µg/L	10.0		83.3	70-130	0.479	25	
Chloroethane	9.27	2.0	µg/L	10.0		92.7	70-130	3.29	25	
Chloroform	10.8	2.0	µg/L	10.0		108	70-130	1.37	25	
Chloromethane	6.18	2.0	µg/L	10.0		61.8	40-160	2.71	25	†
2-Chlorotoluene	9.73	1.0	µg/L	10.0		97.3	70-130	0.410	25	
4-Chlorotoluene	9.79	1.0	µg/L	10.0		97.9	70-130	1.42	25	
1,2-Dibromo-3-chloropropane (DBCP)	9.26	5.0	µg/L	10.0		92.6	70-130	2.56	25	
1,2-Dibromoethane (EDB)	10.3	0.50	µg/L	10.0		103	70-130	0.292	25	
Dibromomethane	10.7	1.0	µg/L	10.0		107	70-130	2.76	25	
1,2-Dichlorobenzene	9.46	1.0	µg/L	10.0		94.6	70-130	0.842	25	
1,3-Dichlorobenzene	9.41	1.0	µg/L	10.0		94.1	70-130	0.636	25	
1,4-Dichlorobenzene	9.16	1.0	µg/L	10.0		91.6	70-130	1.30	25	



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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005943 - SW-846 5030B										
LCS Dup (B005943-BSD1) Prepared: 10/09/09 Analyzed: 10/12/09										
Dichlorodifluoromethane (Freon 12)	5.38	2.0	µg/L	10.0		53.8	40-160	0.186	25	†
1,1-Dichloroethane	10.4	1.0	µg/L	10.0		104	70-130	3.03	25	
1,2-Dichloroethane	10.2	1.0	µg/L	10.0		102	70-130	1.17	25	
1,1-Dichloroethylene	9.85	1.0	µg/L	10.0		98.5	70-130	2.41	25	
cis-1,2-Dichloroethylene	9.94	1.0	µg/L	10.0		99.4	70-130	2.88	25	
trans-1,2-Dichloroethylene	9.67	1.0	µg/L	10.0		96.7	70-130	5.92	25	
1,2-Dichloropropane	10.1	1.0	µg/L	10.0		101	70-130	2.45	25	
1,3-Dichloropropane	9.96	0.50	µg/L	10.0		99.6	70-130	0.301	25	
2,2-Dichloropropane	10.1	1.0	µg/L	10.0		101	40-130	9.70	25	†
1,1-Dichloropropene	10.1	2.0	µg/L	10.0		101	70-130	2.84	25	
cis-1,3-Dichloropropene	9.07	5.0	µg/L	10.0		90.7	70-130	1.64	25	
trans-1,3-Dichloropropene	9.60	0.50	µg/L	10.0		96.0	70-130	1.35	25	
Diethyl Ether	10.8	2.0	µg/L	10.0		108	70-130	0.278	25	
Diisopropyl Ether (DIPE)	11.3	0.50	µg/L	10.0		113	70-130	3.57	25	
1,4-Dioxane	123	50	µg/L	100		123	40-130	11.6	50	V-16 † ‡
Ethylbenzene	9.43	1.0	µg/L	10.0		94.3	70-130	2.41	25	
Hexachlorobutadiene	10.6	1.0	µg/L	10.0		106	70-130	12.8	25	
2-Hexanone (MBK)	122	10	µg/L	100		122	70-160	2.59	25	†
Isopropylbenzene (Cumene)	10.7	1.0	µg/L	10.0		107	70-130	2.85	25	
p-Isopropyltoluene (p-Cymene)	9.12	1.0	µg/L	10.0		91.2	70-130	2.60	25	
Methyl tert-Butyl Ether (MTBE)	12.4	1.0	µg/L	10.0		124	70-130	2.87	25	
Methylene Chloride	9.07	5.0	µg/L	10.0		90.7	70-130	3.47	25	
4-Methyl-2-pentanone (MIBK)	121	10	µg/L	100		121	70-160	3.21	25	†
Naphthalene	10.1	2.0	µg/L	10.0		101	40-130	13.0	25	†
n-Propylbenzene	9.52	1.0	µg/L	10.0		95.2	70-130	2.90	25	
Styrene	9.26	1.0	µg/L	10.0		92.6	70-130	1.41	25	
1,1,1,2-Tetrachloroethane	8.73	1.0	µg/L	10.0		87.3	70-130	2.15	25	
1,1,2,2-Tetrachloroethane	10.5	0.50	µg/L	10.0		105	70-130	2.12	25	
Tetrachloroethylene	10.1	1.0	µg/L	10.0		101	70-160	2.54	25	†
Tetrahydrofuran	11.2	10	µg/L	10.0		112	70-130	1.33	25	
Toluene	9.64	1.0	µg/L	10.0		96.4	70-130	2.76	25	
1,2,3-Trichlorobenzene	8.23	5.0	µg/L	10.0		82.3	70-130	10.5	25	
1,2,4-Trichlorobenzene	10.6	1.0	µg/L	10.0		106	70-130	6.76	25	
1,1,1-Trichloroethane	9.63	1.0	µg/L	10.0		96.3	70-130	5.55	25	
1,1,2-Trichloroethane	10.4	1.0	µg/L	10.0		104	70-130	0.192	25	
Trichloroethylene	9.85	1.0	µg/L	10.0		98.5	70-130	3.00	25	
Trichlorofluoromethane (Freon 11)	9.90	2.0	µg/L	10.0		99.0	70-130	5.50	25	
1,2,3-Trichloropropane	9.53	2.0	µg/L	10.0		95.3	70-130	0.105	25	
1,2,4-Trimethylbenzene	9.32	1.0	µg/L	10.0		93.2	70-130	0.748	25	
1,3,5-Trimethylbenzene	9.77	1.0	µg/L	10.0		97.7	70-130	0.714	25	
Vinyl Chloride	6.20	2.0	µg/L	10.0		62.0	40-160	1.92	25	†
m+p Xylene	19.4	2.0	µg/L	20.0		96.8	70-130	1.03	25	
o-Xylene	10.2	1.0	µg/L	10.0		102	70-130	1.37	25	
Surrogate: 1,2-Dichloroethane-d4	25.6		µg/L	25.0		102	70-130			
Surrogate: Toluene-d8	24.6		µg/L	25.0		98.5	70-130			
Surrogate: 4-Bromofluorobenzene	25.9		µg/L	25.0		103	70-130			



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QUALITY CONTROL

Petroleum Hydrocarbons Analyses - EPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005843 - SW-846 3510C										
Blank (B005843-BLK1)										
Prepared & Analyzed: 10/07/09										
C9-C18 Aliphatics	ND	150	µg/L							
C19-C36 Aliphatics	ND	150	µg/L							
Unadjusted C11-C22 Aromatics	ND	100	µg/L							
C11-C22 Aromatics	ND	100	µg/L							
Acenaphthene	ND	2.0	µg/L							
Acenaphthylene	ND	2.0	µg/L							
Anthracene	ND	2.0	µg/L							
Benzo(a)anthracene	ND	2.0	µg/L							
Benzo(a)pyrene	ND	2.0	µg/L							
Benzo(b)fluoranthene	ND	2.0	µg/L							
Benzo(g,h,i)perylene	ND	2.0	µg/L							
Benzo(k)fluoranthene	ND	2.0	µg/L							
Chrysene	ND	2.0	µg/L							
Dibenz(a,h)anthracene	ND	2.0	µg/L							
Fluoranthene	ND	2.0	µg/L							
Fluorene	ND	2.0	µg/L							
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L							
2-Methylnaphthalene	ND	2.0	µg/L							
Naphthalene	ND	2.0	µg/L							
Phenanthrene	ND	2.0	µg/L							
Pyrene	ND	2.0	µg/L							
Surrogate: Chlorooctadecane (COD)	70.9		µg/L	100		70.9	40-140			
Surrogate: o-Terphenyl (OTP)	71.3		µg/L	100		71.3	40-140			
Surrogate: 2-Bromonaphthalene	93.1		µg/L	100		93.1	40-140			
Surrogate: 2-Fluorobiphenyl	97.7		µg/L	100		97.7	40-140			
LCS (B005843-BS1)										
Prepared & Analyzed: 10/07/09										
C9-C18 Aliphatics	440	150	µg/L	600		73.3	40-140			
C19-C36 Aliphatics	798	150	µg/L	800		99.7	40-140			
Unadjusted C11-C22 Aromatics	1500	100	µg/L	1700		88.3	40-140			
Acenaphthene	71.8	2.0	µg/L	100		71.8	40-140			
Acenaphthylene	75.8	2.0	µg/L	100		75.8	40-140			
Anthracene	84.6	2.0	µg/L	100		84.6	40-140			
Benzo(a)anthracene	87.9	2.0	µg/L	100		87.9	40-140			
Benzo(a)pyrene	85.0	2.0	µg/L	100		85.0	40-140			
Benzo(b)fluoranthene	89.6	2.0	µg/L	100		89.6	40-140			
Benzo(g,h,i)perylene	85.6	2.0	µg/L	100		85.6	40-140			
Benzo(k)fluoranthene	87.5	2.0	µg/L	100		87.5	40-140			
Chrysene	90.1	2.0	µg/L	100		90.1	40-140			
Dibenz(a,h)anthracene	84.8	2.0	µg/L	100		84.8	40-140			
Fluoranthene	85.1	2.0	µg/L	100		85.1	40-140			
Fluorene	77.9	2.0	µg/L	100		77.9	40-140			
Indeno(1,2,3-cd)pyrene	83.6	2.0	µg/L	100		83.6	40-140			
2-Methylnaphthalene	71.8	2.0	µg/L	100		71.8	40-140			
Naphthalene	66.4	2.0	µg/L	100		66.4	40-140			
Phenanthrene	79.9	2.0	µg/L	100		79.9	40-140			
Pyrene	88.4	2.0	µg/L	100		88.4	40-140			
n-Nonane	44.7	2.0	µg/L	100		44.7	30-140			
Naphthalene-aliphatic fraction	0.00		µg/L	100			0-5			
2-Methylnaphthalene-aliphatic fraction	0.00		µg/L	100			0-5			
Surrogate: Chlorooctadecane (COD)	72.2		µg/L	100		72.2	40-140			
Surrogate: o-Terphenyl (OTP)	86.4		µg/L	100		86.4	40-140			



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QUALITY CONTROL

Petroleum Hydrocarbons Analyses - EPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005843 - SW-846 3510C										
LCS (B005843-BS1)					Prepared & Analyzed: 10/07/09					
Surrogate: 2-Bromonaphthalene	108		µg/L	100		108	40-140			
Surrogate: 2-Fluorobiphenyl	115		µg/L	100		115	40-140			
LCS Dup (B005843-BS1)					Prepared & Analyzed: 10/07/09					
C9-C18 Aliphatics	458	150	µg/L	600		76.4	40-140	4.10	25	
C19-C36 Aliphatics	803	150	µg/L	800		100	40-140	0.648	25	
Unadjusted C11-C22 Aromatics	1300	100	µg/L	1700		76.4	40-140	14.5	25	
Acenaphthene	63.9	2.0	µg/L	100		63.9	40-140	11.7	25	
Acenaphthylene	67.6	2.0	µg/L	100		67.6	40-140	11.4	25	
Anthracene	74.2	2.0	µg/L	100		74.2	40-140	13.1	25	
Benzo(a)anthracene	75.1	2.0	µg/L	100		75.1	40-140	15.7	25	
Benzo(a)pyrene	72.5	2.0	µg/L	100		72.5	40-140	15.9	25	
Benzo(b)fluoranthene	76.4	2.0	µg/L	100		76.4	40-140	15.9	25	
Benzo(g,h,i)perylene	73.0	2.0	µg/L	100		73.0	40-140	16.0	25	
Benzo(k)fluoranthene	74.7	2.0	µg/L	100		74.7	40-140	15.9	25	
Chrysene	76.9	2.0	µg/L	100		76.9	40-140	15.8	25	
Dibenz(a,h)anthracene	72.4	2.0	µg/L	100		72.4	40-140	15.9	25	
Fluoranthene	73.5	2.0	µg/L	100		73.5	40-140	14.7	25	
Fluorene	69.0	2.0	µg/L	100		69.0	40-140	12.1	25	
Indeno(1,2,3-cd)pyrene	71.3	2.0	µg/L	100		71.3	40-140	15.9	25	
2-Methylnaphthalene	64.1	2.0	µg/L	100		64.1	40-140	11.4	25	
Naphthalene	60.3	2.0	µg/L	100		60.3	40-140	9.54	25	
Phenanthrene	70.5	2.0	µg/L	100		70.5	40-140	12.4	25	
Pyrene	76.1	2.0	µg/L	100		76.1	40-140	15.0	25	
n-Nonane	47.5	2.0	µg/L	100		47.5	30-140	6.05	25	
Naphthalene-aliphatic fraction	0.00		µg/L	100			0-5			
2-Methylnaphthalene-aliphatic fraction	0.00		µg/L	100			0-5			
Surrogate: Chlorooctadecane (COD)	72.5		µg/L	100		72.5	40-140			
Surrogate: o-Terphenyl (OTP)	74.2		µg/L	100		74.2	40-140			
Surrogate: 2-Bromonaphthalene	93.0		µg/L	100		93.0	40-140			
Surrogate: 2-Fluorobiphenyl	98.7		µg/L	100		98.7	40-140			



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QUALITY CONTROL

Petroleum Hydrocarbons Analyses - VPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005829 - MA VPH										
Blank (B005829-BLK1)										
Prepared & Analyzed: 10/07/09										
Unadjusted C5-C8 Aliphatics	ND	100	µg/L							
C5-C8 Aliphatics	ND	100	µg/L							
Unadjusted C9-C12 Aliphatics	ND	100	µg/L							
C9-C12 Aliphatics	ND	100	µg/L							
C9-C10 Aromatics	ND	100	µg/L							
Benzene	ND	1.0	µg/L							
Butylcyclohexane	ND	1.0	µg/L							
Decane	ND	1.0	µg/L							
Ethylbenzene	ND	1.0	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							
2-Methylpentane	ND	1.0	µg/L							
Naphthalene	ND	10	µg/L							
Nonane	ND	1.0	µg/L							
Pentane	ND	1.0	µg/L							
Toluene	ND	1.0	µg/L							
1,2,4-Trimethylbenzene	ND	1.0	µg/L							
2,2,4-Trimethylpentane	ND	1.0	µg/L							
m+p Xylene	ND	2.0	µg/L							
o-Xylene	ND	1.0	µg/L							
Surrogate: 2,5-Dibromotoluene (FID)	45.3		µg/L	40.0		113	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	37.5		µg/L	40.0		93.6	70-130			
LCS (B005829-BS1)										
Prepared & Analyzed: 10/07/09										
Benzene	98.0	1.0	µg/L	100		98.0	70-130			
Butylcyclohexane	102	1.0	µg/L	100		102	70-130			
Decane	127	1.0	µg/L	100		127	70-130			
Ethylbenzene	99.8	1.0	µg/L	100		99.8	70-130			
Methyl tert-Butyl Ether (MTBE)	104	1.0	µg/L	100		104	70-130			
2-Methylpentane	125	1.0	µg/L	100		125	70-130			
Naphthalene	100	10	µg/L	100		100	70-130			
Nonane	101	1.0	µg/L	100		101	30-130			
Pentane	106	1.0	µg/L	100		106	70-130			
Toluene	97.6	1.0	µg/L	100		97.6	70-130			
1,2,4-Trimethylbenzene	98.8	1.0	µg/L	100		98.8	70-130			
2,2,4-Trimethylpentane	122	1.0	µg/L	100		122	70-130			
m+p Xylene	199	2.0	µg/L	200		99.5	70-130			
o-Xylene	98.0	1.0	µg/L	100		98.0	70-130			
Surrogate: 2,5-Dibromotoluene (FID)	47.7		µg/L	40.0		119	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	38.3		µg/L	40.0		95.8	70-130			
LCS Dup (B005829-BSD1)										
Prepared & Analyzed: 10/07/09										
Benzene	101	1.0	µg/L	100		101	70-130	3.35	25	
Butylcyclohexane	95.9	1.0	µg/L	100		95.9	70-130	5.89	25	
Decane	119	1.0	µg/L	100		119	70-130	6.46	25	
Ethylbenzene	95.6	1.0	µg/L	100		95.6	70-130	4.29	25	
Methyl tert-Butyl Ether (MTBE)	102	1.0	µg/L	100		102	70-130	1.60	25	
2-Methylpentane	116	1.0	µg/L	100		116	70-130	7.47	25	
Naphthalene	105	10	µg/L	100		105	70-130	4.92	25	
Nonane	95.0	1.0	µg/L	100		95.0	30-130	5.98	25	
Pentane	105	1.0	µg/L	100		105	70-130	1.31	25	
Toluene	93.8	1.0	µg/L	100		93.8	70-130	3.89	25	
1,2,4-Trimethylbenzene	96.3	1.0	µg/L	100		96.3	70-130	2.58	25	



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QUALITY CONTROL

Petroleum Hydrocarbons Analyses - VPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005829 - MA VPH										
LCS Dup (B005829-BSD1)				Prepared & Analyzed: 10/07/09						
2,2,4-Trimethylpentane	113	1.0	µg/L	100		113	70-130	7.23	25	
m+p Xylene	192	2.0	µg/L	200		95.9	70-130	3.63	25	
o-Xylene	96.9	1.0	µg/L	100		96.9	70-130	1.11	25	
Surrogate: 2,5-Dibromotoluene (FID)	47.4		µg/L	40.0		119	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	37.7		µg/L	40.0		94.4	70-130			



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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005862 - SW-846 3005A										
Blank (B005862-BLK1)										
				Prepared: 10/07/09 Analyzed: 10/08/09						
Arsenic	ND	2.0	µg/L							
Barium	ND	250	µg/L							
Cadmium	ND	2.5	µg/L							
Chromium	ND	50	µg/L							
Lead	ND	5.0	µg/L							
Selenium	ND	25	µg/L							
Silver	ND	2.5	µg/L							
LCS (B005862-BS1)										
				Prepared: 10/07/09 Analyzed: 10/08/09						
Arsenic	507	4.0	µg/L	500		101	80-120			
Barium	471	500	µg/L	500		94.2	80-120			
Cadmium	479	5.0	µg/L	500		95.8	80-120			
Chromium	483	100	µg/L	500		96.5	80-120			
Lead	490	10	µg/L	500		97.9	80-120			
Selenium	458	50	µg/L	500		91.6	80-120			
Silver	507	5.0	µg/L	500		101	80-120			
LCS Dup (B005862-BSD1)										
				Prepared: 10/07/09 Analyzed: 10/08/09						
Arsenic	516	4.0	µg/L	500		103	80-120	1.75	20	
Barium	493	500	µg/L	500		98.6	80-120	4.59	20	
Cadmium	499	5.0	µg/L	500		99.8	80-120	4.07	20	
Chromium	517	100	µg/L	500		103	80-120	6.91	20	
Lead	503	10	µg/L	500		101	80-120	2.71	20	
Selenium	477	50	µg/L	500		95.4	80-120	4.15	20	
Silver	531	5.0	µg/L	500		106	80-120	4.62	20	
Duplicate (B005862-DUP1)										
				Source: 09J0115-02		Prepared: 10/07/09 Analyzed: 10/08/09				
Arsenic	ND	2.0	µg/L			ND		NC	20	
Barium	ND	250	µg/L			ND		NC	20	
Cadmium	ND	2.5	µg/L			ND		NC	20	
Chromium	ND	50	µg/L			ND		NC	20	
Lead	ND	5.0	µg/L			ND		NC	20	
Selenium	ND	25	µg/L			ND		NC	20	
Silver	ND	2.5	µg/L			ND		NC	20	
Matrix Spike (B005862-MS1)										
				Source: 09J0115-02		Prepared: 10/07/09 Analyzed: 10/08/09				
Arsenic	513	4.0	µg/L	500	ND	103	75-125			
Barium	646	500	µg/L	500	178	93.6	75-125			
Cadmium	482	5.0	µg/L	500	0.163	96.3	75-125			
Chromium	482	100	µg/L	500	ND	96.5	75-125			
Lead	483	10	µg/L	500	ND	96.6	75-125			
Selenium	472	50	µg/L	500	ND	94.5	75-125			
Silver	482	5.0	µg/L	500	ND	96.4	75-125			



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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B005873 - SW-846 7470A Prep										
Blank (B005873-BLK1)				Prepared: 10/07/09 Analyzed: 10/08/09						
Mercury	ND	0.00010	mg/L							
LCS (B005873-BS1)				Prepared: 10/07/09 Analyzed: 10/08/09						
Mercury	0.00205	0.00010	mg/L	0.00200		103	80-120			
LCS Dup (B005873-BSD1)				Prepared: 10/07/09 Analyzed: 10/08/09						
Mercury	0.00200	0.00010	mg/L	0.00200		100	80-120	2.55	20	
Duplicate (B005873-DUP1)		Source: 09J0115-06		Prepared: 10/07/09 Analyzed: 10/08/09						
Mercury	ND	0.00010	mg/L		ND			NC	20	
Matrix Spike (B005873-MS1)		Source: 09J0115-06		Prepared: 10/07/09 Analyzed: 10/08/09						
Mercury	0.00195	0.00010	mg/L	0.00200	ND	97.3	75-125			

FLAG/QUALIFIER SUMMARY

- * QC result is outside of established limits.
 - † Wide recovery limits established for difficult compound.
 - ‡ Wide RPD limits established for difficult compound.
 - # Data exceeded client recommended or regulatory level
- Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
- L-07 Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.
 - V-06 Continuing calibration did not meet method specifications and was biased on the high side for this compound. Significant uncertainty is associated with the reported value which is likely to be biased on the high side.
 - V-16 Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy are associated with reported result.



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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
MADEP-EPH-04-1.1 in Water	
C9-C18 Aliphatics	CT,NC,WA
C19-C36 Aliphatics	CT,NC,WA
Unadjusted C11-C22 Aromatics	CT,NC,WA
C11-C22 Aromatics	CT,NC,WA
Acenaphthene	CT,NC,WA
Acenaphthylene	CT,NC,WA
Anthracene	CT,NC,WA
Benzo(a)anthracene	CT,NC,WA
Benzo(a)pyrene	CT,NC,WA
Benzo(b)fluoranthene	CT,NC,WA
Benzo(g,h,i)perylene	CT,NC,WA
Benzo(k)fluoranthene	CT,NC,WA
Chrysene	CT,NC,WA
Dibenz(a,h)anthracene	CT,NC,WA
Fluoranthene	CT,NC,WA
Fluorene	CT,NC,WA
Indeno(1,2,3-cd)pyrene	CT,NC,WA
2-Methylnaphthalene	CT,NC,WA
Naphthalene	CT,NC,WA
Phenanthrene	CT,NC,WA
Pyrene	CT,NC,WA
MADEP-VPH-04-1.1 in Water	
Unadjusted C5-C8 Aliphatics	CT,NC,WA
C5-C8 Aliphatics	CT,NC,WA
Unadjusted C9-C12 Aliphatics	CT,NC,WA
C9-C12 Aliphatics	CT,NC,WA
C9-C10 Aromatics	CT,NC,WA
Benzene	CT,NC,WA
Ethylbenzene	CT,NC,WA
Methyl tert-Butyl Ether (MTBE)	CT,NC,WA
Naphthalene	CT,NC,WA
Toluene	CT,NC,WA
o-Xylene	CT,NC,WA
SW-846 6020A in Water	
Arsenic	CT,NH,NY,RI
Barium	CT,NH,NY,RI
Cadmium	CT,NH,NY,RI
Chromium	CT,NH,NY,RI
Lead	CT,NH,NY,RI
Selenium	CT,NH,NY,RI
Silver	CT,NH,NY,RI
SW-846 7470A in Water	
Mercury	CT,NH,NY,RI
SW-846 8260B in Water	
Acetone	CT,NH,NY

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260B in Water</i>	
tert-Amyl Methyl Ether (TAME)	NH,NY
Benzene	CT,NH,NY,RI
Bromochloromethane	NH,NY
Bromodichloromethane	CT,NH,NY,RI
Bromoform	CT,NH,NY,RI
Bromomethane	CT,NH,NY,RI
2-Butanone (MEK)	CT,NH,NY
n-Butylbenzene	NY
sec-Butylbenzene	NY
tert-Butylbenzene	NY
tert-Butyl Ethyl Ether (TBEE)	NH,NY
Carbon Disulfide	CT,NH,NY
Carbon Tetrachloride	CT,NH,NY,RI
Chlorobenzene	CT,NH,NY,RI
Chlorodibromomethane	CT,NH,NY,RI
Chloroethane	CT,NH,NY,RI
Chloroform	CT,NH,NY,RI
Chloromethane	CT,NH,NY,RI
Dibromomethane	NH,NY
1,2-Dichlorobenzene	CT,NY,RI
1,3-Dichlorobenzene	CT,NH,NY,RI
1,4-Dichlorobenzene	CT,NH,NY,RI
Dichlorodifluoromethane (Freon 12)	NH,NY,RI
1,1-Dichloroethane	CT,NH,NY,RI
1,2-Dichloroethane	CT,NH,NY,RI
1,1-Dichloroethylene	CT,NH,NY,RI
trans-1,2-Dichloroethylene	CT,NH,NY,RI
1,2-Dichloropropane	CT,NH,NY,RI
2,2-Dichloropropane	NH,NY
1,1-Dichloropropene	NH,NY
cis-1,3-Dichloropropene	CT,NH,NY,RI
trans-1,3-Dichloropropene	CT,NH,NY,RI
Diisopropyl Ether (DIPE)	NH,NY
Ethylbenzene	CT,NH,NY,RI
Hexachlorobutadiene	CT,NH,NY
2-Hexanone (MBK)	CT,NH,NY
Isopropylbenzene (Cumene)	NY
p-Isopropyltoluene (p-Cymene)	CT,NH,NY
Methyl tert-Butyl Ether (MTBE)	CT,NH,NY
Methylene Chloride	CT,NH,NY,RI
4-Methyl-2-pentanone (MIBK)	CT,NH,NY
Naphthalene	NH,NY
n-Propylbenzene	CT,NH,NY
Styrene	CT,NH,NY
1,1,1,2-Tetrachloroethane	CT,NH,NY
1,1,2,2-Tetrachloroethane	CT,NH,NY,RI
Tetrachloroethylene	CT,NH,NY,RI



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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260B in Water</i>	
Toluene	CT,NH,NY,RI
1,2,3-Trichlorobenzene	NH,NY
1,2,4-Trichlorobenzene	CT,NH,NY
1,1,1-Trichloroethane	CT,NH,NY,RI
1,1,2-Trichloroethane	CT,NH,NY,RI
Trichloroethylene	CT,NH,NY,RI
Trichlorofluoromethane (Freon 11)	CT,NH,NY,RI
1,2,3-Trichloropropane	NH,NY
1,2,4-Trimethylbenzene	NY
1,3,5-Trimethylbenzene	NY
Vinyl Chloride	CT,NH,NY,RI
m+p Xylene	CT,NH,NY,RI
o-Xylene	CT,NH,NY,RI

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	American Industrial Hygiene Association	100033	01/1/2010
MA	Massachusetts DEP	M-MA100	06/30/2010
CT	Connecticut Department of Public Health	PH-0567	09/30/2009
NY	New York State Department of Health	10899 NELAP	04/1/2010
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2010
RI	Rhode Island Department of Health	LAO00112	12/30/2009
NC	North Carolina Div. of Water Quality	652	12/31/2009
NJ	New Jersey DEP	MA007 NELAP	06/30/2010
FL	Florida Department of Health	E871027 NELAP	06/30/2010
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2010
WA	State of Washington Department of Ecology	C2065	03/23/2010



CHAIN OF CUSTODY RECORD
09J015

U = Other	U = Other
CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY FOR US	



Sample Receipt Checklist

 CLIENT NAME: OTO RECEIVED BY: CFC DATE: 10/5/09

 1) Was the chain(s) of custody relinquished and signed? Yes No

 2) Does the chain agree with the samples? Yes No

If not, explain:

 3) Are all the samples in good condition? Yes No

If not, explain:

4) How were the samples received:

 On Ice ☒ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☒

 Were the samples received in Temperature Compliance of (2-6°C)? Yes No

 Temperature °C by Temp blank 6.5 Temperature °C by Temp gun _____

 5) Are there Dissolved samples for the lab to filter? Yes No

Who was notified _____ Date _____ Time _____

 6) Are there any samples "On Hold"? Yes No
Stored where:
 7) Are there any RUSH or SHORT HOLDING TIME samples? Yes No

Who was notified _____ Date _____ Time _____

8) Location where samples are stored:

/y

 Permission to subcontract samples? Yes No
 (Walk-in clients only) if not already approved

Client Signature: _____

Containers sent in to Con-Test

	# of containers		# of containers
1 Liter Amber	<u>10</u>	8 oz clear jar	
500 mL Amber		4 oz clear jar	
250 mL Amber (8oz amber)		2 oz clear jar	
1 Liter Plastic		Other glass jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic	<u>10</u>	Air Cassette	
40 mL Vial - type listed below	<u>40</u>	Brass Sleeves	
Colisure / bacteria bottle		Tubes	
Dissolved Oxygen bottle		Summa Cans	
Flashpoint bottle		Regulators	
Encore		Other	

 Laboratory Comments: pH < 7

0 mL vials: # HCl _____ # Methanol _____

Bisulfate _____ # DI Water _____

Thiosulfate _____ Unpreserved _____

Time and Date Frozen: _____

 o all samples have the proper pH: Yes No N/A

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test Analytical Laboratory

Project #: 09J0115

Project Location: Crane Manufacturing, Springfield, MA

MADEP RTN1:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

09J0115-01 thru 09J0115-10

Sample Matrices: Water

MCP SW-846 Methods Used	8260B (X)	8151A ()	8330 ()	6010B ()	7470A/1A (X)
	8270C ()	8081A ()	VPH (X)	6020 (X)	9014M ² ()
As specified in MADEP Compendium of Analytical Methods. (check all that apply)	8082 ()	8021B ()	EPH (X)	7000 S ³ ()	7196A ()
1 List Release Tracking Number (RTN), if known 2 M -- SW-846 Method 9014 or MADEP Physiologically Available Cyanide (PAC) Method 3 S -- SW-846 Methods 7000 Series List individual method and analyte					

An affirmative response to questions A, B, C and D is required for "Presumptive Certainty" status

A	Were all samples received by the laboratory in a condition consistent with that described on the Chain-of-Custody documentation for the data set?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
B	Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
C	Does the data included in this report meet all the analytical requirements for "Presumptive Certainty", as described in Section 2.0 (a), (b), (c) and (d) of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
D	VPH and EPH Methods only: Was the VPH or EPH Method conducted without significant modifications (see Section 11.3 of respective Methods)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹

A response to questions E and F below is required for "Presumptive Certainty" status

E	Were all analytical QC performance standards and recommendations for the specified methods achieved?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No ¹
F	Were results for all analyte-list compounds/elements for the specified method(s) reported?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No ¹

¹All Negative responses must be addressed in an attached Environmental Laboratory case narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature:



Position: Laboratory Manager

Printed Name: Daren J. Damboragian

Date: 10/13/09

Gilson Aspec XL4 Fractionation Check

Silica Gel Lot: **S212-47**
Frac Check Lot: 080709 PJG
Hexane Lot: 49148
DCM Lot: CZ816
Acetone Lot: 49131

Vendor: **PHENOMENEX**
Amount of DCM Collected: 5000 µL
Amount of Hexane Collected: 1800 µL

Data File: 080709 D0807095/D0807096

Compound	Conc. (ppm)	Rec.	% Rec.	Limits
Naphthalene	50	38.516	77%	40-140
2-Methylnaphthalene	50	41.010	82%	40-140
Acenaphthalene	50	42.372	85%	40-140
Acenaphthene	50	40.054	80%	40-140
Fluorene	50	43.400	87%	40-140
Phenanthrene	50	43.968	88%	40-140
Anthracene	50	45.965	92%	40-140
o-Terphenyl (surr.)	50	44.983	90%	40-140
Fluoranthene	50	44.382	89%	40-140
Pyrene	50	45.899	92%	40-140
Benzo(a)anthracene	50	44.878	90%	40-140
Chrysene	50	45.870	92%	40-140
Benzo(b)fluoranthene	50	45.651	91%	40-140
Benzo(k)fluoranthene	50	44.473	89%	40-140
Benzo(a)pyrene	50	43.179	86%	40-140
Indeno(123cd)pyrene	50	41.860	84%	40-140
Dibenzo(ah)anthracene	50	42.453	85%	40-140
Benzo(ghi)perylene	50	42.789	86%	40-140
C9	50	36.825	74%	30-140
C10	50	39.031	78%	40-140
C12	50	39.059	78%	40-140
C14	50	44.203	88%	40-140
C16	50	47.338	95%	40-140
C18	50	47.748	95%	40-140
C19	50	48.786	98%	40-140
C20	50	47.942	96%	40-140
1-Chlorooctadecane (surr.)	50	37.263	75%	40-140
C22	50	48.025	96%	40-140
C24	50	47.244	94%	40-140
C26	50	48.141	96%	40-140
C28	50	46.216	92%	40-140
C30	50	45.661	91%	40-140
C36	50	46.369	93%	40-140
Fractionation Surrogates				
2-Fluorobiphenyl	50	44.388	89%	40-140
2-Bromonaphthalene	50	42.799	86%	40-140
Aliphatic bleed thru	% (<5%)			
Naphthalene	0			0.000
2-Methylnaphthalene	0			0.000



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October 13, 2009

Brin Thompson
OTO Associates
293 Bridge St. Suite 500
Springfield, MA 01103

Project Location: Crane Manufacturing
Client Job Number:
Project Number: 76-22-04
Laboratory Work Order Number: 09J0123

Enclosed are results of analyses for samples received by the laboratory on October 6, 2009. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Susan M. Burney
Project Manager



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OTO Associates
293 Bridge St. Suite 500
Springfield, MA 01103
ATTN: Brin Thompson

REPORT DATE: 10/13/2009

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 76-22-04

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 09J0123

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Crane Manufacturing

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
CM-41	09J0123-01	Ground Water		MADEP-EPH-04-1.1	
				MADEP-VPH-04-1.1	
				SW-846 6020A	
				SW-846 7470A	
CM-25	09J0123-02	Ground Water		SW-846 8260B	
				MADEP-EPH-04-1.1	
				MADEP-VPH-04-1.1	
				SW-846 6020A	
CM-22	09J0123-03	Ground Water		SW-846 7470A	
				SW-846 8260B	
				MADEP-EPH-04-1.1	
				MADEP-VPH-04-1.1	
CM-38	09J0123-04	Ground Water		SW-846 6020A	
				SW-846 7470A	
				SW-846 8260B	
				MADEP-EPH-04-1.1	
Existing-4	09J0123-05	Ground Water		MADEP-VPH-04-1.1	
				SW-846 6020A	
				SW-846 7470A	
				SW-846 8260B	



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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 6020A

Qualifications:

Elevated method detection limit due to high concentration of an interfering analyte(s).

Analyte & Samples(s) Qualified:

Arsenic, Chromium, Selenium

09J0123-03[CM-22]

SW-846 8260B

Qualifications:

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:

1,4-Dioxane, Acetone, Hexachlorobutadiene, Methylene Chloride, Naphthalene

B005943-BS1, B005844-BSD1, B005844-BS1

Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.

Analyte & Samples(s) Qualified:

1,2,4-Trichlorobenzene, Hexachlorobutadiene, Naphthalene

09J0123-02[CM-25], B005844-BLK1, B005844-BS1, B005844-BSD1

Continuing calibration did not meet method specifications and was biased on the high side for this compound. Significant uncertainty is associated with the reported value which is likely to be biased on the high side.

Analyte & Samples(s) Qualified:

1,2,4-Trichlorobenzene, 2-Hexanone (MBK), 4-Methyl-2-pentanone (MIBK), Bromomethane, Hexachlorobutadiene, Methylene Chloride, Naphthalene

B005880-BS1, B005880-BSD1, B005844-BS1, B005844-BSD1, B005943-BS1, B005943-BSD1, 09J0123-04[CM-38]

Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy are associated with reported result.

Analyte & Samples(s) Qualified:

1,4-Dioxane

09J0123-01[CM-41], 09J0123-02[CM-25], 09J0123-03[CM-22], 09J0123-04[CM-38], 09J0123-05[Existing-4], B005844-BLK1, B005844-BS1, B005844-BSD1, B005880-BLK1, B005880-BS1, B005880-BSD1, B005943-BLK1, B005943-BS1, B005943-BSD1



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MADEP-EPH-04-1.1

SPE cartridge contamination with non-petroleum compounds, if present, is verified by GC/MS in each method blank per extraction batch and excluded from C11-C22 aromatic range fraction in all samples in the batch. No significant modifications were made to the method.

MADEP-VPH-04-1.1

No significant modifications were made to the method. All VPH samples were received preserved properly at pH <2 in the proper containers as specified on the chain-of-custody form unless specified in this narrative.

SW-846 8260B

Laboratory control sample recoveries for required MCP Data Enhancement 8260 compounds were all within limits specified by the method except for "difficult analytes" where recovery control limits somewhere between 40-160% are used and/or unless otherwise listed in this narrative. Difficult analytes: MIBK, MEK, acetone, 1,4-dioxane, vinyl chloride, chloromethane, dichlorodifluoromethane, 2-hexanone, naphthalene, bromomethane, 2,2-dichloropropane and tetrachloroethylene

Duplicate laboratory fortified blank RPDs were all within control limits specified by the method except for "difficult analytes" where RPDs of 50% are used and/or unless otherwise listed in this narrative. Difficult analyte: 1,4-dioxane

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in dark ink, appearing to read "Daren J. Damborian", is written over a light gray grid background.

Daren J. Damborian
Laboratory Manager



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-41

Sampled: 10/6/2009 09:46

Sample ID: 09J0123-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Bromodichloromethane	1.3	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Chloroform	5.7	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-41

Sampled: 10/6/2009 09:46

Sample ID: 09J0123-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
p-isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 22:42	MFF

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	103	70-130	10/7/09 22:42
Toluene-d8	98.7	70-130	10/7/09 22:42
4-Bromofluorobenzene	98.9	70-130	10/7/09 22:42



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-41

Sampled: 10/6/2009 09:46

Sample ID: 09J0123-01

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Unadjusted C11-C22 Aromatics	100	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
C11-C22 Aromatics	100	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Acenaphthylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Fluorene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
2-Methylnaphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Naphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:29	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	73.0	40-140	10/8/09 18:29
o-Terphenyl (OTP)	93.5	40-140	10/8/09 18:29
2-Bromonaphthalene	97.9	40-140	10/8/09 18:29
2-Fluorobiphenyl	106	40-140	10/8/09 18:29



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-41

Sampled: 10/6/2009 09:46

Sample ID: 09J0123-01

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
Unadjusted C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
C9-C12 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
C9-C10 Aromatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 0:48	EEH
Surrogates	% Recovery	Recovery Limits	Flag						
2,5-Dibromotoluene (FID)	113	70-130							
2,5-Dibromotoluene (PID)	92.7	70-130							



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-8405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-41

Sampled: 10/6/2009 09:46

Sample ID: 09J0123-01

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:22	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:22	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:22	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:22	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:22	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:40	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:22	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:22	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-25

Sampled: 10/6/2009 10:30

Sample ID: 09J0123-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
n-Butylbenzene	11	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
sec-Butylbenzene	4.1	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
tert-Butylbenzene	1.6	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-25

Sampled: 10/6/2009 10:30

Sample ID: 09J0123-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1	R-05	SW-846 8260B	10/8/09	10/9/09 21:32	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Isopropylbenzene (Cumene)	3.4	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
p-Isopropyltoluene (p-Cymene)	8.4	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Naphthalene	88	2.0	µg/L	1	R-05	SW-846 8260B	10/8/09	10/9/09 21:32	MFF
n-Propylbenzene	6.3	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	R-05	SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,2,4-Trimethylbenzene	88	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
1,3,5-Trimethylbenzene	32	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
m+p Xylene	3.6	2.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/8/09	10/9/09 21:32	MFF

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	97.8	70-130	10/9/09 21:32
Toluene-d8	99.3	70-130	10/9/09 21:32
4-Bromofluorobenzene	104	70-130	10/9/09 21:32



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-25

Sampled: 10/6/2009 10:30

Sample ID: 09J0123-02

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	840	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Unadjusted C11-C22 Aromatics	860	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
C11-C22 Aromatics	740	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Acenaphthene	4.4	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Acenaphthylene	11	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Fluorene	6.5	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
2-Methylnaphthalene	47	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Naphthalene	48	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Phenanthrene	3.2	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 18:50	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	69.5	40-140	
o-Terphenyl (OTP)	90.6	40-140	
2-Bromonaphthalene	94.0	40-140	
2-Fluorobiphenyl	104	40-140	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-25

Sampled: 10/6/2009 10:30

Sample ID: 09J0123-02

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	500	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
C5-C8 Aliphatics	ND	500	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
Unadjusted C9-C12 Aliphatics	1500	500	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
C9-C12 Aliphatics	640	500	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
C9-C10 Aromatics	900	500	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
Benzene	ND	5.0	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
Ethylbenzene	ND	5.0	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
Methyl tert-Butyl Ether (MTBE)	ND	5.0	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
Naphthalene	86	50	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
Toluene	ND	5.0	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
m+p Xylene	ND	10	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
o-Xylene	ND	5.0	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:03	EEH
Surrogates	% Recovery		Recovery Limits		Flag				
2,5-Dibromotoluene (FID)	123		70-130				10/8/09 4:03		
2,5-Dibromotoluene (PID)	99.9		70-130				10/8/09 4:03		



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-25

Sampled: 10/6/2009 10:30

Sample ID: 09J0123-02

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:25	KMT
Barium	520	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:25	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:25	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:25	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:25	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:42	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:25	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:25	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-22

Sampled: 10/6/2009 11:20

Sample ID: 09J0123-03

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
n-Butylbenzene	5.6	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
sec-Butylbenzene	2.7	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Chloroform	2.2	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Diisopropyl Ether (DiPE)	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-22

Sampled: 10/6/2009 11:20

Sample ID: 09J0123-03

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Isopropylbenzene (Cumene)	1.3	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
p-Isopropyltoluene (p-Cymene)	5.0	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
n-Propylbenzene	3.1	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,2,4-Trimethylbenzene	12	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
1,3,5-Trimethylbenzene	4.2	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/12/09	10/12/09 17:46	LBD

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	105	70-130	10/12/09 17:46
Toluene-d8	98.8	70-130	10/12/09 17:46
4-Bromofluorobenzene	105	70-130	10/12/09 17:46



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-22

Sampled: 10/6/2009 11:20

Sample ID: 09J0123-03

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	450	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Unadjusted C11-C22 Aromatics	520	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
C11-C22 Aromatics	460	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Acenaphthylene	6.9	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Fluorene	4.0	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
2-Methylnaphthalene	39	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Naphthalene	7.6	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:10	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	64.7	40-140	10/8/09 19:10
o-Terphenyl (OTP)	88.8	40-140	10/8/09 19:10
2-Bromonaphthalene	99.9	40-140	10/8/09 19:10
2-Fluorobiphenyl	110	40-140	10/8/09 19:10



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-22

Sampled: 10/6/2009 11:20

Sample ID: 09J0123-03

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
Unadjusted C9-C12 Aliphatics	640	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
C9-C12 Aliphatics	280	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
C9-C10 Aromatics	360	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 1:36	EEH
Surrogates	% Recovery	Recovery Limits	Flag						
2,5-Dibromotoluene (FID)	127	70-130						10/8/09 1:36	
2,5-Dibromotoluene (PID)	103	70-130						10/8/09 1:36	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-22

Sampled: 10/6/2009 11:20

Sample ID: 09J0123-03

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	4.0	µg/L	10	DL-04	SW-846 6020A	10/7/09	10/8/09 16:29	KMT
Barium	270	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:29	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:29	KMT
Chromium	ND	100	µg/L	10	DL-04	SW-846 6020A	10/7/09	10/8/09 16:29	KMT
Lead	5.3	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:29	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:43	MPF
Selenium	ND	50	µg/L	10	DL-04	SW-846 6020A	10/7/09	10/8/09 16:29	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:29	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-38

Sampled: 10/6/2009 12:30

Sample ID: 09J0123-04

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	1000	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
tert-Amyl Methyl Ether (TAME)	ND	10	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Benzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Bromobenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Bromochloromethane	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Bromodichloromethane	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Bromoform	ND	100	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Bromomethane	ND	100	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
2-Butanone (MEK)	ND	400	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
n-Butylbenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
sec-Butylbenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
tert-Butylbenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	10	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Carbon Disulfide	ND	60	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Carbon Tetrachloride	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Chlorobenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Chlorodibromomethane	ND	10	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Chloroethane	ND	40	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Chloroform	ND	40	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Chloromethane	ND	40	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
2-Chlorotoluene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
4-Chlorotoluene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	100	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,2-Dibromoethane (EDB)	ND	10	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Dibromomethane	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,2-Dichlorobenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,3-Dichlorobenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,4-Dichlorobenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Dichlorodifluoromethane (Freon 12)	ND	40	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,1-Dichloroethane	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,2-Dichloroethane	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,1-Dichloroethylene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
cis-1,2-Dichloroethylene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
trans-1,2-Dichloroethylene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,2-Dichloropropane	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,3-Dichloropropane	ND	10	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
2,2-Dichloropropane	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,1-Dichloropropene	ND	40	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
cis-1,3-Dichloropropene	ND	100	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
trans-1,3-Dichloropropene	ND	10	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Diethyl Ether	ND	40	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Diisopropyl Ether (DIPE)	ND	10	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,4-Dioxane	ND	1000	µg/L	20	V-16	SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Ethylbenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-38

Sampled: 10/6/2009 12:30

Sample ID: 09J0123-04

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
2-Hexanone (MBK)	ND	200	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Isopropylbenzene (Cumene)	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
p-Isopropyltoluene (p-Cymene)	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Methyl tert-Butyl Ether (MTBE)	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Methylene Chloride	ND	100	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
4-Methyl-2-pentanone (MIBK)	ND	200	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Naphthalene	250	40	µg/L	20	V-06	SW-846 8260B	10/7/09	10/8/09 0:42	MFF
n-Propylbenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Styrene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,1,1,2-Tetrachloroethane	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,1,2,2-Tetrachloroethane	ND	10	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Tetrachloroethylene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Tetrahydrofuran	ND	200	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Toluene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,2,3-Trichlorobenzene	ND	100	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,2,4-Trichlorobenzene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,1,1-Trichloroethane	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,1,2-Trichloroethane	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Trichloroethylene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Trichlorofluoromethane (Freon 11)	ND	40	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,2,3-Trichloropropane	ND	40	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,2,4-Trimethylbenzene	160	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
1,3,5-Trimethylbenzene	45	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
Vinyl Chloride	ND	40	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
m+p Xylene	ND	40	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF
o-Xylene	ND	20	µg/L	20		SW-846 8260B	10/7/09	10/8/09 0:42	MFF

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	101	70-130	
Toluene-d8	98.4	70-130	
4-Bromofluorobenzene	99.6	70-130	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-38

Sampled: 10/6/2009 12:30

Sample ID: 09J0123-04

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	8400	750	µg/L	5		MADEP-EPH-04-1.1	10/7/09	10/12/09 11:38	CJM
C19-C36 Aliphatics	1100	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Unadjusted C11-C22 Aromatics	5600	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
C11-C22 Aromatics	5000	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Acenaphthene	11	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Acenaphthylene	55	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Fluorene	32	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
2-Methylnaphthalene	380	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Naphthalene	130	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Phenanthrene	20	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:31	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	64.5	40-140	
o-Terphenyl (OTP)	85.1	40-140	
2-Bromonaphthalene	83.4	40-140	
2-Fluorobiphenyl	89.9	40-140	



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-38

Sampled: 10/6/2009 12:30

Sample ID: 09J0123-04

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	500	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
C5-C8 Aliphatics	ND	500	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
Unadjusted C9-C12 Aliphatics	1500	500	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
C9-C12 Aliphatics	ND	500	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
C9-C10 Aromatics	1000	500	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
Benzene	ND	5.0	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
Ethylbenzene	13	5.0	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
Methyl tert-Butyl Ether (MTBE)	ND	5.0	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
Naphthalene	250	50	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
Toluene	ND	5.0	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
m+p Xylene	ND	10	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
o-Xylene	ND	5.0	µg/L	5		MADEP-VPH-04-1.1	10/7/09	10/8/09 4:54	EEH
Surrogates	% Recovery		Recovery Limits		Flag				
2,5-Dibromotoluene (FID)	111		70-130				10/8/09 4:54		
2,5-Dibromotoluene (PID)	104		70-130				10/8/09 4:54		



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: CM-38

Sampled: 10/6/2009 12:30

Sample ID: 09J0123-04

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	2.2	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:32	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:32	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:32	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:32	KMT
Lead	10	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:32	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:45	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:32	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:32	KMT



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: Existing-4

Sampled: 10/6/2009 13:18

Sample ID: 09J0123-05

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Benzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Bromodichloromethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Bromoform	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Bromomethane	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
sec-Butylbenzene	1.2	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Carbon Disulfide	ND	3.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Carbon Tetrachloride	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Chloroethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Chloroform	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Chloromethane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
cis-1,3-Dichloropropene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: Existing-4

Sampled: 10/6/2009 13:18

Sample ID: 09J0123-05

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Naphthalene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Styrene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Toluene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF
o-Xylene	ND	1.0	µg/L	1		SW-846 8260B	10/7/09	10/7/09 23:12	MFF

Surrogates	% Recovery	Recovery Limits	Flag
1,2-Dichloroethane-d4	102	70-130	10/7/09 23:12
Toluene-d8	101	70-130	10/7/09 23:12
4-Bromofluorobenzene	101	70-130	10/7/09 23:12



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: Existing-4

Sampled: 10/6/2009 13:18

Sample ID: 09J0123-05

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
C19-C36 Aliphatics	ND	150	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Unadjusted C11-C22 Aromatics	240	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
C11-C22 Aromatics	240	100	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Acenaphthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Acenaphthylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Benzo(a)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Benzo(a)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Benzo(b)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Benzo(g,h,i)perylene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Benzo(k)fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Chrysene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Dibenz(a,h)anthracene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Fluoranthene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Fluorene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Indeno(1,2,3-cd)pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
2-Methylnaphthalene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Naphthalene	3.8	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Phenanthrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM
Pyrene	ND	2.0	µg/L	1		MADEP-EPH-04-1.1	10/7/09	10/8/09 19:52	CJM

Surrogates	% Recovery	Recovery Limits	Flag
Chlorooctadecane (COD)	63.1	40-140	10/8/09 19:52
o-Terphenyl (OTP)	76.2	40-140	10/8/09 19:52
2-Bromonaphthalene	80.5	40-140	10/8/09 19:52
2-Fluorobiphenyl	82.8	40-140	10/8/09 19:52



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: Existing-4

Sampled: 10/6/2009 13:18

Sample ID: 09J0123-05

Sample Matrix: Ground Water

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
C5-C8 Aliphatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
Unadjusted C9-C12 Aliphatics	210	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
C9-C12 Aliphatics	210	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
C9-C10 Aromatics	ND	100	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
Benzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
Ethylbenzene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
Naphthalene	ND	10	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
Toluene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
m+p Xylene	ND	2.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
o-Xylene	ND	1.0	µg/L	1		MADEP-VPH-04-1.1	10/7/09	10/8/09 2:25	EEH
Surrogates	% Recovery		Recovery Limits		Flag				
2,5-Dibromotoluene (FID)	126		70-130				10/8/09 2:25		
2,5-Dibromotoluene (PID)	104		70-130				10/8/09 2:25		



39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Crane Manufacturing

Sample Description:

Work Order: 09J0123

Date Received: 10/6/2009

Field Sample #: Existing-4

Sampled: 10/6/2009 13:18

Sample ID: 09J0123-05

Sample Matrix: Ground Water

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	3.4	2.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:36	KMT
Barium	ND	250	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:36	KMT
Cadmium	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:36	KMT
Chromium	ND	50	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:36	KMT
Lead	ND	5.0	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:36	KMT
Mercury	ND	0.00010	mg/L	1		SW-846 7470A	10/7/09	10/8/09 13:47	MPF
Selenium	ND	25	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:36	KMT
Silver	ND	2.5	µg/L	5		SW-846 6020A	10/7/09	10/8/09 16:36	KMT