Minnesota Pollution Control Agency

Monitoring Report

Guidance Document 4-08

This form must be completed annually for Minnesota Pollution Control Agency (MPCA) review following the submittal of Guidance Document 4-06 *Investigation Report Form*. Under certain circumstances MPCA staff may request submittal of this form on an alternate schedule (e.g., quarterly, semi-annually).

All site monitoring results and additional work activities requested by the MPCA must be included and used to support the site management decision. Include any additional information that is important for making the site management decision. Refer to MPCA Guidance Document 1-01 *Petroleum Remediation Program General Policy* for the overall site investigation objectives and to other MPCA guidance documents for details on investigation methods. Do not revise or delete any text from this report form. Attach all applicable figures, tables, and appendices, and indicate those that have been updated during this reporting period. **All data provided must be cumulative.**

MPCA Site ID: **Leak00017354** Date: **October 22, 2010**

Responsible Party Information

Name: **Wellington Management Inc.** Phone #: **651-292-9844**

Mailing Address: **1625 Energy Park Drive, Suite 100**

City: **St. Paul, Minnesota** Zip Code: **55108**

Alternate Contact (if any) for Responsible Party: **Sonja Simonsen** Phone #: **651-999-5504**

Leak Site Information

Leak Site Name: **Former Jiffy Gas Station** Phone #: **NA**

Leak Site Address: **2154 Lexington Avenue North**

City: **Roseville** Zip Code: **55113** County: **Ramsey**

Environmental Professional Information

By signing this document, I/we acknowledge that we are submitting this document on behalf of and as agents of the responsible person or volunteer for this leak site. I/we acknowledge that if information in this document is inaccurate or incomplete, it will delay the completion of remediation and may harm the environment and may result in a reduction in Petrofund reimbursement. In addition, I/we acknowledge on behalf of the responsible person or volunteer for this leak site that if this document is determined to contain a false material statement, representation, or certification, or if it omits material information, the responsible person or volunteer may be found to be in violation of Minn. Stat. § 115.075 (2007) or Minn. R. 7000.0300 (Duty of Candor), and that the responsible person or volunteer may be liable for civil penalties.

MPCA staff are instructed to reject unsigned reports and reports that have been altered.

Name and Title of Report Author(s)	Signature	Date Signed
Tai Yeow, Project Manager	Tai Yeow	**10/22/10**

Name and Title of Report Reviewer(s)	Signature	Date Signed
Mike Hultgren, Operations Manager	Mike Hultgren	**10/22/10**

Name(s) of Field Technician(s): **Jason Hoffmann and Sean Dobie**

Company and mailing address:
ATC Associates Inc.
4380 Round Lake Road West
Roseville, Minnesota 55113

Project Manager E-mail Address: **mike.hultgren@atcassociates.com**
Phone: **651-635-9050**
Fax: **651-635-9080**

Section 1: Work Completed

1.1 Describe all site work completed since the *Investigation Report Form* or the last *Monitoring Report* was submitted. This should include both field and non-field related activities.
ATC conducted two rounds of semi-annual groundwater monitoring (GWM) at MW-1B on December 22, 2009 and June 28, 2010.

1.2 If additional work requested in the most recent MPCA correspondence has not been completed, explain why.
All additional work requested by the MPCA has been completed.

Section 2: Monitoring Results

2.1 Ground Water

Discuss the cumulative ground water monitoring results, water level measurements, and plume characteristics with respect to identified receptors.

This AMR summarizes groundwater monitoring activities at Former Jiffy Gas Station for the period from December 22, 2009 through June 28, 2010. The Site Location Map is provided as Figure 1.

Two semi-annual groundwater monitoring events were conducted during this time period. Groundwater monitoring events consisted of measuring static groundwater elevations and collecting groundwater samples for laboratory analysis. Groundwater samples were collected on December 22, 2009 and June 28, 2010.

Static water levels were measured in the monitoring wells during each monitoring event. Monitoring well completion information is included in Table 9. General groundwater flow direction for this reporting period is expected to be consistent with the east-southeasterly flow direction as reported in the north adjacent leak site (MPCA ID# 3591). Static water levels are presented in Table 10. Based on the patterns observed in the hydrograph, presented as Figure 4, groundwater fluctuations across the monitoring wells appear to be generally consistent.

Prior to collecting groundwater samples for analysis, monitoring wells were purged of three well volumes of water or until dry, using a disposable bailer. Sample collection information, including procedures, equipment and decontamination, is included in Appendix B. Groundwater sampling information sheets are included in Appendix D. Complete laboratory analytical reports are included in Appendix A. Groundwater samples were collected and analyzed for volatile organic compounds (VOCs) using EPA Method 8260; benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl-tertiary-butyl-ether (MTBE) using EPA Method 8021; gasoline range organics (GRO) using Wisconsin Department of Natural Resources (WDNR) Modified Method; and diesel range organics (DRO) using WDNR Modified Method. Groundwater analytical results are presented in Table 11.

The monitoring well, MW-1B, was sampled semi-annually for two rounds over the course of this reporting period. A plot of contaminant concentrations versus time for MW-1B is presented in Figures 5a. For comparison, a plot of contaminant concentrations versus time for another onsite well, Clark MW-3, located near the northeast corner of the site, is presented in Figures 5b. Contaminant concentrations detected in groundwater samples collected from both wells appear to be generally stable, although benzene concentrations remained above the Minnesota Department of Health (MDH)-developed Health Risk Limits (HRLs) of 10 micrograms per liter (ug/L) as of the June 2010 GWM event. Elevated GRO and DRO concentrations were also detected in MW-1B, with concentrations of 11,000 ug/L and 3,300 ug/L respectively,

detected in the water sample collected from MW-1B during the June 2010 GWM event. There is currently no HRL developed for GRO or DRO.

Groundwater analytical results for other detected petroleum compounds were less than the HRLs, where established, for the December 2009 GWM event. Groundwater analytical results for other contaminants are presented in Table 12.

2.2 **Field-Detectable Vapors** (photoionization detector, explosimeter, etc.)
Discuss the results of any additional follow-up field vapor monitoring. Include a description of each vapor monitoring location and an explanation of monitoring methods and instruments used. Interpret the cumulative results as related to the identified receptors.
No field vapor monitoring was conducted.

2.3 **Vapor Intrusion** (soil gas, sub-slab, indoor, ambient)
Discuss the results of any follow-up vapor intrusion assessment (VIA) activities including a description of each VIA sampling location and an interpretation of the results with respect to receptors.
No vapor intrusion assessment was conducted.

2.4 **Free Product**
If free product is present, discuss what activities are being completed to measure and recover it. Describe the effectiveness of the recovery efforts and free product trends over the course of the investigation. Complete Table 14 and discuss the data compiled to date.
No free product was observed in the onsite monitoring wells.

2.5 **Other** (e.g., surface water, contaminated surface soil, etc.)
Discuss the results of any additional monitoring or subsurface investigation conducted during this reporting period. Identify all monitoring locations on an attached site map by labeling each location. A description of sampling methods, including the instruments used, must be included in Section 6.

2.6 **Site Conceptual Model**
Discuss any changes to the overall site conceptual model that has altered the current site management decision based upon the information presented in this report.
The site conceptual model has not changed based on information gathered since the 2009 Limited Site Investigation (LSI) report was submitted. The groundwater contamination appears to be associated with the previously-closed release (Leak #8898). No free product was observed in the two onsite monitoring wells. Groundwater concentrations have remained relatively stable over almost ten years of long-term monitoring. No groundwater receptors exist and the uppermost drinking water aquifer is separated from the impacted aquifer by clay and shale layers.

Continued vapor intrusion assessment results from the north adjacent leak site (Leak #3591), which included data collected from permanent soil vapor ports located down-gradient from the Former Jiffy Station, did not indicate levels of concern in the soil vapors.

Section 3: Site Management Decision

The site management decision should be based on the Program's objectives described in Guidance Document 1-01 *Petroleum Remediation Program General Policy.*

3.1 Recommendation for site:

- ☒ site closure
- ☐ additional ground water monitoring
- ☐ additional field-detectable vapor monitoring
- ☐ additional soil or ground water investigation
- ☐ additional soil gas/vapor intrusion investigation
- ☐ corrective action

3.2 If closure is recommended, summarize significant investigative events and describe how the site-specific exposure pathways identified in the site conceptual model (SCM) have been adequately addressed.

The groundwater contamination appears to be associated with the previously-closed release (Leak #8898) at the subject property. Leak #17354 should be closed. The previous Leak #8898 was closed with a substantial amount of groundwater contamination in place. The contaminant concentrations currently detected in monitoring well MW-1B were less than the dissolved contaminant concentrations detected as part of the investigation of MPCA Leak #8898, despite being installed in a worst-case location that was not previously investigated.

Groundwater concentrations have remained stable. No free product was observed. Risks to receptors appear to be minimal. Based on the above, ATC recommends site closure.

3.3 If additional monitoring or subsurface investigation is recommended, provide details of all proposed activities (e.g., monitoring locations, sampling frequency, target analytes, additional monitoring wells, soil borings). Continue ground water monitoring and sampling in accordance with the previously-approved schedule until the MPCA responds to this report.

3.4 If additional vapor intrusion investigation is recommended, provide details of proposed activities such as completing an indoor building survey, sub-slab vapor sampling, indoor air sampling, or locations for additional soil gas sampling.

3.5 If corrective action is recommended, provide a conceptual approach by completing Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet* and include in Section 6. See Guidance Document 4-10 *Elements of the Corrective Action Design* for more information on the corrective action design process and other requirements. (Note: If a *Conceptual Corrective Action Design Worksheet* is submitted, MPCA staff will review this report at a higher-than-normal priority to determine if corrective action is required.)

Section 4: Figures

Attach the following figures in the order listed below. All figures must include a north arrow, scale, and legend. Approximate scales are not acceptable.

☒ Site Location Map using a U.S. Geological Survey 7.5 minute quadrangle map.

☒ One or more Site Maps showing:

- Structures
- Locations and depths of on-site buried utilities
- All past and present petroleum storage tanks, piping, dispensers, and transfer areas
- Extent of soil excavation
- Boring and well locations (including any drinking water wells on site)
- Horizontal extent of soil contamination
- Extent of contaminated surface soil
- Horizontal extent of ground water contamination
- Horizontal extent of NAPL
- Location of end points for all geologic cross sections
- Potential pathways that lead to surface water features within ¼ mile of the site

Distinguish sequential elements of investigations by dates, symbols, etc. in the key.

☐ Updated ground water gradient contour maps using water level elevations from each monitoring event since the last report. Show all wells at the site, and differentiate wells constructed in different aquifers. Label ground water contours and elevations at each data point used for contouring.

☒ Hydrograph for all monitoring and recovery wells.

☒ Graph(s) showing contaminant concentrations over time for all monitoring and recovery wells.

☐ Potential Receptor Map (scale 1 inch = 50 to 100 feet), centered on the release area, showing property boundaries and roads, and potential receptors such as buildings, water wells, underground utilities (distinguish between water, storm sewer, and sanitary sewer), surface waters, ditches, and any other pertinent items within 500 feet of the release source.

☐ Vapor Survey Map showing utilities and buildings with basements and monitoring locations within 500 feet (if a survey was required). If the survey area has been expanded beyond 500 feet, adjust the map to encompass the entire surveyed area.

☒ Vapor Intrusion Assessment Map showing all vapor intrusion samples and receptors at and within the 100-foot preliminary assessment area. If the assessment area has been expanded beyond 100 feet, adjust the map to encompass the entire assessment area.

Section 5: Tables

Attach all tables from the *Investigation Report Form* and indicate those that have been updated during this reporting period by marking the check box below. **Tables must include all cumulative data.**

Updated	Table Number and Name
☐	Table 1. Tank Information
☐	Table 2. Results of Soil Headspace Screening
☐	Table 3. Analytical Results of Soil Samples
☐	Table 4. Other Contaminants Detected in Soils (Petroleum or Non-petroleum Derived)
☐	Table 5. Contaminated Surface Soil Results
☐	Table 6. Water Level Measurements and Depths of Water Samples Collected from Borings
☐	Table 7. Analytical Results of Water Samples Collected from Borings
☐	Table 8. Other Contaminants Detected in Water Samples Collected from Borings (Petroleum or Non-petroleum Derived)
☐	Table 9. Monitoring Well Completion Information
☒	Table 10. Water Level Measurements in Wells
☒	Table 11. Analytical Results of Water Samples Collected from Wells
☒	Table 12. Other Contaminants Detected in Water Samples Collected from Wells (Petroleum or Non-petroleum Derived)
☒	Table 13. Natural Attenuation Parameters
☐	Table 14. Free Product Recovery
☐	Table 15. Properties Located within 500 feet of the Release Source
☐	Table 16. Water Supply Wells Located within 500 feet of the Release Source and Municipal or Industrial Wells within ½ mile
☐	Table 17. Surface Water Receptor Information
☐	Table 18. Utility Receptor Information
☐	Table 19. Vapor Survey Results
☐	Table 20. Results of Soil Gas Sampling for Vapor Intrusion Screening

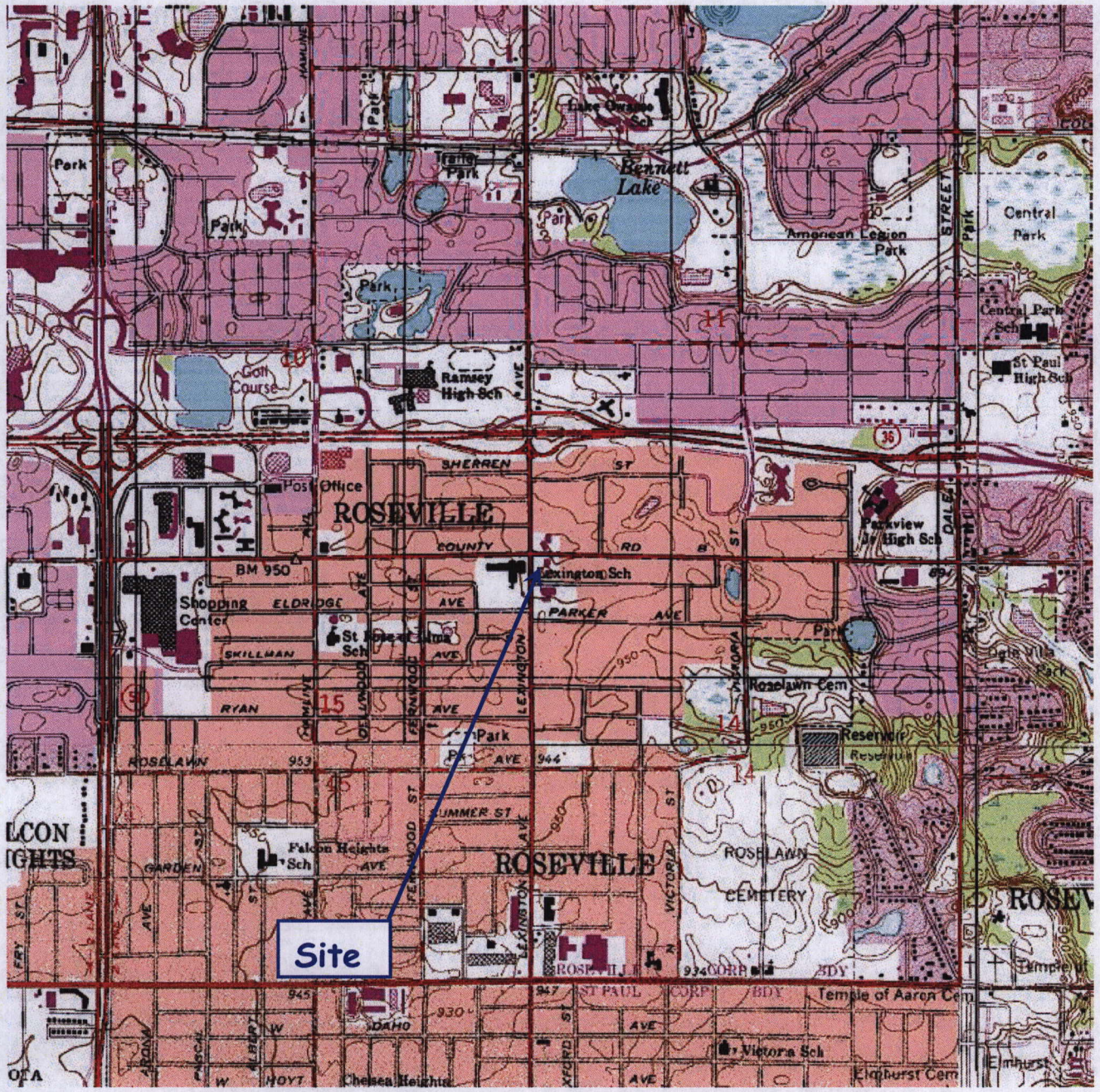
Section 6: Appendices

Attach all required or applicable appendices in the following order. Indicate those appendices that are included in this report by marking the check box. The appendix section of the report contains sufficient information to document all activities completed since the last report. All reproduced data must be legible. Reports missing required documentation are subject to rejection.

☒	*Appendix A*	Copies of most recent laboratory analytical reports for Soil, Soil Gas/Sub-slab Vapor/Indoor Air/Ambient Air, and Ground Water samples, including a copy of the Chain of Custody. Include laboratory QA/QC data, Chromatograms, and MDH laboratory certification number.
☒	*Appendix B*	Methodologies and Procedures, Including Field Screening of Soil, Other Field Analyses, Soil Boring, Soil Sampling, Soil Gas/Sub-Slab/Indoor air/Ambient Air Sampling, Well Installation, and Water Sampling.
☐	*Appendix C*	Geologic Logs of Additional Soil Borings and Wells Installed. Include Well Construction Diagrams and Copies of the Minnesota Department of Health Well Record for new wells.
☒	*Appendix D*	Field or sampling data sheets (sampling forms, field crew notes, etc.).
☐	*Appendix E*	Guidance Document 1-03a *Spatial Data Reporting Form* (if not previously submitted or new site features need to be reported).
☐	*Appendix F*	Guidance Document 2-05 *Release Information Worksheet* (if not previously submitted).
☐	*Appendix G*	Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet.*

Web pages and phone numbers

MPCA staff	http://www.pca.state.mn.us/pca/staff/index.cfm
MPCA toll free	**1-800-657-3864**
Petroleum Remediation Program web page	http://www.pca.state.mn.us/programs/lust_p.html
MPCA Info. Request	http://www.pca.state.mn.us/about/inforequest.html
MPCA VIC program	http://www.pca.state.mn.us/cleanup/vic.html
MPCA Petroleum Brownfields Program	http://www.pca.state.mn.us/programs/vpic_p.html
MPCA SRS guidance documents	http://www.pca.state.mn.us/cleanup/riskbasedoc.html http://www.pca.state.mn.us/cleanup/riskbasedoc.html#surfacewaterpathway
MDH HRLs	http://www.health.state.mn.us/divs/eh/groundwater/hrltable.html
MDH DW hotline	**1-800-818-9318**
Petrofund Web Page	http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=-536881377&agency=Commerce
Petrofund Phone	**651-215-1775 or 1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**



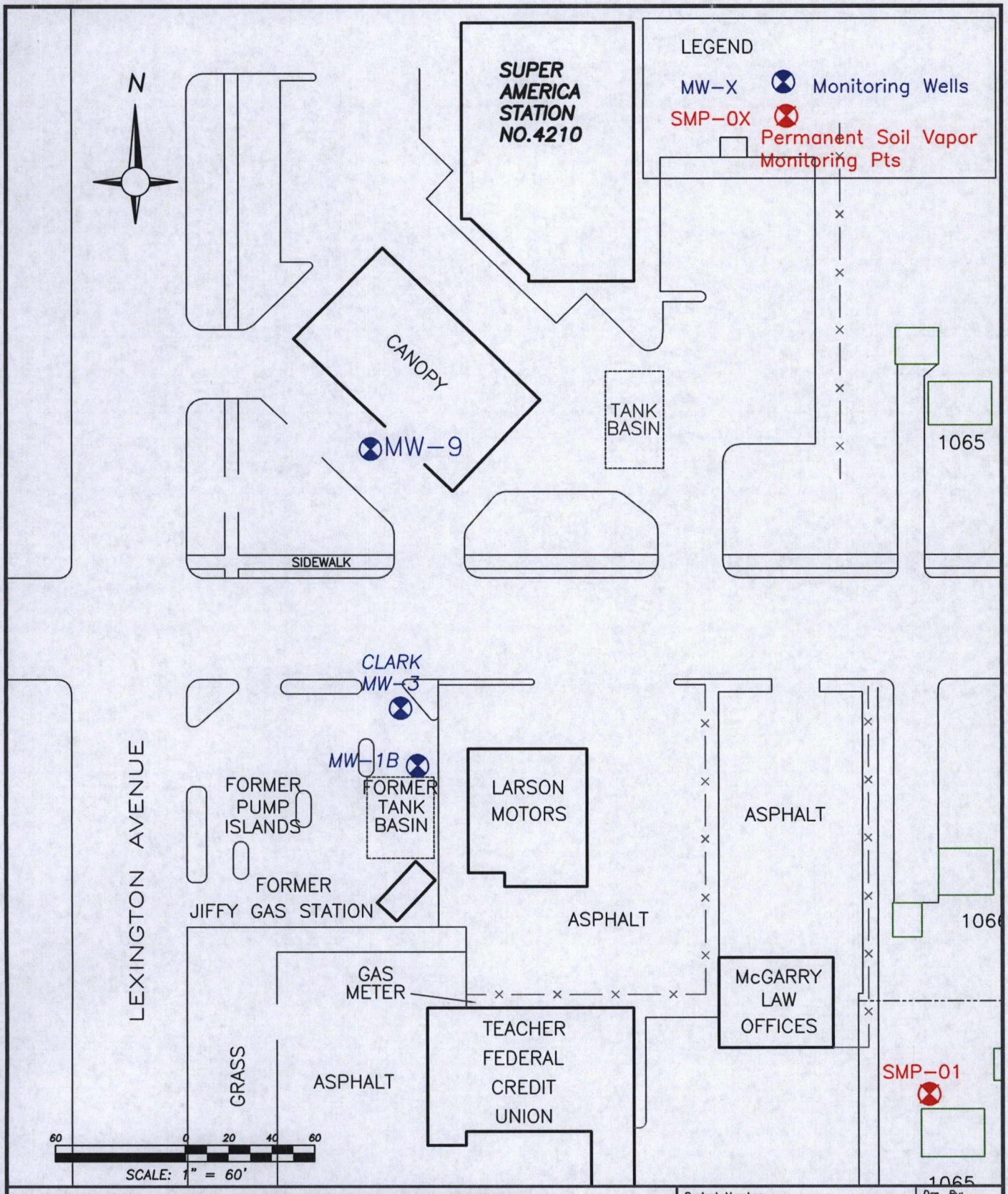
SOURCE: UNITED STATES GEOLOGICAL SURVEY, NEW BRIGHTON QUADRANGLE, MINNESOTA TOPOGRAPHIC MAP (7.5 MINUTE SERIES), DATED 1997.

ATC ASSOCIATES INC
4380 Round Lake Road West
Arden Hills, Minnesota 55112

PROJECT NO: 22.30552.0014		
DESIGNED BY: ATC	SCALE: UNK	REVIEWED BY: DPR
DRAWN BY: CTY	DATE: OCT 2010	FILE: TOPO

FIGURE 1
SITE LOCATION MAP

FORMER JIFFY GAS STATION
2154 LEXINGTON AVENUE NORTH
ROSEVILLE, MINNESOTA 55113
SW ¼, SW ¼, SW ¼, SEC 11, T29N, R23W



EXTENDED SITE MAP SHOWING EXISTING MONITORING WELLS

FORMER JIFFY GAS STATION
2154 LEXINGTON AVENUE NORTH
ROSEVILLE, MINNESOTA 55113

Project Number: 22.30552.0014		Drn. By: EB
Drawing File: JIFFY 2010		Ckd. By: CTY
Date: OCT 2010	Scale: AS SHOWN	App'd By:
VATC ASSOCIATES INC.		Figure: 2

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Figure 4. Hydrograph

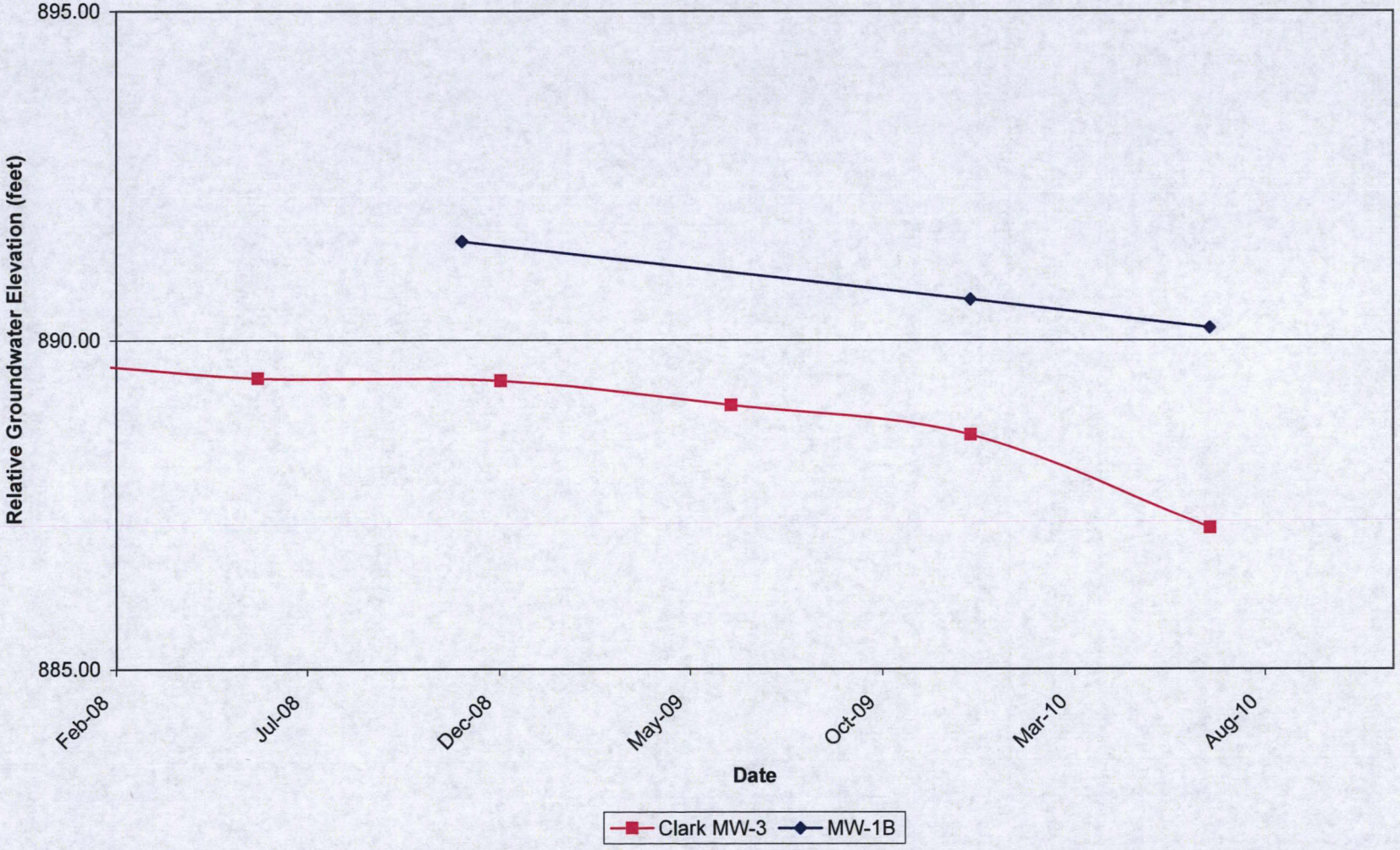


Figure 5a. MW-1B Concentrations Over Time

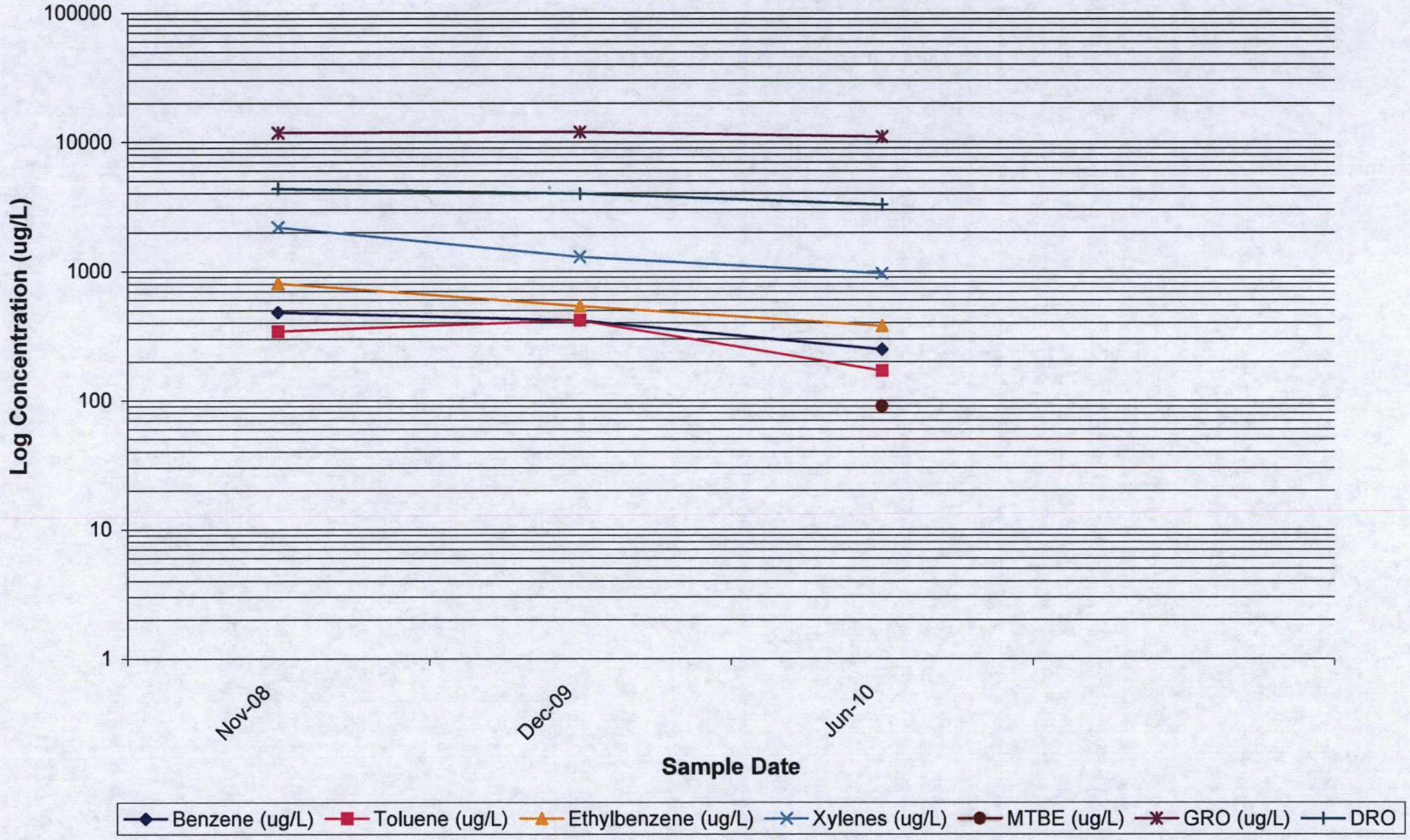
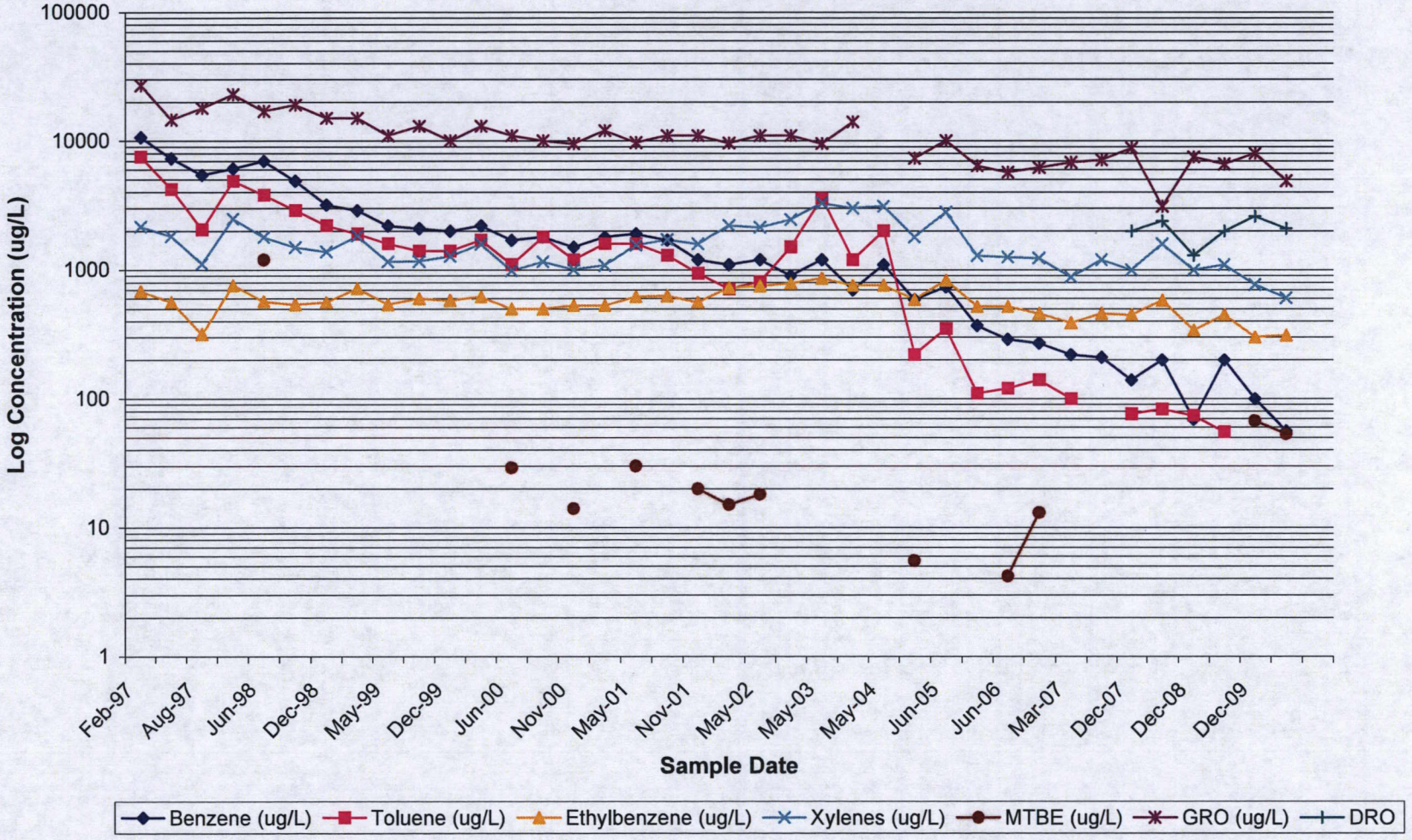
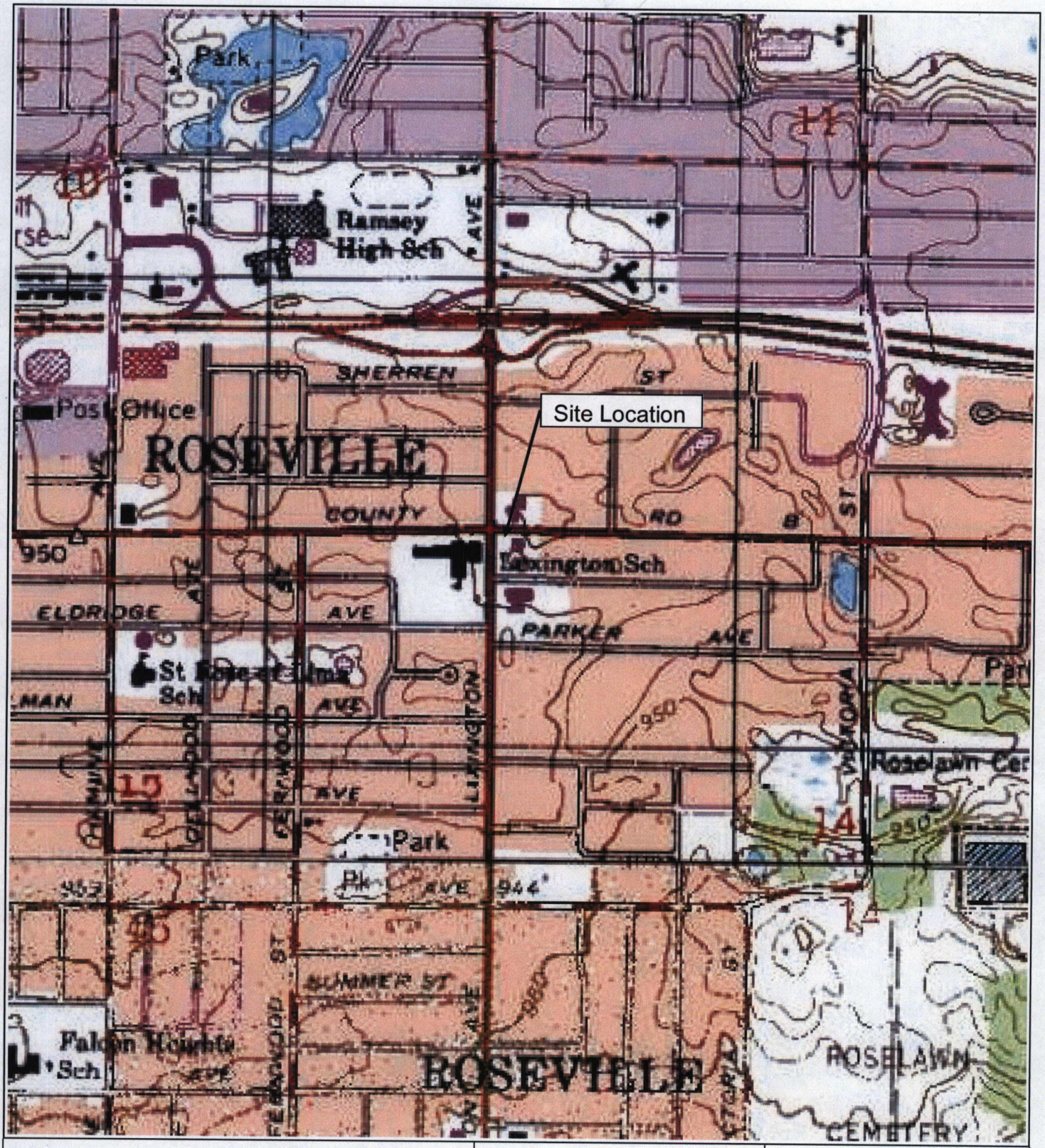


Figure 5b. Clark MW-3 Concentrations Over Time





N

Quadrangle Location

ROSEVILLE, RAMSEY COUNTY
MINNESOTA

7.5 MINUTE SERIES (TOPOGRAPHIC)

500 0 500 1,000 Feet

FIGURE 1
SITE LOCATION MAP

2154 LEXINGTON AVENUE NORTH
ROSEVILLE, MINNESOTA

DPRA
Creative People. Smart Solutions.

DATE: 01/06/2009

PROJECT: #5381.0044.0003

The Subject Property is Highlighted in Red

HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

2008

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

N W E S

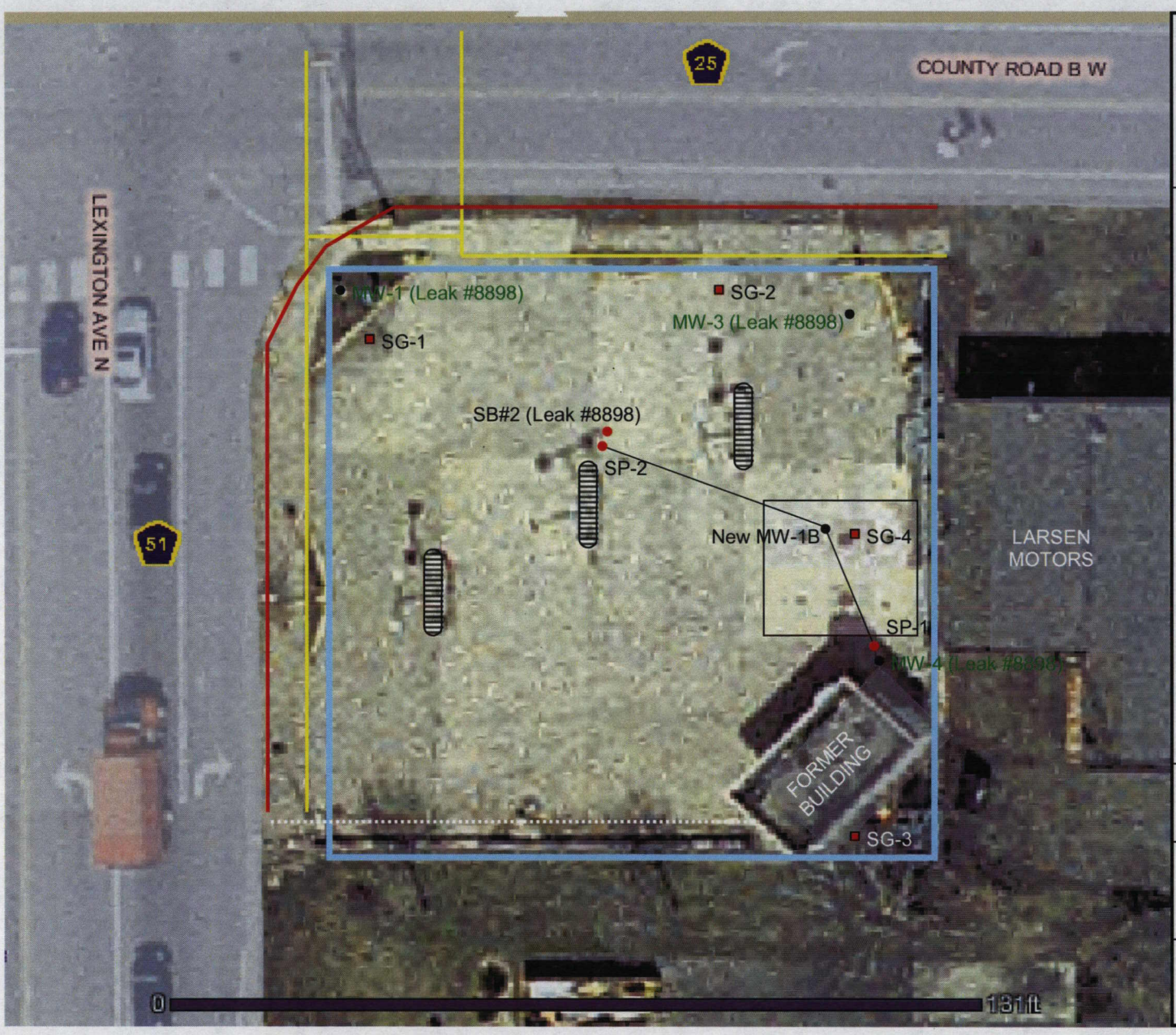


FIGURE 2
SITE MAP

Former Jiffy Gas Station
2154 Lexington Ave. N.
Roseville, MN 55113

LEGEND

- Subject Property
- Former Tank Basin and Dispensers
- Soil Probe Locations
- Monitoring Well Locations
- Soil-gas Locations
- Underground Electricity
- Natural Gas
- Communications
- Cross-section Location

N

Background Image from
Ramsey County
Online Mapping

DPRA
Creative People. Smart Solutions.

DATE: 01/12/2009

PROJECT #005381.0044.0003

FIGURE 4
POTENITIAL RECEPTOR MAP

Former Jiffy Gas Station
2154 Lexington Ave. N.
Roseville, Minnesota

LEGEND

- 500 Foot Radius
- 8 — Receptor ID Corresponding to Table 6
- Storm Sewer Catch Basin and Man-hole access
- Water Well with Unique #

Background Image from Microsoft Virtual Earth Live Search Maps

DATE: 01/08/2008

PROJECT #5381.0044.0003

DPRA
Creative People. Smart Solutions.

TABLE 1

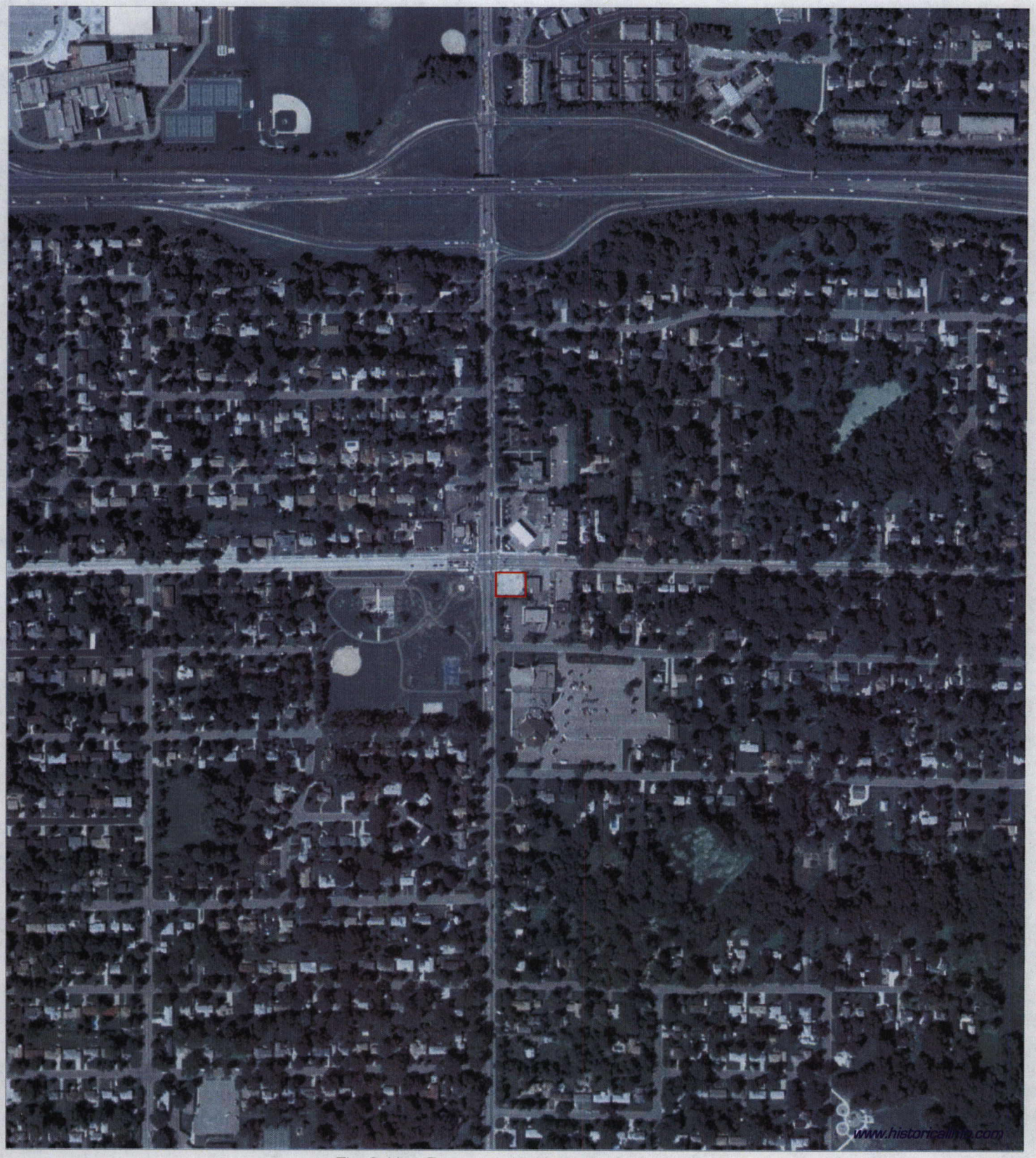
DPRA
Creative People. Smart Solutions.

Tank Information

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Tank #	Tank Material	Piping Material	UST or AST	Capacity (gal)	Contents	Installation Date	Status	Condition
1	Steel	Steel	UST	6,000	Gasoline	1961	Removed 7/8/2008	Rusted/Pitted (no holes or cracks)
2	Steel	Steel	UST	6,000	Gasoline	1961	Removed 7/8/2008	Rusted/Pitted (no holes or cracks)

UST = Underground storage tank
AST = Aboveground storage tank



The Subject Property is Highlighted in Red

HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

2003

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

N W E S

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HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

2000

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

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HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

1997

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

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HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

1991

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

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HIG
HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

1984

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

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HIG
HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

1980

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

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HIG
HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

1974

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

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HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

1966

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

N W E S

www.historicalinfo.com

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HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

1957

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

N W E S

The Subject Property is Highlighted in Red

HIG
HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

1953

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

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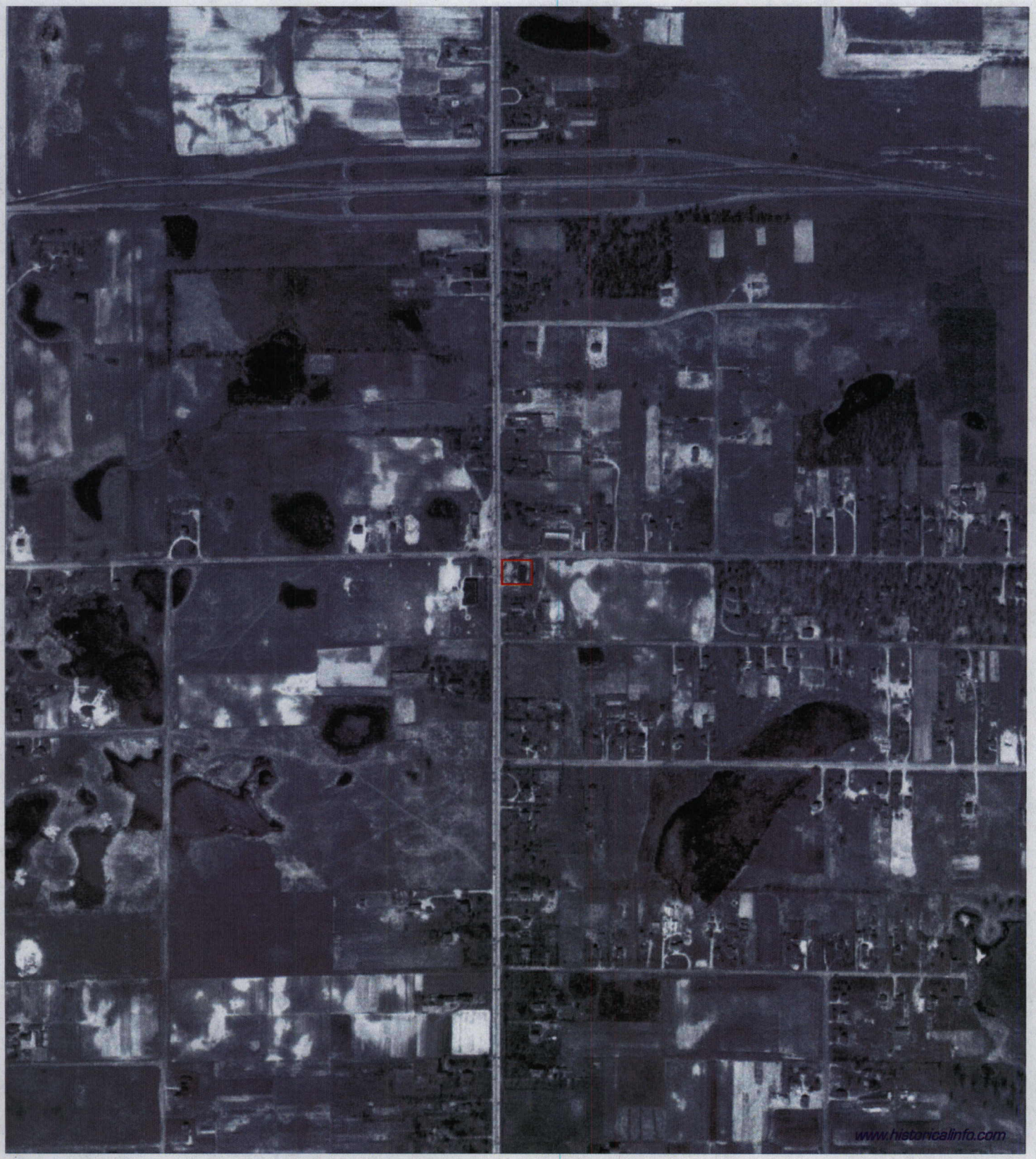


The Subject Property is Highlighted in Red

HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

1947

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

N W E S

The Subject Property is Highlighted in Red

HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

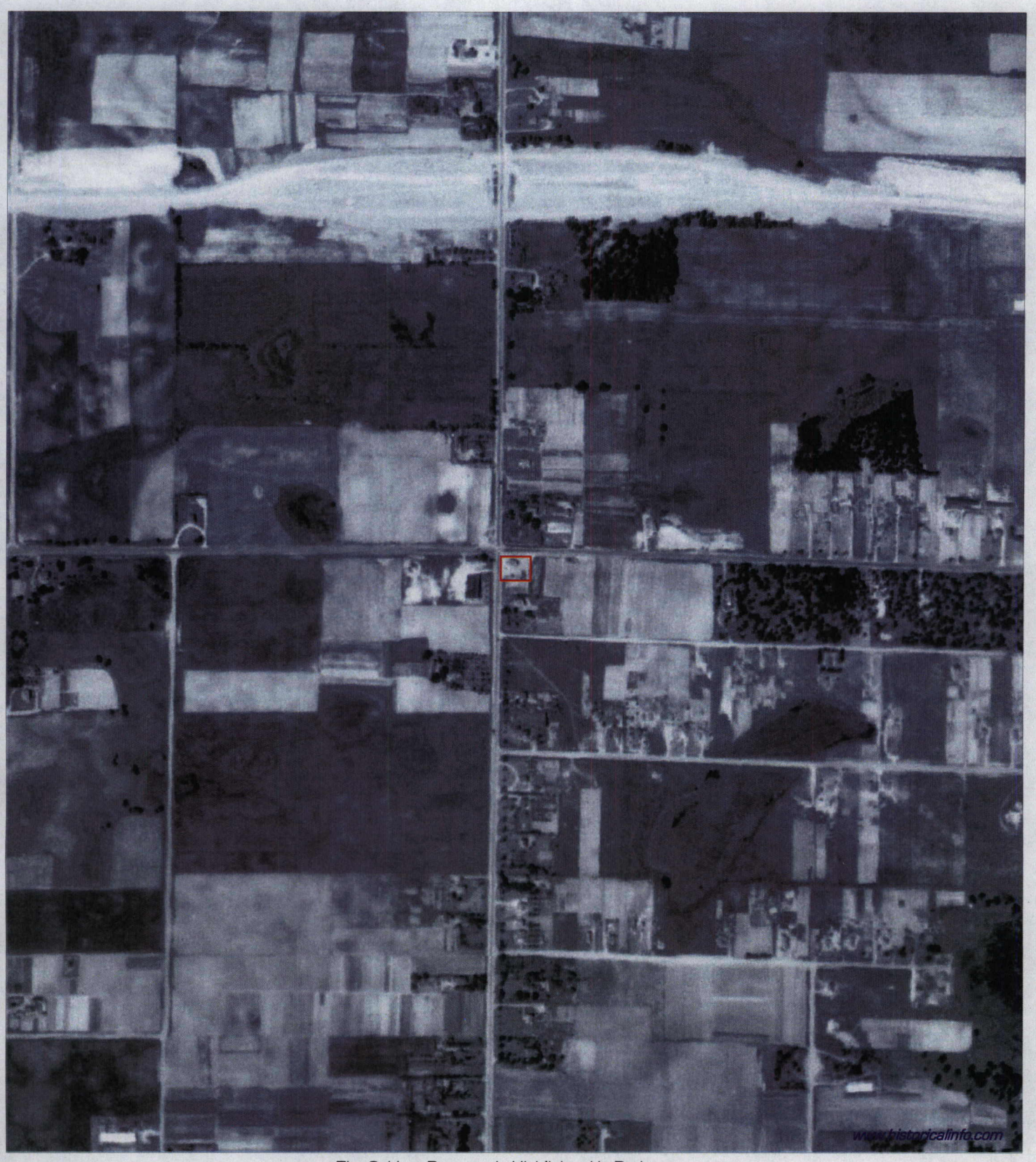
1940

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

N W E S



The Subject Property is Highlighted in Red

HISTORICAL INFORMATION GATHERERS, INC.

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

1937

HIG Project Number: MAJ-1028

Client Project Number: 5381.0044.0003

Approximate Scale 1:6000 (1"=500')

N W E S

DPRA Incorporated
332 Minnesota Street
St. Paul, MN 55101
Telephone: 651-227-6500

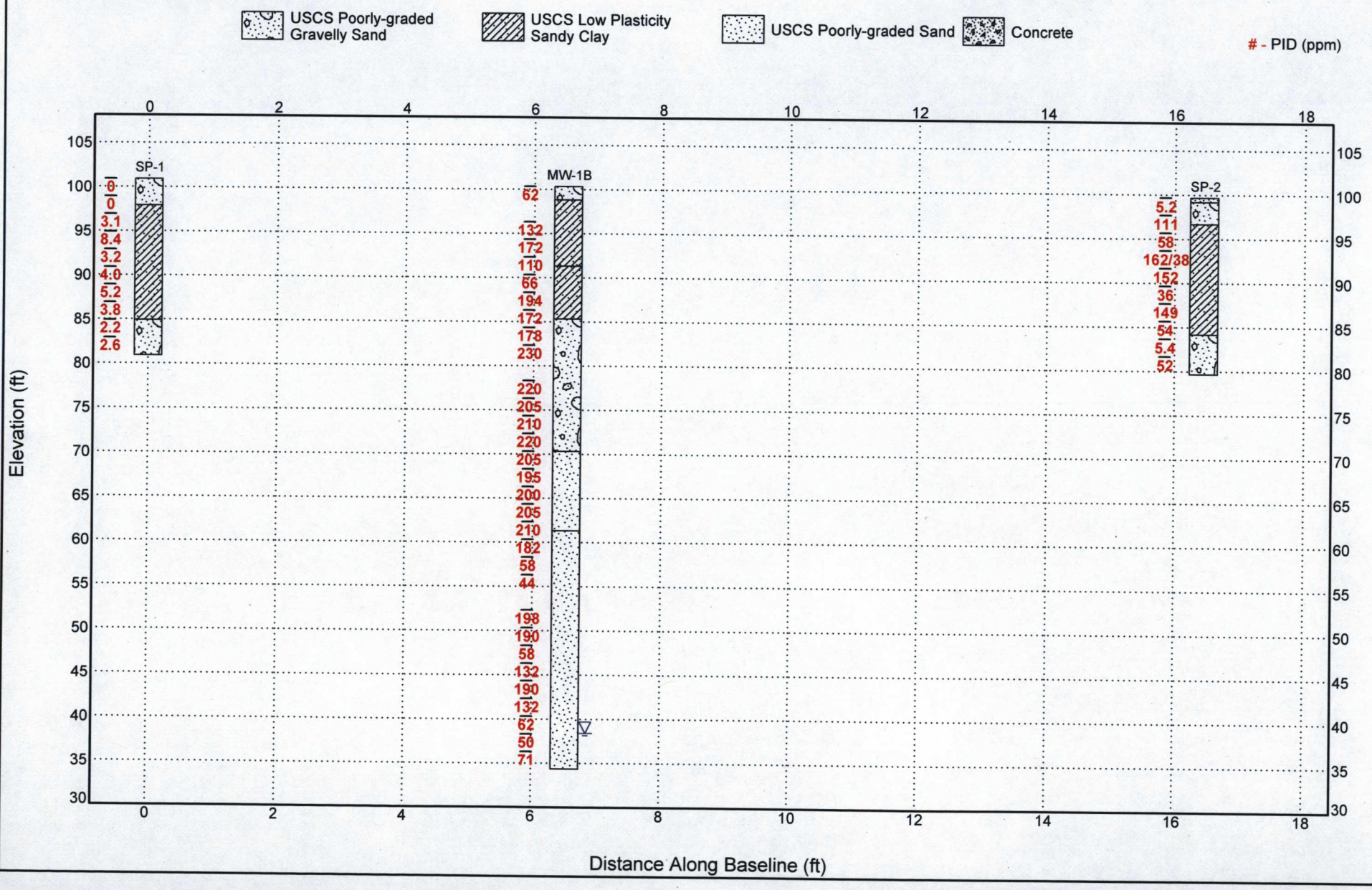
Creative People. Smart Solutions.

Figure 3
Subsurface Diagram

PROJECT NAME Former Jiffy Gas Station

PROJECT NUMBER 005381.0044.0003

PROJECT LOCATION Roseville, MN



STRATIGRAPHY & GW - A SIZE FORMER JIFFY GAS STATION.GPJ GINT US.GDT 1/12/09

TABLE 1

Tank Information

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Tank #	Tank Material	Piping Material	UST or AST	Capacity (gal)	Contents	Installation Date	Status	Condition
1	Steel	Steel	UST	6,000	Gasoline	1961	Removed 7/8/2008	Rusted/Pitted (no holes or cracks)
2	Steel	Steel	UST	6,000	Gasoline	1961	Removed 7/8/2008	Rusted/Pitted (no holes or cracks)

UST = Underground storage tank
AST = Aboveground storage tank

TABLE 2

PID MEASUREMENTS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

	Sample Location:	MW-1B	SP-1	MW#4	SP-2	SB#2
Depth (ft.)	Date:	11/17/2008	11/17/2008	12/20/1996	11/17/2008	12/19/1996
0-2		62	0.0	---	5.2	---
2-4		---	0.0	---	111	---
4-6		132	3.1	50.3	58	733
6-8		172	8.4	238	162	2,924
8-10		110	3.2	340	152	---
10-12		66	4.0	229	36	---
12-14		194	5.2	---	149	1,449
14-16		172	3.8	210	54	1,630
16-18		178	2.2	4231	5.4	---
18-20		230	2.6	23.2	52	1,791
20-22		---		3,001		---
22-24		220		---		174
24-26		205		95.5		270
26-28		210		35.2		325
28-30		220		57.0		187
30-32		205		---		---
32-34		195		4,052		---
34-36		200		5,025		113
36-38		205		6,518		1,108
38-40		210		8,580		2,115
40-42		182		---		---
42-44		58		8,320		2,218
44-46		44		8,182		415
46-48		---		7,860		161
48-50		198		6,871		175
50-52		190		---		---
52-54		58		7,126		396
54-56		132		1,220		69.2
56-58		190		1,287		1,620
58-60		132		1,241		1,924
60-62		62		---		---
62-64		50		199		1,825
64-66		71		1,012		1,932
66-68				140		
68-70				23.2		

PID = Photoionization detector
--- = Not measured
All results in parts per million (ppm).
Shaded cells indicate PID measurements from Leak #8898 investigation.

TABLE 3

NON-AQUEOUS ANALYTICAL RESULTS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample	Sample Date	Sample Depth (feet)	Benzene (mg/kg)	Ethyl-Benzene (mg/kg)	Toluene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	GRO (mg/kg)	DRO (mg/kg)
MW-1B	11/17/08	28-30	<0.052	1.2	0.13	7.4	<0.21	107	20.0
MW-1B	11/17/08	58-60	<0.055	0.25	<0.055	0.76	<0.22	59.0	10.8
SP-1	11/17/08	6-8	<0.061	<0.061	<0.061	<0.18	<0.24	7.4	<10.3
MW#4	12/20/96	38-40	10.6	166	210	721	NA	5,170	81.1
SP-2	11/17/08	5-7	<0.058	4.7	<0.058	17.3	<2.3	207	19.0
SB#2	12/20/96	5-7	15.0	32.7	57.2	107	8.33	1,130	<4.0

mg/kg = milligrams per killogram
MTBE = methyl-tert-butyl ether
GRO = gasoline range organics
DRO = diesel range organics
Shaded cells indicate sampling results from Leak #8898 investigation
* All lab types are fixed

TABLE 6

Groundwater Elevations in Borings

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Soil Boring	Date Measured	Screen Depth (approximate in feet)	Depth to Groundwater (approximate in feet)
GP-1	07/18/06	7-12	6.5
GP-2	07/18/06	7-12	6
GP-3	07/18/06	7-12	6
GP-4	07/18/06	7-12	12
GP-5	03/08/07	13-18	12.15
GP-6	03/08/07	13-18	14.25
GP-7	3/8/2007	13-18	No Water Detected

TABLE 7

AQUEOUS ANALYTICAL RESULTS - TEMPORARY PROBES

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample	Sample Date	Sample Depth (feet)	Benzene (µg/l)	Ethyl-Benzene (µg/l)	Toluene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)	GRO (µg/l)	Lab Type
GP-1	07/18/06	7-12	**784**	511	60.9	627	<10	7,980	Fixed
GP-2	07/18/06	7-12	**54.3**	2.9	<1.0	1.1	<1.0	401	Fixed
GP-3	07/18/06	7-12	**334**	559	102	1,420	<1.0	21,400	Fixed
GP-4	07/18/06	7-12	**33,700**	**38,900**	**119,000**	**175,000**	<200	89,100	Fixed
GP-5	03/08/07	8-13	<1.0	<1.0	<1.0	<3.0	<1.0	<100	Fixed
GP-6	03/08/07	8-13	<1.0	<1.0	<1.0	<3.0	69.4	<100	Fixed
	HRL		**10**	**700**	**1,000**	**10,000**	NE	NE	

MTBE	=	Methyl tertiary butyl ether
GRO	=	Gasoline-range organics
µg/l	=	Micrograms per liter
NE	=	Not established
HRL	=	Minnesota Department of Health (MDH) Health Risk Limit

TABLE 8

OTHER AQUEOUS ANALYTICAL RESULTS - TEMPORARY PROBES

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample	Sample Date	Sample Depth (feet)	Acetone (µg/l)	2-Butanone (MEK) (µg/l)	sec-Butylbenzene (µg/l)	Isopropyl-benzene (µg/l)	Naphth-alene (µg/l)	n-Propyl-benzene (µg/l)	1,2,4-TMB	1,3,5-TMB (µg/l)	Lab Type
GP-1	07/18/06	7-12	<1.0	<1.0	25.9	75.5	178	232	936	128	Fixed
GP-2	07/18/06	7-12	158	36.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	Fixed
GP-3	07/18/06	7-12	<50	<50	21.1	71.2	205	217	1,110	439	Fixed
GP-4	07/18/06	7-12	<1,000	<1,000	1,670	**4,680**	**11,200**	15,200	87,600	30,500	Fixed
GP-5	03/08/07	8-13	39.1	9.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	Fixed
GP-6	03/08/07	8-13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	Fixed
	HRL		**700**	**4,000**	NE	**300**	**300**	NE	NE	NE	

MTBE	=	Methyl tertiary butyl ether
GRO	=	Gasoline-range organics
DRO	=	Diesel-range organics
µg/l	=	Micrograms per liter
NE	=	Not established
HRL	=	Minnesota Department of Health (MDH) Health Risk Limit
TMB	=	Trimethylbenzene

TABLE 9

MONITORING WELL CONSTRUCTION SUMMARY

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Monitoring Well	Unique Well Number	Date Installed	Top of Casing (feet)*	Ground Surface (feet)*	Top of Well Screen (feet)*	Bottom of Well Screen (feet)*	Screened Interval (feet)*	Bottom of Well (feet)*
MW-1B	764235	11/17/08	104.48	100.34	48.48	38.48	38.48-48.48	38.48

* Referenced to benchmark elevation of 100.00 feet at MW-3 on the NE corner of the site.

TABLE 10

GROUNDWATER ELEVATIONS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Well	Date Measured	Top of Casing Elevation [1] (feet)	Depth to Groundwater [2] (feet)	Groundwater Elevation (feet)	Water Level Above Screen Y/N
MW-1B	11/19/08	104.48	61.92	42.56	N
	12/22/09	104.48	62.8	41.68	N
	06/28/10	104.48	63.23	41.25	N

(1) Referenced to benchmark elevation of 100.00 feet at MW-3 on the NE corner of the Site.

(2) Measured from top of well casing.

TABLE 11

AQUEOUS ANALYTICAL RESULTS (PETROLEUM)

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample	Sample Date	Benzene (µg/l)	Ethyl-Benzene (µg/l)	Toluene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)	GRO (µg/l)	DRO (µg/l)
MW-1B	11/18/08	484	810	345	2,210	<5.0	11,800	4,400
	12/22/09	420	540	420	1,300	<25	12,000	4,000
	06/28/10	250	380	170	970	90	11,000	3,300
Clark MW-3	02/11/97	10700	682	7520	2170	-	27000	-
	05/15/97	7300	564	4220	1830	ND	14600	-
	08/06/97	5450	318	2060	1120	NA	18000	-
	03/05/98	6100	760	4900	2500	ND	23000	-
	06/02/98	7,000	570	3,800	1,800	1,200	17,000	-
	08/10/98	4,900	540	2,900	1,500	ND	19,000	-
	12/09/98	3,200	560	2,200	1,390	ND	15,000	-
	02/27/99	2,900	720	1,900	1,840	NA	15,000	-
	05/11/99	2,200	540	1,600	1,160	ND	11,000	-
	08/31/99	2,100	600	1,400	1,170	ND	13,000	-
	12/09/99	2,000	580	1,400	1,280	ND	10,000	-
	02/29/00	2,200	620	1,700	1,590	ND	13,000	-
	06/02/00	1,700	500	1,100	990	29	11,000	-
	09/08/00	1,800	500	1,800	1,160	ND	10,000	-
	11/21/00	1,500	530	1,200	1,010	14	9,500	-
	02/28/01	1,800	530	1,600	1,090	ND	12,000	-
	05/15/01	1,900	620	1,600	1,550	30	9,700	-
	09/04/01	1,700	630	1,300	1,720	ND	11,000	-
	11/26/01	1,200	560	940	1,600	20	11,000	-
	02/28/02	1,100	730	710	2,210	15	9,600	-
	05/21/02	1,200	750	810	2,140	18	11,000	-
	11/25/02	900	790	1,500	2,450	ND	11,000	-
	05/22/03	1,200	860	3,600	3,290	ND	9,500	-
	12/03/03	700	760	1,200	3,010	ND	14,000	-
	05/24/04	1,100	760	2,000	3,120			-
	04/05/05	590	590	220	1,800	6	7,300	-
	06/14/05	740	830	350	2,800	<10	10,000	-
	09/26/05	-	-	-	-	-	-	-
	12/16/05	-	-	-	-	-	-	-
	03/07/06	370	520	110	1,290	<5.0	6,400	-
	06/07/06	290	520	120	1,260	4	5,700	-
	09/26/06	270	460	140	1,240	13	6,200	-
	03/20/07	220	390	100	880	<100	6,800	-
	06/28/07	210	460	<100	1,200	<20	7,100	-
	12/21/07	140	450	76	1,000	<10	8,800	2000
	06/12/08	200	580	83	1,600	<1.0	3,100	2400
	12/19/08	69	340	74	1,000	<1.0	7,500	1300
	06/18/09	200	450	55	1,100	<3.9	6,600	2000
	12/22/09	100	300	<50	770	67	8,000	2600
	06/28/10	56	310	<50	610	53	4,900	2100
Former MW-4	05/21/02	1,400	630	340	1,530	ND	9,600	NA
	11/25/02	690	600	240	1,560	ND	8,200	NA
	05/22/03	710	560	210	940	ND	5,200	NA
	12/03/03	450	410	200	860	7.7	7,500	NA
	HRL	**10**	**700**	**1,000**	**10,000**	**NE**	**NE**	**NE**

TABLE 11

AQUEOUS ANALYTICAL RESULTS (PETROLEUM)

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample	Sample Date	Benzene (µg/l)	Ethyl-Benzene (µg/l)	Toluene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)	GRO (µg/l)	DRO (µg/l)
µg/l	Micrograms per liter							
MTBE	Methyl-tertiary butyl ether							
GRO	Gasoline-range organics							
DRO	Diesel-range organics							
HRL	Minnesota Department of Health - Health Risk Limit							
<	Less than Report Limit							
ND	Not detected, no report limit was provided in previous investigation data tables							
NA	Not analyzed							

Shaded cells indicate data from Leak #8898 investigation

* All lab types are fixed

Table 12
Other Contaminants

Well ID	Date	n-Butyl benzene (ug/L)	sec-Butyl benzene (ug/L)	Isopropyl benzene (ug/L)	p-Isopropyl toluene (ug/L)	Naphthalene (ug/L)	n-Propyl benzene (ug/L)	Styrene (ug/L)	1,2,4-Trimethyl benzene (ug/L)	1,2,3-Trimethyl benzene (ug/L)	1,3,5-Trimethyl benzene (ug/L)	Laboratory
MW-1B	11/18/2008	57.4	28.4	134	134	428	154	ND	757	ND	202	Fixed
	12/22/2009	<25	<25	100	30	240	110	<25	550	220	150	Fixed
	6/28/2010	NA	NA	NA	NA	NA	NA	NA	500	NA	140	Fixed
Clark MW-3	6/12/2008	7.3	12	43	27	160	48	2.0	270	66	96	Fixed
	12/19/2008	7.5	10	34	14	110	40	<1.0	170	54	77	Fixed
	6/18/2009	13	11	31	21	130	42	<7.6	200	57	76	Fixed
Duplicates												
Clark MW-3	12/19/008	8.4	12	38	15	96	46	<1.0	190	61	88	Fixed
Clark MW-3	6/18/2009	13	12	35	23	100	48	<7.6	240	64	81	Fixed
MDH HRLs		**NE**	**NE**	**300**	**NE**	**300**	**NE**	**NE**	**NE**	**NE**	**NE**	

Notes:
MDH HRL = Minnesota Department of Health, Health Risk Limit
ug/L = micrograms per liter
NE = Not Established
BOLDED concentrations indicate exceedance of HRL
NA = Not Analyzed

TABLE 13

NATURAL ATTENUATION PARAMETERS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample	Date Sampled	Redox Potential (mV)	pH	Temp. °C	D.O. mg/L
MW-1B	11/18/08				
	12/22/09	-52.9	*	8.92	3.58
	06/28/10	-300.4	6.95	15.43	0.77

mg/l	Milligrams per liter
°C	Degrees Celsius
D.O	Dissolved Oxygen
---	Not measured
FP	Free Product
ppm	Part per million
*	Faulty pH sensor

TABLE 14

Properties Located Within 500 Feet of the Release Source

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

ID # (From Map)	Property Address	Water Well (Y or N)	How Determined*	Well Use**	Public Water Supply (Y or N)	Confirmed By City (Y or N)	Basement Or Sumps (Y or N)	Possible Petroleum Sources (Y or N)	Residential or Commercial?	Comments (including property use)
Site	2154 Lexington Ave N	N	PC	NA		Y		Y	Commercial	
1	2150 Lexington Ave N	N	Postcard	NA	Y	Y	N/N	N	Commercial	Teacher Federal Credit Union
2	2120 Lexington Ave N	N	PC	NA	Y	Y	Y/N	N	Residential	
3	1065 Burke Ave	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
4	1059 Burke Ave	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
5	1051 Burke Ave	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
6	1047 Burke Ave	Sealed	PC	NA	Y	Y	Y/Y	N	Residential	Korf Residence
7	1088 County Road B	N	PC	NA	Y	Y	N/N	Y	Commercial	Larsen Motors Auto Repair
8	1076 County Road B	N	PC	NA	Y	Y	N/N	N	Commercial	MN Low Vision Store
9	1066 County Road B	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
10	1060 County Road B	Sealed	Postcard	NA	Y	Y	Y/N	N	Residential	Dec Residence
11	1052 County Road B	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
12	1044 County Road B	Sealed	Postcard	NA	Y	Y	Y/N	N	Residential	Lowe Residence
13	1043 County Road B	Sealed	Postcard	NA	Y	Y	N/N	N	Residential	Radatz Residence
14	1045 County Road B	Sealed	PC	NA	Y	Y	Y/N	N	Residential	
15	1047 County Road B	Sealed	Postcard	NA	Y	Y	Y/Y	N	Residential	Bolek Residence
16	1061 County Road B	Sealed	Postcard	NA	Y	Y	Y/N	N	Residential	
17	1065 County Road B	N	PC	NA	Y	Y	Y/N	N	Residential	
18	2172 Lexington Ave N	N	PC	NA	Y	Y	N/N	Y	Commercial	SA Gas Station
19	2194 Lexington Ave N	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	Lexington Crt Apts
20	2201 Lexington Ave N	N	Postcard	NA	Y	Y	Y/Y	N	Commercial	State Farm Insurance
21	1119 Lexington Ave N	*Resident not willing to provide information								
22	1125 Lexington Ave N	N	Assumed/VO	NA	Y		Y/?	N	Residential	
23	1136 Lexington Ave N	N	Assumed/VO	NA	Y		Y/?	N	Residential	
24	1130 Lexington Ave N	Sealed	PC	NA	Y		Y/Y	N	Residential	
25	1126 Sandhurst Dr	Sealed	PC	NA	Y	Y	Y/Y	N	Residential	Mergens Residence
26	2167 Lexington Ave N	N	Assumed	NA	Y	Y	N/N	N	Commercial	TCF Bank
27	1123 County Road B	N	PC	NA	Y	Y	N/?	N	Commercial	Cheetah Auto Supply
28	1125 County Road B	N	Assumed	NA	Y		N/N	N	Commercial	Stephen's Salon
29	1131 County Road B	N	PC	NA	Y	Y	Y/N	N	Residential	
30	1139 County Road B	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
31	1145 County Road B	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	

E.g., visual observation, personal contact, telephone, returned postcard, assumed (i.e., no postcard returned).

***E.g., domestic, industrial, municipal, livestock, lawn/gardening, irrigation.*

NA = Not applicable

PC = Personal Contact

VO = Visual Observation

TABLE 15

Water Supply Wells Located Within 500 Feet of the
Release Source and Municipal or Industrial Wells Within ½ Mile

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Unique Well #	Ground Elevation	Total Depth (ft)	Base of Casing (ft)	Static Elevation	Aquifer	Use	Owner	Distance & Direction from Source
200105	945	325	192	108	St. Peter	Domestic	Spetz and Berg	500 feet North
200102	945	154	144	92	Platteville	Industrial	Conning House	2,500 feet NW

TABLE 16

FIELD VAPOR MONITORING

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Location	Date Sampled	PID Reading (ppm)	LEL (%)	Total Depth (feet)	Sample Depth (feet)
VMP-1	07/18/06	0.00	0.00	6.00	6.00
VMP-2	07/18/06	0.00	0.00	6.00	6.00

ppm = parts per million
LEL = lower explosive limit
--- = Not Analyzed

Table 19
SOIL GAS SAMPLING INFORMATION

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Site Name	Former Jiffy Gas Station	Staff:	Curtis Pranger
Address	2154 Lexington Avenue North	Date	11/17/2008
City/State	Roseville, MN	Temperature (°F)	25
Weather Conditions :	Partly Cloudy	4 ml per foot of 1/8" tubing	9.65 ml per foot of 1/2" OD tubing

Sample Name	Method Temp./Perm.	Installer	Sample Depth	Reason	Tubing Diameter (inches)	Tubing Length (ft)	Tubing Volume (ml)	Volume Extracted (ml)	Extraction Method	Pre Sample Summa Can Vac. (in. Hg)	Sample Duration (min)	Post Sample Summa Can Vac. (in. Hg)	PID Reading (ppm)	Comments
SG-1	Temp	Bergerson Caswell	4'	Site definition	0.5	5	48	240	Syringe	-29	2 min	0	0	9:00
SG-2	Temp	Bergerson Caswell	4'	Site definition	0.5	6	58	240	Syringe	-29	30 sec	0	0	9:45
SG-3	Temp	Bergerson Caswell	4'	Site definition	0.5	6	58	240	Syringe	-29	35 sec	0	0	10:10
SG-4	Temp	Bergerson Caswell	8'	Worst Case	0.5	10	97	240	Syringe	-28	12 sec	0	120	10:30

TABLE 20

SOIL GAS ANALYTICAL RESULTS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample Location:	SG-1	SG-2	SG-3	SG-4		
Date:	11/17/2008	11/17/2008	11/17/2008	11/17/2008		
Depth (feet):	4	4	4	8		
PID (ppm):	0	0	0	120		
Compound	Result	Result	Result	Result	10X ISVs	100X ISVs
1,1,1-Trichloroethane	<1.4	8.4	<1.4	<3,770	10,000	100,000
1,1,2,2-Tetrachloroethane	<1.8	<1.8	<1.8	<4,800	2	20
1,1,2-Trichloroethane	<1.4	<1.4	<1.4	<3,770	6	60
1,1,2-Trichlorotrifluoroethane	44.5	6.6	<2.0	<5,490	300,000	3,000,000
1,1-Dichloroethane	<1.0	1.8	<1.0	<2,810	5,000	50,000
1,1-Dichloroethene	<1.0	<1.0	<1.0	<2,780	2,000	20,000
1,2,4-Trichlorobenzene	<1.2	<1.2	<1.2	<3,400	40	400
1,2,4-Trimethylbenzene	12.7	<3.1	4.9	135,000	70	700
1,2-Dibromoethane (EDB)	<2.0	<2.0	<2.0	<5,490	0.2	2
1,2-Dichlorobenzene	<1.5	<1.5	<1.5	<4,120	2,000	20,000
1,2-Dichloroethane	<1.0	<1.0	<1.0	<2,810	4	40
1,2-Dichloropropane	<1.2	<1.2	<1.2	<3,220	40	400
1,3,5-Trimethylbenzene	3.2	<3.1	<3.1	61,500	60	600
1,3-Butadiene	<0.56	<0.56	<0.56	<1,540	3	30
1,3-Dichlorobenzene	<1.5	<1.5	<1.5	<4,120	1,000	10,000
1,4-Dichlorobenzene	<1.5	<1.5	<1.5	<4,120	600	6,000
2-Butanone (MEK)	42.3	8.6	5.3	<2,060	50,000	500,000
2-Hexanone	<1.0	<1.0	<1.0	<2,850	NA	NA
2-Propanol	<3.1	<3.1	<3.1	<8,580	70,000	700,000
4-Ethyltoluene	6.1	<3.1	<3.1	98,700	NA	NA
4-Methyl-2-pentanone (MIBK)	<1.0	<1.0	<1.0	<2,850	30,000	300,000
Acetone	191	35	17.9	<1,650	4,000	40,000
Benzene	<0.81	<0.81	3.4	18,500,000	45	450
Bromodichloromethane	<1.8	<1.8	<1.8	<4,800	6	60
Bromoform	<2.6	<2.6	<2.6	<7,200	90	900
Bromomethane	<0.99	<0.99	<0.99	<2,710	50	500
Carbon disulfide	12.4	2.7	1.1	<2,160	7,000	70,000
Carbon tetrachloride	<1.6	<1.6	<1.6	<4,460	7	70
Chlorobenzene	<1.2	<1.2	<1.2	<3,220	500	5,000
Chloroethane	<0.68	<0.68	<0.68	<1,850	100,000	1,000,000
Chloroform	<1.2	<1.2	<1.2	<3,400	1,000	10,000
Chloromethane	<0.52	<0.52	<0.52	<1,440	60	600
cis-1,2-Dichloroethene	<1.0	<1.0	<1.0	<2,780	400	4,000
cis-1,3-Dichloropropene	<1.2	<1.2	<1.2	<3,160	30	300
Cyclohexane	34,200	130	3.9	110,000,000	60,000	600,000
Dibromochloromethane	<2.1	<2.1	<2.1	<5,830	4	40
Dichlorodifluoromethane	13.2	<1.2	3.3	<3,430	2,000	20,000
Dichlorotetrafluoroethane	<1.8	<1.8	<1.8	<4,800	NA	NA
Ethanol	33	4.8	2.5	<6,520	150,000	1,500,000
Ethyl acetate	<0.91	<0.91	<0.91	<2,500	30,000	300,000
Ethylbenzene	<1.1	1.2	2.6	7,970,000	10,000	100,000
Hexachloro-1,3-butadiene	<2.8	<2.8	<2.8	<7,550	5	50
m&p-Xylene	28.5	4.7	8.0	35,800,000	1,000	10,000
Methylene Chloride	<0.89	<0.89	1.6	<2,440	200	2,000

TABLE 20

SOIL GAS ANALYTICAL RESULTS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample Location:	SG-1	SG-2	SG-3	SG-4		
Date:	11/17/2008	11/17/2008	11/17/2008	11/17/2008		
Depth (feet):	4	4	4	8		
PID (ppm):	0	0	0	120		
Compound	Result	Result	Result	Result	10X ISVs	100X ISVs
Methyl-tert-butyl ether	<0.91	<0.91	<0.91	<2,500	30,000	300,000
Naphthalene	<3.4	<3.4	<3.4	<9,260	90	900
n-Heptane	9,180	<1.0	3.9	60,000,000	NA	NA
n-Hexane	**33,300**	7.3	6.3	**140;000;000**	20,000	200,000
o-Xylene	7.1	1.5	3.0	**11;600;000**	1,000	10,000
Propylene	<0.44	<0.44	23.9	<1,200	30,000	300,000
Styrene	<1.1	<1.1	<1.1	<2,980	10,000	100,000
Tetrachloroethene	<1.8	<1.8	54.8	<4,800	200	2,000
Tetrahydrofuran	<0.75	<0.75	<0.75	<2,060	NA	NA
Toluene	<0.96	6.6	14.6	**40,900,000**	50,000	500,000
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<2,780	600	6,000
trans-1,3-Dichloropropene	<1.2	<1.2	<1.2	<3,160	30	300
Trichloroethene	<1.4	<1.4	<1.4	<3,770	30	300
Trichlorofluoromethane	<1.4	<1.4	<1.4	<3,770	7,000	70,000
Vinyl acetate	<0.89	<0.89	<0.89	<2,440	2,000	20,000
Vinyl chloride	<0.65	<0.65	<0.65	<1,780	10	100

All results are in micrograms per cubic meter (µg/m3)
ISV = MPCA Intrusion Screening Value
NA - No toxicity data available
BOLD: Indicates that the detected concentration exceeds 10 times the ISV
BOLD IN SHADED BOX : Indicates that the detected concentration exceeds 100 times the ISV

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Est. 1970

Mike Hultgren
ATC Associates, Inc. - MN
1929 County Rd C-2 W

Roseville, MN 55113

Report Summary

Monday January 04, 2010

Report Number: L438326
Samples Received: 12/24/09
Client Project: 22.30552.0014

Description: Former Jiffy GAs Station - GWM

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: John Hawkins

John Hawkins, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375,DW21704, ND - R-140
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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REPORT OF ANALYSIS

Mike Hultgren
ATC Associates, Inc. - MN
1929 County Rd C-2 W
Roseville, MN 55113

January 04,2010

ESC Sample # : L438326-01

Site ID :

Project # : 22.30552.0014

Date Received : December 24, 2009
Description : Former Jiffy GAs Station - GWM

Sample ID : MW-01B 63FT

Collected By : Jason Hoffmann
Collection Date : 12/22/09 15:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
WI DNR						
Gasoline (C6-C10)	12000	1000	ug/l	GROWM/8015	12/28/09	10
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	100.		% Rec.	GROWM/8015	12/28/09	10
Volatile Organics						
Acetone	BDL	1200	ug/l	8260B	01/01/10	25
Acrolein	BDL	1200	ug/l	8260B	01/01/10	25
Acrylonitrile	BDL	250	ug/l	8260B	01/01/10	25
Allyl chloride	BDL	120	ug/l	8260B	01/01/10	25
Benzene	420	25.	ug/l	8260B	01/01/10	25
Bromobenzene	BDL	25.	ug/l	8260B	01/01/10	25
Bromodichloromethane	BDL	25.	ug/l	8260B	01/01/10	25
Bromoform	BDL	25.	ug/l	8260B	01/01/10	25
Bromomethane	BDL	120	ug/l	8260B	01/01/10	25
n-Butylbenzene	BDL	25.	ug/l	8260B	01/01/10	25
sec-Butylbenzene	BDL	25.	ug/l	8260B	01/01/10	25
tert-Butylbenzene	BDL	25.	ug/l	8260B	01/01/10	25
Carbon tetrachloride	BDL	25.	ug/l	8260B	01/01/10	25
Chlorobenzene	BDL	25.	ug/l	8260B	01/01/10	25
Chlorodibromomethane	BDL	25.	ug/l	8260B	01/01/10	25
Chloroethane	BDL	120	ug/l	8260B	01/01/10	25
2-Chloroethyl vinyl ether	BDL	1200	ug/l	8260B	01/01/10	25
Chloroform	BDL	120	ug/l	8260B	01/01/10	25
Chloromethane	BDL	62.	ug/l	8260B	01/01/10	25
2-Chlorotoluene	BDL	25.	ug/l	8260B	01/01/10	25
4-Chlorotoluene	BDL	25.	ug/l	8260B	01/01/10	25
1,2-Dibromo-3-Chloropropane	BDL	120	ug/l	8260B	01/01/10	25
1,2-Dibromoethane	BDL	25.	ug/l	8260B	01/01/10	25
Dibromomethane	BDL	25.	ug/l	8260B	01/01/10	25
1,2-Dichlorobenzene	BDL	25.	ug/l	8260B	01/01/10	25
1,3-Dichlorobenzene	BDL	25.	ug/l	8260B	01/01/10	25
1,4-Dichlorobenzene	BDL	25.	ug/l	8260B	01/01/10	25
Dichlorodifluoromethane	BDL	120	ug/l	8260B	01/01/10	25
1,1-Dichloroethane	BDL	25.	ug/l	8260B	01/01/10	25
1,2-Dichloroethane	BDL	25.	ug/l	8260B	01/01/10	25
1,1-Dichloroethene	BDL	25.	ug/l	8260B	01/01/10	25
cis-1,2-Dichloroethene	BDL	25.	ug/l	8260B	01/01/10	25
trans-1,2-Dichloroethene	BDL	25.	ug/l	8260B	01/01/10	25
1,2-Dichloropropane	BDL	25.	ug/l	8260B	01/01/10	25
1,1-Dichloropropene	BDL	25.	ug/l	8260B	01/01/10	25
1,3-Dichloropropane	BDL	25.	ug/l	8260B	01/01/10	25
cis-1,3-Dichloropropene	BDL	25.	ug/l	8260B	01/01/10	25
trans-1,3-Dichloropropene	BDL	25.	ug/l	8260B	01/01/10	25

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

Mike Hultgren
ATC Associates, Inc. - MN
1929 County Rd C-2 W
Roseville, MN 55113

January 04,2010

ESC Sample # : L438326-01

Date Received : December 24, 2009
Description : Former Jiffy GAs Station - GWM

Site ID :

Sample ID : MW-01B 63FT

Project # : 22.30552.0014

Collected By : Jason Hoffmann
Collection Date : 12/22/09 15:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
2,2-Dichloropropane	BDL	25.	ug/l	8260B	01/01/10	25
Di-isopropyl ether	BDL	25.	ug/l	8260B	01/01/10	25
Ethylbenzene	540	25.	ug/l	8260B	01/01/10	25
Ethyl ether	BDL	25.	ug/l	8260B	01/01/10	25
Hexachloro-1,3-butadiene	BDL	25.	ug/l	8260B	01/01/10	25
Isopropylbenzene	100	25.	ug/l	8260B	01/01/10	25
p-Isopropyltoluene	30.	25.	ug/l	8260B	01/01/10	25
2-Butanone (MEK)	BDL	250	ug/l	8260B	01/01/10	25
Methylene Chloride	BDL	120	ug/l	8260B	01/01/10	25
2-Hexanone	BDL	250	ug/l	8260B	01/01/10	25
4-Methyl-2-pentanone (MIBK)	BDL	250	ug/l	8260B	01/01/10	25
Methyl tert-butyl ether	BDL	25.	ug/l	8260B	01/01/10	25
Naphthalene	240	120	ug/l	8260B	01/01/10	25
n-Propylbenzene	110	25.	ug/l	8260B	01/01/10	25
Styrene	BDL	25.	ug/l	8260B	01/01/10	25
1,1,1,2-Tetrachloroethane	BDL	25.	ug/l	8260B	01/01/10	25
1,1,2,2-Tetrachloroethane	BDL	25.	ug/l	8260B	01/01/10	25
1,1,2-Trichloro-1,2,2-trifluoro	BDL	25.	ug/l	8260B	01/01/10	25
Tetrachloroethene	BDL	25.	ug/l	8260B	01/01/10	25
Tetrahydrofuran	BDL	120	ug/l	8260B	01/01/10	25
Toluene	420	120	ug/l	8260B	01/01/10	25
1,2,3-Trichlorobenzene	BDL	25.	ug/l	8260B	01/01/10	25
1,2,4-Trichlorobenzene	BDL	25.	ug/l	8260B	01/01/10	25
1,1,1-Trichloroethane	BDL	25.	ug/l	8260B	01/01/10	25
1,1,2-Trichloroethane	BDL	25.	ug/l	8260B	01/01/10	25
Trichloroethene	BDL	25.	ug/l	8260B	01/01/10	25
Trichlorofluoromethane	BDL	120	ug/l	8260B	01/01/10	25
1,2,3-Trichloropropane	BDL	25.	ug/l	8260B	01/01/10	25
1,2,4-Trimethylbenzene	550	25.	ug/l	8260B	01/01/10	25
1,2,3-Trimethylbenzene	220	25.	ug/l	8260B	01/01/10	25
1,3,5-Trimethylbenzene	150	25.	ug/l	8260B	01/01/10	25
Vinyl chloride	BDL	25.	ug/l	8260B	01/01/10	25
Xylenes, Total	1300	75.	ug/l	8260B	01/01/10	25
Surrogate Recovery						
Toluene-d8	105.		% Rec.	8260B	01/01/10	25
Dibromofluoromethane	102.		% Rec.	8260B	01/01/10	25
4-Bromofluorobenzene	104.		% Rec.	8260B	01/01/10	25
TPH (GC/FID) High Fraction	4000	100	ug/l	DROWM/8015	12/29/09	1
Surrogate recovery(%)						
Triacontane	121.		% Rec.	DROWM/8015	12/29/09	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

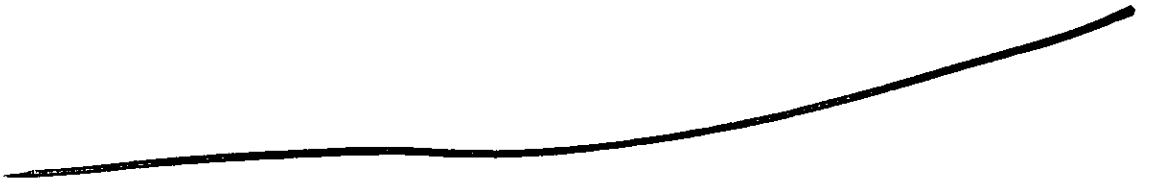
.
Reported: 01/04/10 10:58 Printed: 01/04/10 10:58

Summary of Remarks For Samples Printed
01/04/10 at 10:58:29

TSR Signing Reports: 341
R5 - Desired TAT

For all SSA projects they need project number and EDD logged All SSA projects need COC attached to Invoice

Sample: L438326-01 Account: ATCRSMN Received: 12/24/09 09:00 Due Date: 01/04/10 00:00 RPT Date: 01/04/10 10:58



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ATC Associates, Inc. - MN
Mike Hultgren
1929 County Rd C-2 W

Roseville, MN 55113

Quality Assurance Report
Level II

L438326

January 04, 2010

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Gasoline (C6-C10)	< .1	mg/l			WG456921	12/27/09 20:11
a,a,a-Trifluorotoluene(PID)		% Rec.	95.83	80-120	WG456921	12/27/09 20:11
TPH (GC/FID) High Fraction	< .1	ppm			WG456934	12/29/09 09:38
Triacontane		% Rec.	140.8	50-150	WG456934	12/29/09 09:38
1,1,1,2-Tetrachloroethane	< .001	mg/l			WG457521	01/01/10 14:42
1,1,1-Trichloroethane	< .001	mg/l			WG457521	01/01/10 14:42
1,1,2,2-Tetrachloroethane	< .001	mg/l			WG457521	01/01/10 14:42
1,1,2-Trichloroethane	< .001	mg/l			WG457521	01/01/10 14:42
1,1,2-Trichloro-1,2,2-trifluoroethane	< .001	mg/l			WG457521	01/01/10 14:42
1,1-Dichloroethane	< .001	mg/l			WG457521	01/01/10 14:42
1,1-Dichloroethene	< .001	mg/l			WG457521	01/01/10 14:42
1,1-Dichloropropene	< .001	mg/l			WG457521	01/01/10 14:42
1,2,3-Trichlorobenzene	< .001	mg/l			WG457521	01/01/10 14:42
1,2,3-Trichloropropane	< .001	mg/l			WG457521	01/01/10 14:42
1,2,3-Trimethylbenzene	< .001	mg/l			WG457521	01/01/10 14:42
1,2,4-Trichlorobenzene	< .001	mg/l			WG457521	01/01/10 14:42
1,2,4-Trimethylbenzene	< .001	mg/l			WG457521	01/01/10 14:42
1,2-Dibromo-3-Chloropropane	< .005	mg/l			WG457521	01/01/10 14:42
1,2-Dibromoethane	< .001	mg/l			WG457521	01/01/10 14:42
1,2-Dichlorobenzene	< .001	mg/l			WG457521	01/01/10 14:42
1,2-Dichloroethane	< .001	mg/l			WG457521	01/01/10 14:42
1,2-Dichloropropane	< .001	mg/l			WG457521	01/01/10 14:42
1,3,5-Trimethylbenzene	< .001	mg/l			WG457521	01/01/10 14:42
1,3-Dichlorobenzene	< .001	mg/l			WG457521	01/01/10 14:42
1,3-Dichloropropane	< .001	mg/l			WG457521	01/01/10 14:42
1,4-Dichlorobenzene	< .001	mg/l			WG457521	01/01/10 14:42
2,2-Dichloropropane	< .001	mg/l			WG457521	01/01/10 14:42
2-Butanone (MEK)	< .01	mg/l			WG457521	01/01/10 14:42
2-Chloroethyl vinyl ether	< .001	mg/l			WG457521	01/01/10 14:42
2-Chlorotoluene	< .001	mg/l			WG457521	01/01/10 14:42
2-Hexanone	< .01	mg/l			WG457521	01/01/10 14:42
4-Chlorotoluene	< .001	mg/l			WG457521	01/01/10 14:42
4-Methyl-2-pentanone (MIBK)	< .01	mg/l			WG457521	01/01/10 14:42
Acetone	< .05	mg/l			WG457521	01/01/10 14:42
Acrolein	< .05	mg/l			WG457521	01/01/10 14:42
Acrylonitrile	< .01	mg/l			WG457521	01/01/10 14:42
Allyl chloride	< .005	mg/l			WG457521	01/01/10 14:42
Benzene	< .001	mg/l			WG457521	01/01/10 14:42
Bromobenzene	< .001	mg/l			WG457521	01/01/10 14:42
Bromodichloromethane	< .001	mg/l			WG457521	01/01/10 14:42
Bromoform	< .001	mg/l			WG457521	01/01/10 14:42
Bromomethane	< .005	mg/l			WG457521	01/01/10 14:42
Carbon tetrachloride	< .001	mg/l			WG457521	01/01/10 14:42
Chlorobenzene	< .001	mg/l			WG457521	01/01/10 14:42
Chlorodibromomethane	< .001	mg/l			WG457521	01/01/10 14:42
Chloroethane	< .001	mg/l			WG457521	01/01/10 14:42
Chloroform	< .005	mg/l			WG457521	01/01/10 14:42
Chloromethane	< .001	mg/l			WG457521	01/01/10 14:42
cis-1,2-Dichloroethene	< .001	mg/l			WG457521	01/01/10 14:42
cis-1,3-Dichloropropene	< .001	mg/l			WG457521	01/01/10 14:42
Di-isopropyl ether	< .001	mg/l			WG457521	01/01/10 14:42
Dibromomethane	< .001	mg/l			WG457521	01/01/10 14:42
Dichlorodifluoromethane	< .005	mg/l			WG457521	01/01/10 14:42
Ethyl ether	< .001	mg/l			WG457521	01/01/10 14:42
Ethylbenzene	< .001	mg/l			WG457521	01/01/10 14:42

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Mike Hultgren
1929 County Rd C-2 W

Roseville, MN 55113

Quality Assurance Report
Level II

L438326

January 04, 2010

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Hexachloro-1,3-butadiene	< .001	mg/l			WG457521	01/01/10 14:42
Isopropylbenzene	< .001	mg/l			WG457521	01/01/10 14:42
Methyl tert-butyl ether	< .001	mg/l			WG457521	01/01/10 14:42
Methylene Chloride	< .005	mg/l			WG457521	01/01/10 14:42
n-Butylbenzene	< .001	mg/l			WG457521	01/01/10 14:42
n-Propylbenzene	< .001	mg/l			WG457521	01/01/10 14:42
Naphthalene	< .005	mg/l			WG457521	01/01/10 14:42
p-Isopropyltoluene	< .001	mg/l			WG457521	01/01/10 14:42
sec-Butylbenzene	< .001	mg/l			WG457521	01/01/10 14:42
Styrene	< .001	mg/l			WG457521	01/01/10 14:42
tert-Butylbenzene	< .001	mg/l			WG457521	01/01/10 14:42
Tetrachloroethene	< .001	mg/l			WG457521	01/01/10 14:42
Tetrahydrofuran	< .005	mg/l			WG457521	01/01/10 14:42
Toluene	< .005	mg/l			WG457521	01/01/10 14:42
trans-1,2-Dichloroethene	< .001	mg/l			WG457521	01/01/10 14:42
trans-1,3-Dichloropropene	< .001	mg/l			WG457521	01/01/10 14:42
Trichloroethene	< .001	mg/l			WG457521	01/01/10 14:42
Trichlorofluoromethane	< .005	mg/l			WG457521	01/01/10 14:42
Vinyl chloride	< .001	mg/l			WG457521	01/01/10 14:42
Xylenes, Total	< .003	mg/l			WG457521	01/01/10 14:42
4-Bromofluorobenzene		% Rec.	97.10	75-128	WG457521	01/01/10 14:42
Dibromofluoromethane		% Rec.	102.1	79-125	WG457521	01/01/10 14:42
Toluene-d8		% Rec.	105.6	87-114	WG457521	01/01/10 14:42

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Gasoline (C6-C10)	mg/l	.5	0.544	109.	80-120	WG456921
a,a,a-Trifluorotoluene(PID)				94.84	80-120	WG456921
TPH (GC/FID) High Fraction	mg/l	1	0.946	94.6	75-115	WG456934
Triacontane				134.4	50-150	WG456934
1,1,1,2-Tetrachloroethane	mg/l	.025	0.0288	115.	75-134	WG457521
1,1,1-Trichloroethane	mg/l	.025	0.0292	117.	67-137	WG457521
1,1,2,2-Tetrachloroethane	mg/l	.025	0.0289	115.	72-128	WG457521
1,1,2-Trichloroethane	mg/l	.025	0.0269	108.	79-123	WG457521
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/l	.025	0.0254	102.	51-149	WG457521
1,1-Dichloroethane	mg/l	.025	0.0282	113.	67-133	WG457521
1,1-Dichloroethene	mg/l	.025	0.0290	116.	60-130	WG457521
1,1-Dichloropropene	mg/l	.025	0.0293	117.	68-132	WG457521
1,2,3-Trichlorobenzene	mg/l	.025	0.0273	109.	63-138	WG457521
1,2,3-Trichloropropane	mg/l	.025	0.0282	113.	68-130	WG457521
1,2,3-Trimethylbenzene	mg/l	.025	0.0276	111.	70-127	WG457521
1,2,4-Trichlorobenzene	mg/l	.025	0.0289	116.	65-137	WG457521
1,2,4-Trimethylbenzene	mg/l	.025	0.0280	112.	72-135	WG457521
1,2-Dibromo-3-Chloropropane	mg/l	.025	0.0321	128.	55-134	WG457521
1,2-Dibromoethane	mg/l	.025	0.0285	114.	75-126	WG457521
1,2-Dichlorobenzene	mg/l	.025	0.0295	118.	75-122	WG457521
1,2-Dichloroethane	mg/l	.025	0.0282	113.	63-137	WG457521
1,2-Dichloropropane	mg/l	.025	0.0272	109.	74-122	WG457521
1,3,5-Trimethylbenzene	mg/l	.025	0.0292	117.	73-134	WG457521
1,3-Dichlorobenzene	mg/l	.025	0.0271	108.	73-131	WG457521
1,3-Dichloropropane	mg/l	.025	0.0268	107.	77-119	WG457521
1,4-Dichlorobenzene	mg/l	.025	0.0267	107.	70-121	WG457521
2,2-Dichloropropane	mg/l	.025	0.0289	116.	46-151	WG457521
2-Butanone (MEK)	mg/l	.125	0.148	118.	53-132	WG457521

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ATC Associates, Inc. - MN
Mike Hultgren
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Roseville, MN 55113

Quality Assurance Report
Level II

L438326

January 04, 2010

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
2-Chloroethyl vinyl ether	mg/l	.125	0.142	114.	0-171	WG457521
2-Chlorotoluene	mg/l	.025	0.0278	111.	74-128	WG457521
2-Hexanone	mg/l	.125	0.149	119.	56-147	WG457521
4-Chlorotoluene	mg/l	.025	0.0283	113.	74-130	WG457521
4-Methyl-2-pentanone (MIBK)	mg/l	.125	0.151	121.	60-142	WG457521
Acetone	mg/l	.125	0.146	117.	48-134	WG457521
Acrolein	mg/l	.125	0.0700	56.0	6-182	WG457521
Acrylonitrile	mg/l	.125	0.150	120.	60-140	WG457521
Benzene	mg/l	.025	0.0289	116.	67-126	WG457521
Bromobenzene	mg/l	.025	0.0263	105.	76-123	WG457521
Bromodichloromethane	mg/l	.025	0.0299	120.	68-133	WG457521
Bromoform	mg/l	.025	0.0323	129.	60-139	WG457521
Bromomethane	mg/l	.025	0.0275	110.	45-175	WG457521
Carbon tetrachloride	mg/l	.025	0.0307	123.	64-141	WG457521
Chlorobenzene	mg/l	.025	0.0284	114.	77-125	WG457521
Chlorodibromomethane	mg/l	.025	0.0290	116.	73-138	WG457521
Chloroethane	mg/l	.025	0.0256	102.	49-155	WG457521
Chloroform	mg/l	.025	0.0280	112.	66-126	WG457521
Chloromethane	mg/l	.025	0.0271	109.	45-152	WG457521
cis-1,2-Dichloroethene	mg/l	.025	0.0296	118.	72-128	WG457521
cis-1,3-Dichloropropene	mg/l	.025	0.0300	120.	73-131	WG457521
Di-isopropyl ether	mg/l	.025	0.0273	109.	63-139	WG457521
Dibromomethane	mg/l	.025	0.0292	117.	73-125	WG457521
Dichlorodifluoromethane	mg/l	.025	0.0391	157.	39-189	WG457521
Ethyl ether	mg/l	.025	0.0235	93.9	60-142	WG457521
Ethylbenzene	mg/l	.025	0.0296	118.	76-129	WG457521
Hexachloro-1,3-butadiene	mg/l	.025	0.0267	107.	67-135	WG457521
Isopropylbenzene	mg/l	.025	0.0289	116.	73-132	WG457521
Methyl tert-butyl ether	mg/l	.025	0.0284	114.	51-142	WG457521
Methylene Chloride	mg/l	.025	0.0280	112.	64-125	WG457521
n-Butylbenzene	mg/l	.025	0.0304	122.	63-142	WG457521
n-Propylbenzene	mg/l	.025	0.0280	112.	71-132	WG457521
Naphthalene	mg/l	.025	0.0304	121.	56-145	WG457521
p-Isopropyltoluene	mg/l	.025	0.0296	118.	68-138	WG457521
sec-Butylbenzene	mg/l	.025	0.0293	117.	70-135	WG457521
Styrene	mg/l	.025	0.0313	125.	78-130	WG457521
tert-Butylbenzene	mg/l	.025	0.0296	118.	72-134	WG457521
Tetrachloroethene	mg/l	.025	0.0292	117.	67-135	WG457521
Tetrahydrofuran	mg/l	.025	0.0288	115.	50-140	WG457521
Toluene	mg/l	.025	0.0283	113.	72-122	WG457521
trans-1,2-Dichloroethene	mg/l	.025	0.0302	121.	67-129	WG457521
trans-1,3-Dichloropropene	mg/l	.025	0.0281	113.	66-137	WG457521
Trichloroethene	mg/l	.025	0.0292	117.	74-126	WG457521
Trichlorofluoromethane	mg/l	.025	0.0268	107.	54-156	WG457521
Vinyl chloride	mg/l	.025	0.0301	121.	55-153	WG457521
Xylenes, Total	mg/l	.075	0.0833	111.	75-128	WG457521
4-Bromofluorobenzene				98.48	75-128	WG457521
Dibromofluoromethane				107.8	79-125	WG457521
Toluene-d8				108.3	87-114	WG457521

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Gasoline (C6-C10)	mg/l	0.528	0.544	106.	80-120	2.97	20	WG456921
a,a,a-Trifluorotoluene(PID)				95.53	80-120			WG456921
TPH (GC/FID) High Fraction	mg/l	0.896	0.946	90.0	75-115	5.47	20	WG456934
Triacontane				130.3	50-150			WG456934

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Quality Assurance Report
Level II

L438326

January 04, 2010

Analyte	Units	Laboratory Control Sample Result	Ref	%Rec	Limit	Duplicate RPD	Limit	Batch
1,1,1,2-Tetrachloroethane	mg/l	0.0273	0.0288	109.	75-134	5.38	20	WG457521
1,1,1-Trichloroethane	mg/l	0.0279	0.0292	112.	67-137	4.64	20	WG457521
1,1,2,2-Tetrachloroethane	mg/l	0.0276	0.0289	110.	72-128	4.63	20	WG457521
1,1,2-Trichloroethane	mg/l	0.0272	0.0269	109.	79-123	1.19	20	WG457521
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/l	0.0241	0.0254	96.0	51-149	5.29	20	WG457521
1,1-Dichloroethane	mg/l	0.0272	0.0282	109.	67-133	3.81	20	WG457521
1,1-Dichloroethene	mg/l	0.0269	0.0290	107.	60-130	7.65	20	WG457521
1,1-Dichloropropene	mg/l	0.0283	0.0293	113.	68-132	3.21	20	WG457521
1,2,3-Trichlorobenzene	mg/l	0.0267	0.0273	107.	63-138	2.26	20	WG457521
1,2,3-Trichloropropane	mg/l	0.0272	0.0282	109.	68-130	3.76	20	WG457521
1,2,3-Trimethylbenzene	mg/l	0.0271	0.0276	108.	70-127	1.87	20	WG457521
1,2,4-Trichlorobenzene	mg/l	0.0286	0.0289	114.	65-137	1.11	20	WG457521
1,2,4-Trimethylbenzene	mg/l	0.0273	0.0280	109.	72-135	2.76	20	WG457521
1,2-Dibromo-3-Chloropropane	mg/l	0.0303	0.0321	121.	55-134	5.81	20	WG457521
1,2-Dibromoethane	mg/l	0.0291	0.0285	116.	75-126	2.14	20	WG457521
1,2-Dichlorobenzene	mg/l	0.0283	0.0295	113.	75-122	4.01	20	WG457521
1,2-Dichloroethane	mg/l	0.0276	0.0282	110.	63-137	1.98	20	WG457521
1,2-Dichloropropane	mg/l	0.0276	0.0272	110.	74-122	1.58	20	WG457521
1,3,5-Trimethylbenzene	mg/l	0.0286	0.0292	114.	73-134	2.38	20	WG457521
1,3-Dichlorobenzene	mg/l	0.0268	0.0271	107.	73-131	1.27	20	WG457521
1,3-Dichloropropane	mg/l	0.0273	0.0268	109.	77-119	1.79	20	WG457521
1,4-Dichlorobenzene	mg/l	0.0267	0.0267	107.	70-121	0.0286	20	WG457521
2,2-Dichloropropane	mg/l	0.0278	0.0289	111.	46-151	3.87	20	WG457521
2-Butanone (MEK)	mg/l	0.146	0.148	117.	53-132	1.05	20	WG457521
2-Chloroethyl vinyl ether	mg/l	0.146	0.142	117.	0-171	2.90	27	WG457521
2-Chlorotoluene	mg/l	0.0273	0.0278	109.	74-128	1.69	20	WG457521
2-Hexanone	mg/l	0.151	0.149	121.	56-147	1.31	20	WG457521
4-Chlorotoluene	mg/l	0.0284	0.0283	113.	74-130	0.183	20	WG457521
4-Methyl-2-pentanone (MIBK)	mg/l	0.145	0.151	116.	60-142	4.13	20	WG457521
Acetone	mg/l	0.135	0.146	108.	48-134	8.18	20	WG457521
Acrolein	mg/l	0.0658	0.0700	53.0	6-182	6.19	39	WG457521
Acrylonitrile	mg/l	0.143	0.150	115.	60-140	4.66	20	WG457521
Benzene	mg/l	0.0285	0.0289	114.	67-126	1.54	20	WG457521
Bromobenzene	mg/l	0.0262	0.0263	105.	76-123	0.526	20	WG457521
Bromodichloromethane	mg/l	0.0293	0.0299	117.	68-133	2.01	20	WG457521
Bromoform	mg/l	0.0318	0.0323	127.	60-139	1.50	20	WG457521
Bromomethane	mg/l	0.0261	0.0275	104.	45-175	5.32	20	WG457521
Carbon tetrachloride	mg/l	0.0286	0.0307	114.	64-141	7.22	20	WG457521
Chlorobenzene	mg/l	0.0282	0.0284	113.	77-125	0.728	20	WG457521
Chlorodibromomethane	mg/l	0.0291	0.0290	116.	73-138	0.307	20	WG457521
Chloroethane	mg/l	0.0244	0.0256	97.0	49-155	4.78	20	WG457521
Chloroform	mg/l	0.0265	0.0280	106.	66-126	5.51	20	WG457521
Chloromethane	mg/l	0.0261	0.0271	104.	45-152	3.86	20	WG457521
cis-1,2-Dichloroethene	mg/l	0.0285	0.0296	114.	72-128	3.81	20	WG457521
cis-1,3-Dichloropropene	mg/l	0.0305	0.0300	122.	73-131	1.58	20	WG457521
Di-isopropyl ether	mg/l	0.0272	0.0273	109.	63-139	0.592	20	WG457521
Dibromomethane	mg/l	0.0282	0.0292	113.	73-125	3.50	20	WG457521
Dichlorodifluoromethane	mg/l	0.0361	0.0391	144.	39-189	8.17	24	WG457521
Ethyl ether	mg/l	0.0232	0.0235	93.0	60-142	1.32	20	WG457521
Ethylbenzene	mg/l	0.0286	0.0296	114.	76-129	3.22	20	WG457521
Hexachloro-1,3-butadiene	mg/l	0.0257	0.0267	103.	67-135	3.87	20	WG457521
Isopropylbenzene	mg/l	0.0280	0.0289	112.	73-132	3.31	20	WG457521
Methyl tert-butyl ether	mg/l	0.0267	0.0284	107.	51-142	6.08	20	WG457521
Methylene Chloride	mg/l	0.0262	0.0280	105.	64-125	6.84	20	WG457521
n-Butylbenzene	mg/l	0.0298	0.0304	119.	63-142	2.12	20	WG457521
n-Propylbenzene	mg/l	0.0274	0.0280	110.	71-132	2.34	20	WG457521
Naphthalene	mg/l	0.0288	0.0304	115.	56-145	5.26	20	WG457521
p-Isopropyltoluene	mg/l	0.0283	0.0296	113.	68-138	4.27	20	WG457521
sec-Butylbenzene	mg/l	0.0285	0.0293	114.	70-135	2.99	20	WG457521

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Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
Styrene	mg/l	0.0318	0.0313	127.	78-130	1.45	20	WG457521
tert-Butylbenzene	mg/l	0.0289	0.0296	115.	72-134	2.52	20	WG457521
Tetrachloroethene	mg/l	0.0287	0.0292	115.	67-135	1.95	20	WG457521
Tetrahydrofuran	mg/l	0.0254	0.0288	102.	50-140	12.5	20	WG457521
Toluene	mg/l	0.0277	0.0283	111.	72-122	2.14	20	WG457521
trans-1,2-Dichloroethene	mg/l	0.0284	0.0302	114.	67-129	6.03	20	WG457521
trans-1,3-Dichloropropene	mg/l	0.0291	0.0281	116.	66-137	3.44	20	WG457521
Trichloroethene	mg/l	0.0283	0.0292	113.	74-126	3.12	20	WG457521
Trichlorofluoromethane	mg/l	0.0251	0.0268	100.	54-156	6.75	20	WG457521
Vinyl chloride	mg/l	0.0285	0.0301	114.	55-153	5.42	20	WG457521
Xylenes, Total	mg/l	0.0834	0.0833	111.	75-128	0.119	20	WG457521
4-Bromofluorobenzene				99.88	75-128			WG457521
Dibromofluoromethane				104.4	79-125			WG457521
Toluene-d8				107.4	87-114			WG457521

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Gasoline (C6-C10)	mg/l	0.614	0	.5	123.*	80-120	L438331-03	WG456921
a,a,a-Trifluorotoluene(PID)					94.73	80-120		WG456921
1,1,1,2-Tetrachloroethane	mg/l	0.0317	0	.025	127.	45-152	L438218-01	WG457521
1,1,1-Trichloroethane	mg/l	0.0279	0	.025	112.	31-161	L438218-01	WG457521
1,1,2,2-Tetrachloroethane	mg/l	0.0331	0	.025	132.	49-149	L438218-01	WG457521
1,1,2-Trichloroethane	mg/l	0.0301	0	.025	120.	46-145	L438218-01	WG457521
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/l	0.0247	0	.025	98.8	14-168	L438218-01	WG457521
1,1-Dichloroethane	mg/l	0.0279	0	.025	111.	30-159	L438218-01	WG457521
1,1-Dichloroethene	mg/l	0.0284	0	.025	114.	10-162	L438218-01	WG457521
1,1-Dichloropropene	mg/l	0.0271	0	.025	108.	14-162	L438218-01	WG457521
1,2,3-Trichlorobenzene	mg/l	0.0281	0	.025	112.	32-143	L438218-01	WG457521
1,2,3-Trichloropropane	mg/l	0.0323	0	.025	129.	48-148	L438218-01	WG457521
1,2,3-Trimethylbenzene	mg/l	0.0262	0	.025	105.	36-141	L438218-01	WG457521
1,2,4-Trichlorobenzene	mg/l	0.0307	0	.025	123.	27-142	L438218-01	WG457521
1,2,4-Trimethylbenzene	mg/l	0.0308	0	.025	123.	29-153	L438218-01	WG457521
1,2-Dibromo-3-Chloropropane	mg/l	0.0320	0	.025	128.	37-148	L438218-01	WG457521
1,2-Dibromoethane	mg/l	0.0319	0	.025	128.	41-149	L438218-01	WG457521
1,2-Dichlorobenzene	mg/l	0.0277	0	.025	111.	40-139	L438218-01	WG457521
1,2-Dichloroethane	mg/l	0.0295	0	.025	118.	29-167	L438218-01	WG457521
1,2-Dichloropropane	mg/l	0.0251	0	.025	100.	39-148	L438218-01	WG457521
1,3,5-Trimethylbenzene	mg/l	0.0324	0	.025	130.	33-149	L438218-01	WG457521
1,3-Dichlorobenzene	mg/l	0.0317	0	.025	127.	32-148	L438218-01	WG457521
1,3-Dichloropropane	mg/l	0.0295	0	.025	118.	44-142	L438218-01	WG457521
1,4-Dichlorobenzene	mg/l	0.0496	0	.025	198.*	32-136	L438218-01	WG457521
2,2-Dichloropropane	mg/l	0.0285	0	.025	114.	14-158	L438218-01	WG457521
2-Butanone (MEK)	mg/l	0.141	0	.125	112.	32-151	L438218-01	WG457521
2-Chloroethyl vinyl ether	mg/l	0.102	0	.125	81.8	0-175	L438218-01	WG457521
2-Chlorotoluene	mg/l	0.0307	0	.025	123.	35-147	L438218-01	WG457521
2-Hexanone	mg/l	0.167	0	.125	133.	41-155	L438218-01	WG457521
4-Chlorotoluene	mg/l	0.0418	0	.025	167.*	33-147	L438218-01	WG457521
4-Methyl-2-pentanone (MIBK)	mg/l	0.140	0	.125	112.	40-160	L438218-01	WG457521
Acetone	mg/l	0.151	0	.125	120.	25-157	L438218-01	WG457521
Acrolein	mg/l	0.0606	0	.125	48.5	0-179	L438218-01	WG457521
Acrylonitrile	mg/l	0.153	0	.125	122.	37-162	L438218-01	WG457521
Benzene	mg/l	0.0283	0	.025	113.	16-158	L438218-01	WG457521
Bromobenzene	mg/l	0.0374	0	.025	149.*	37-147	L438218-01	WG457521
Bromodichloromethane	mg/l	0.0278	0	.025	111.	45-147	L438218-01	WG457521
Bromoform	mg/l	0.0366	0	.025	146.	38-152	L438218-01	WG457521
Bromomethane	mg/l	0.0287	0	.025	115.	0-191	L438218-01	WG457521

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Est. 1970

ATC Associates, Inc. - MN
Mike Hultgren
1929 County Rd C-2 W

Roseville, MN 55113

Quality Assurance Report
Level II

L438326

January 04, 2010

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Carbon tetrachloride	mg/l	0.0294	0	.025	118.	22-168	L438218-01	WG457521
Chlorobenzene	mg/l	0.0311	0	.025	124.	33-148	L438218-01	WG457521
Chlorodibromomethane	mg/l	0.0328	0	.025	131.	48-151	L438218-01	WG457521
Chloroethane	mg/l	0.0261	0	.025	104.	4-176	L438218-01	WG457521
Chloroform	mg/l	0.0273	0	.025	109.	37-147	L438218-01	WG457521
Chloromethane	mg/l	0.0271	0	.025	108.	10-174	L438218-01	WG457521
cis-1,2-Dichloroethene	mg/l	0.0311	0.00180	.025	117.	29-156	L438218-01	WG457521
cis-1,3-Dichloropropene	mg/l	0.0272	0	.025	109.	35-148	L438218-01	WG457521
Di-isopropyl ether	mg/l	0.0278	0	.025	111.	39-160	L438218-01	WG457521
Dibromomethane	mg/l	0.0273	0	.025	109.	36-152	L438218-01	WG457521
Dichlorodifluoromethane	mg/l	0.0390	0	.025	156.	0-200	L438218-01	WG457521
Ethyl ether	mg/l	0.0253	0	.025	101.	24-168	L438218-01	WG457521
Ethylbenzene	mg/l	0.0327	0	.025	131.	29-150	L438218-01	WG457521
Hexachloro-1,3-butadiene	mg/l	0.0260	0	.025	104.	28-144	L438218-01	WG457521
Isopropylbenzene	mg/l	0.0313	0	.025	125.	35-147	L438218-01	WG457521
Methyl tert-butyl ether	mg/l	0.0296	0	.025	118.	24-167	L438218-01	WG457521
Methylene Chloride	mg/l	0.0290	0	.025	116.	23-151	L438218-01	WG457521
n-Butylbenzene	mg/l	0.0290	0	.025	116.	22-151	L438218-01	WG457521
n-Propylbenzene	mg/l	0.0302	0	.025	121.	26-150	L438218-01	WG457521
Naphthalene	mg/l	0.0310	0	.025	124.	24-160	L438218-01	WG457521
p-Isopropyltoluene	mg/l	0.0328	0	.025	131.	28-151	L438218-01	WG457521
sec-Butylbenzene	mg/l	0.0321	0	.025	128.	32-149	L438218-01	WG457521
Styrene	mg/l	0.0370	0	.025	148.	38-149	L438218-01	WG457521
tert-Butylbenzene	mg/l	0.0372	0	.025	149.	36-149	L438218-01	WG457521
Tetrachloroethene	mg/l	0.0296	0	.025	118.	13-157	L438218-01	WG457521
Tetrahydrofuran	mg/l	0.0265	0	.025	106.	28-163	L438218-01	WG457521
Toluene	mg/l	0.0249	0	.025	99.5	22-152	L438218-01	WG457521
trans-1,2-Dichloroethene	mg/l	0.0297	0	.025	119.	11-160	L438218-01	WG457521
trans-1,3-Dichloropropene	mg/l	0.0268	0	.025	107.	33-153	L438218-01	WG457521
Trichloroethene	mg/l	0.0250	0	.025	100.	18-163	L438218-01	WG457521
Trichlorofluoromethane	mg/l	0.0259	0	.025	103.	10-177	L438218-01	WG457521
Vinyl chloride	mg/l	0.0296	0	.025	118.	0-179	L438218-01	WG457521
Xylenes, Total	mg/l	0.0923	0	.075	123.	27-151	L438218-01	WG457521
4-Bromofluorobenzene					114.1	75-128		WG457521
Dibromofluoromethane					107.9	79-125		WG457521
Toluene-d8					96.07	87-114		WG457521

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Gasoline (C6-C10)	mg/l	0.596	0.614	119.	80-120	2.93	20	L438331-03	WG456921
a,a,a-Trifluorotoluene(PID)				94.50	80-120				WG456921
1,1,1,2-Tetrachloroethane	mg/l	0.0253	0.0317	101.	45-152	22.6*	21	L438218-01	WG457521
1,1,1-Trichloroethane	mg/l	0.0262	0.0279	105.	31-161	6.08	23	L438218-01	WG457521
1,1,2,2-Tetrachloroethane	mg/l	0.0272	0.0331	109.	49-149	19.5	22	L438218-01	WG457521
1,1,2-Trichloroethane	mg/l	0.0261	0.0301	104.	46-145	14.0	20	L438218-01	WG457521
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/l	0.0227	0.0247	90.6	14-168	8.65	24	L438218-01	WG457521
1,1-Dichloroethane	mg/l	0.0264	0.0279	105.	30-159	5.57	21	L438218-01	WG457521
1,1-Dichloroethene	mg/l	0.0262	0.0284	105.	10-162	8.30	23	L438218-01	WG457521
1,1-Dichloropropene	mg/l	0.0272	0.0271	109.	14-162	0.117	23	L438218-01	WG457521
1,2,3-Trichlorobenzene	mg/l	0.0254	0.0281	102.	32-143	10.0	33	L438218-01	WG457521
1,2,3-Trichloropropane	mg/l	0.0256	0.0323	102.	48-148	23.2*	23	L438218-01	WG457521
1,2,3-Trimethylbenzene	mg/l	0.0248	0.0262	99.0	36-141	5.58	25	L438218-01	WG457521
1,2,4-Trichlorobenzene	mg/l	0.0268	0.0307	107.	27-142	13.5	30	L438218-01	WG457521
1,2,4-Trimethylbenzene	mg/l	0.0251	0.0308	100.	29-153	20.5	27	L438218-01	WG457521
1,2-Dibromo-3-Chloropropane	mg/l	0.0293	0.0320	117.	37-148	8.97	27	L438218-01	WG457521
1,2-Dibromoethane	mg/l	0.0279	0.0319	111.	41-149	13.5	21	L438218-01	WG457521

* Performance of this Analyte is outside of established criteria.
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Mike Hultgren
1929 County Rd C-2 W
Roseville, MN 55113

Quality Assurance Report
Level II

L438326

January 04, 2010

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
1,2-Dichlorobenzene	mg/l	0.0264	0.0277	106.	40-139	4.80	23	L438218-01	WG457521
1,2-Dichloroethane	mg/l	0.0270	0.0295	108.	29-167	9.14	21	L438218-01	WG457521
1,2-Dichloropropane	mg/l	0.0258	0.0251	103.	39-148	2.71	20	L438218-01	WG457521
1,3,5-Trimethylbenzene	mg/l	0.0261	0.0324	104.	33-149	21.7	26	L438218-01	WG457521
1,3-Dichlorobenzene	mg/l	0.0245	0.0317	98.0	32-148	25.5*	24	L438218-01	WG457521
1,3-Dichloropropane	mg/l	0.0260	0.0295	104.	44-142	12.8	20	L438218-01	WG457521
1,4-Dichlorobenzene	mg/l	0.0246	0.0496	98.4	32-136	67.4*	23	L438218-01	WG457521
2,2-Dichloropropane	mg/l	0.0263	0.0285	105.	14-158	8.02	23	L438218-01	WG457521
2-Butanone (MEK)	mg/l	0.145	0.141	116.	32-151	3.16	26	L438218-01	WG457521
2-Chloroethyl vinyl ether	mg/l	0.0934	0.102	74.8	0-175	9.03	75	L438218-01	WG457521
2-Chlorotoluene	mg/l	0.0250	0.0307	100.	35-147	20.4	24	L438218-01	WG457521
2-Hexanone	mg/l	0.150	0.167	120.	41-155	10.3	28	L438218-01	WG457521
4-Chlorotoluene	mg/l	0.0257	0.0418	103.	33-147	47.6*	25	L438218-01	WG457521
4-Methyl-2-pentanone (MIBK)	mg/l	0.147	0.140	118.	40-160	5.31	28	L438218-01	WG457521
Acetone	mg/l	0.141	0.151	113.	25-157	6.75	26	L438218-01	WG457521
Acrolein	mg/l	0.0582	0.0606	46.6	0-179	4.04	39	L438218-01	WG457521
Acrylonitrile	mg/l	0.151	0.153	120.	37-162	1.39	24	L438218-01	WG457521
Benzene	mg/l	0.0274	0.0283	109.	16-158	3.23	21	L438218-01	WG457521
Bromobenzene	mg/l	0.0243	0.0374	97.3	37-147	42.2*	23	L438218-01	WG457521
Bromodichloromethane	mg/l	0.0278	0.0278	111.	45-147	0.0132	20	L438218-01	WG457521
Bromoform	mg/l	0.0303	0.0366	121.	38-152	19.0	20	L438218-01	WG457521
Bromomethane	mg/l	0.0251	0.0287	100.	0-191	13.2	35	L438218-01	WG457521
Carbon tetrachloride	mg/l	0.0274	0.0294	110.	22-168	7.04	24	L438218-01	WG457521
Chlorobenzene	mg/l	0.0265	0.0311	106.	33-148	16.2	22	L438218-01	WG457521
Chlorodibromomethane	mg/l	0.0273	0.0328	109.	48-151	18.4	21	L438218-01	WG457521
Chloroethane	mg/l	0.0231	0.0261	92.3	4-176	12.4	27	L438218-01	WG457521
Chloroform	mg/l	0.0253	0.0273	101.	37-147	7.47	21	L438218-01	WG457521
Chloromethane	mg/l	0.0243	0.0271	97.0	10-174	11.2	28	L438218-01	WG457521
cis-1,2-Dichloroethene	mg/l	0.0287	0.0311	107.	29-156	8.00	22	L438218-01	WG457521
cis-1,3-Dichloropropene	mg/l	0.0291	0.0272	116.	35-148	6.79	21	L438218-01	WG457521
Di-isopropyl ether	mg/l	0.0251	0.0278	100.	39-160	10.1	21	L438218-01	WG457521
Dibromomethane	mg/l	0.0279	0.0273	112.	36-152	2.21	20	L438218-01	WG457521
Dichlorodifluoromethane	mg/l	0.0347	0.0390	139.	0-200	11.6	26	L438218-01	WG457521
Ethyl ether	mg/l	0.0228	0.0253	91.3	24-168	10.3	23	L438218-01	WG457521
Ethylbenzene	mg/l	0.0266	0.0327	106.	29-150	20.6	24	L438218-01	WG457521
Hexachloro-1,3-butadiene	mg/l	0.0245	0.0260	98.1	28-144	5.80	33	L438218-01	WG457521
Isopropylbenzene	mg/l	0.0262	0.0313	105.	35-147	18.0	25	L438218-01	WG457521
Methyl tert-butyl ether	mg/l	0.0257	0.0296	103.	24-167	14.1	22	L438218-01	WG457521
Methylene Chloride	mg/l	0.0255	0.0290	102.	23-151	12.9	21	L438218-01	WG457521
n-Butylbenzene	mg/l	0.0278	0.0290	111.	22-151	4.23	29	L438218-01	WG457521
n-Propylbenzene	mg/l	0.0252	0.0302	101.	26-150	18.1	25	L438218-01	WG457521
Naphthalene	mg/l	0.0279	0.0310	112.	24-160	10.4	37	L438218-01	WG457521
p-Isopropyltoluene	mg/l	0.0258	0.0328	103.	28-151	23.8	27	L438218-01	WG457521
sec-Butylbenzene	mg/l	0.0260	0.0321	104.	32-149	20.8	26	L438218-01	WG457521
Styrene	mg/l	0.0290	0.0370	116.	38-149	24.3*	23	L438218-01	WG457521
tert-Butylbenzene	mg/l	0.0266	0.0372	106.	36-149	33.1*	26	L438218-01	WG457521
Tetrachloroethene	mg/l	0.0259	0.0296	104.	13-157	13.2	24	L438218-01	WG457521
Tetrahydrofuran	mg/l	0.0287	0.0265	115.	28-163	7.79	27	L438218-01	WG457521
Toluene	mg/l	0.0262	0.0249	105.	22-152	5.33	22	L438218-01	WG457521
trans-1,2-Dichloroethene	mg/l	0.0272	0.0297	109.	11-160	8.90	23	L438218-01	WG457521
trans-1,3-Dichloropropene	mg/l	0.0288	0.0268	115.	33-153	7.22	22	L438218-01	WG457521
Trichloroethene	mg/l	0.0266	0.0250	106.	18-163	6.19	21	L438218-01	WG457521
Trichlorofluoromethane	mg/l	0.0237	0.0259	95.0	10-177	8.54	24	L438218-01	WG457521
Vinyl chloride	mg/l	0.0272	0.0296	109.	0-179	8.57	26	L438218-01	WG457521
Xylenes, Total	mg/l	0.0765	0.0923	102.	27-151	18.7	23	L438218-01	WG457521
4-Bromofluorobenzene				98.58	75-128				WG457521
Dibromofluoromethane				106.0	79-125				WG457521
Toluene-d8				105.4	87-114				WG457521

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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1929 County Rd C-2 W

Roseville, MN 55113

Quality Assurance Report
Level II

L438326

January 04, 2010

Batch number /Run number / Sample number cross reference

WG456921: R1057550: L438326-01
WG456934: R1058708: L438326-01
WG457521: R1061434: L438326-01

* * Calculations are performed prior to rounding of reported values .
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L438326

January 04, 2010

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

ATC Associates Inc.
1929 County Road C2 West
Roseville, MN 55113

Alternate billing information:

Report to: Mike Hultgren

Email to: mike.hultgren@atcassociates.com

Project Description: Former Jiffy Gas Station - GWM

City/State Collected: Roseville, Minnesota

Phone: (651) 635-9050
FAX: (651) 635-9080

Client Project #: 22.30552.0014

ESC Key:

Collected by: Jason Hoffmann

Site/Facility ID#:

P.O.#:

Collected by (signature):

Packed on Ice N ☐ Y ☑

Rush? (Lab MUST Be Notified)
____ Same Day. 200%
____ Next Day. 100%
____ Two Day 50%

Date Results Needed:

Email? __No ✓Yes

FAX? __No __Yes

Analysis/Container/Preservative

C044

Chain of Custody
Page 1 of 1

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Phone (800) 767-5859
FAX (615) 758-5859

CoCode (lab use only)

Template/Prelogin

Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	VOCs	GRO	DRO w/ SG					Remarks/Contaminant	Sample # (lab only)
MW-01B	Grab	GW	63 ft	12/22/09	1500	6	✓	✓	✓						L438326-01

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks:

9662 7449 4058

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐	Condition: (lab use only)
Jason Hoffmann	12/23/09	1600 hrs			ecs (OK)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.4 / Bottles Received: 6	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) Terri Woods	Date: 12/24/09 / Time: 0900	pH Checked: <2 / NCF:

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Mike Hultgren
ATC Associates, Inc. - MN
1929 County Rd C-2 W
Roseville, MN 55113

Report Summary

Wednesday July 07, 2010

Report Number: L466643
Samples Received: 06/29/10
Client Project: 22.30552.0014

Description: Former Jiffy GAs Station - GWM

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: John Hawkins

John Hawkins , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Mike Hultgren
ATC Associates, Inc. - MN
1929 County Rd C-2 W
Roseville, MN 55113

July 07,2010

ESC Sample # : L466643-01

Site ID :

Project # : 22.30552.0014

Date Received : June 29, 2010
Description : Former Jiffy Gas Station - GWM

Sample ID : MW-01B 63 FT

Collected By : Jason Hoffmann
Collection Date : 06/28/10 14:00

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
PVOCGRO						
Benzene	250	5.0	ug/l	8021	07/01/10	10
Toluene	170	50.	ug/l	8021	07/01/10	10
Ethylbenzene	380	5.0	ug/l	8021	07/01/10	10
m&p-Xylene	820	10.	ug/l	8021	07/01/10	10
o-Xylene	150	5.0	ug/l	8021	07/01/10	10
Methyl tert-butyl ether	90.	10.	ug/l	8021	07/01/10	10
Naphthalene	140	50.	ug/l	8021	07/01/10	10
1,3,5-Trimethylbenzene	140	10.	ug/l	8021	07/01/10	10
1,2,4-Trimethylbenzene	500	10.	ug/l	8021	07/01/10	10
Gasoline (C6-C10)	11000	1000	ug/l	8015	07/01/10	10
Surrogate recovery-%						
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021	07/01/10	10
TPH (GC/FID) High Fraction	3300	100	ug/l	DROWM/8015	07/01/10	1
Surrogate recovery(%)						
Triacontane	109.		% Rec.	DROWM/8015	07/01/10	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 07/07/10 15:58 Printed: 07/07/10 15:58

ATC Associates Inc
Groundwater Sampling Information Sheet

Project Name: SSA 4210 GWM
Location: Roseville, MN
Project #:

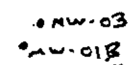
Date: 6-28-10
Personnel: J.H.
Onsite:
Offsite:

Temperature: 65
Precipitation: –
Wind: 20 mph

#	Monitoring Well	Total Depth	Depth To Product	Depth To Water	Gauging Time 24hr	Well Diameter	3 Well Volumes	Amt Pumped gal	Temp °C	Conductivity µS/cm	ORP	DO mg/l	pH	Sample Time 24hr	Sample Appearance	Comments
1	MW-11	90.0	–	84.64	10:55	2"	2.6	3.0	12.98	845	-431.8	4.46	6.88	11:30		
2	~~[illegible]~~															
3	MW-10	65.0	–	63.67	11:00	2"	0.7	0.7	13.21	924	-377.7	1.98	7.03	12:00		
4															black sandy	odor, strong
5	MW-03	63.45	–	60.79	12:30	2"	1.3	1.5	13.04	1677	-242.1	1.91	7.17	13:00		
6																odor
7	MW-01B	70.45	–	63.23	13:15	2"	3.5	3.5	15.43	2003	-300.4	0.77	6.95	14:00		
8																
9	MW-09	65.0	60.01	60.25	14:20	2"		DID NOT SAMPLE								
10																

Duplicate: MW-03

Additional Comments: ~~Field Blank~~
~~* 0.24 ft of free product present in MW-09. Did not sample MW-09. See separate data sheet for information concerning free product recovery.~~
MW-01B will have a seperate COC.



MW-01B is 27.0 ft South and 7.5 ft west of MW-03

MW-01B is ~~[illegible]~~ 228.0 ft south and 101.5 ft west of the southeast ~~northeast~~ corner of the SSA store.

MW-03 is 10.0 ft west of the nearby guard rail and 21.5 ft south of the curbing of Cty Rd B.

ATC Associates Inc

Groundwater Sampling Information Sheet

Project Name: SSA 4210
Location: Roseville
Project #:

Date: 12-22-09
Personnel: J. H.
Onsite @
Offsite @

Temperature:
Precipitation:
Wind:

	Monitoring Well	Total Depth	Depth To Product	Depth To Water	Gauging Time 24 hr	Well Diameter	3 well Volumes	Amt Purged; gal	Temp °C	Conductivity µS/cm	ORP	DO mg/l	pH	Sample Time 24 hr	Sample Appearance	Comments
west 1	MW-11	90.0	-	84.67	11:55	2"	2.6	3.0	9.18	659	-705.7	5.00	12.10	12:30	Brown, black	
2																
east 3	MW-10	65.0	-	63.23	12:00	2"	0.9	1.0	9.68	614	-695.5	3.00	12.63	13:00	clear	
4																
5	MW-03	63.45	-	60.38	13:45	2"	1.5	1.5	9.19	1231	-46.2	3.60	12.74	14:15	Black Strong odor	
6																
7	MW-01B	70.45	-	62.80	14:40	2"	3.7	4.0	8.92	1439	-52.9	3.58	12.26	15:00	clear	
8																
9	MW-09	65.0	59.42	60.60	11:30	2"		FREE PRODUCT.				DID NOT		SAMPLE		
10																

Additional Comments: * 1.18 ft of free product in MW-09.
Hand Bailed free product

Duplicates: MW-03

ATC gws form revised 03/2006; jmo

First time sampling MW-01B. It is not SSA 4210's well. It will have a different chain.

- YSI was not giving accurate PID readings

METHODS

Sample collection followed MPCA Guidance Documents 4-05, Groundwater Sample Collection and Analysis Procedures, and 4-01a Vapor Intrusion Assessments Performed during Site Investigations, dated September 2008.

Monitoring wells were gauged using a Solinst© Water Level Indicator. The water level indicator was decontaminated between wells using an Alconox and clean water rinse. Once the wells were gauged, three well volumes were purged using a disposable bailer. Following well purging, the disposable bailer was used in order to collect a sample from the well. Disposable bailers were used and disposed of after one well was sampled.

Groundwater samples collected for laboratory analysis were placed in the appropriate sample containers, properly labeled and preserved, immediately placed in a cooler on ice, and submitted to Pace following QA/QC procedures and chain of custody protocol. Groundwater sampling was performed following industry standard operating procedures, such as those outlined in MPCA Guidance Documents 4-01 and 4-05.

The groundwater and soil vapor samples were submitted to Environmental Science Corporation (ESC) (Minnesota Department of Health Lab ID No. 027-053-137) for benzene, toluene, ethylbenzene, and total xylenes (BTEX, Modified USEPA 8021B Method) or volatile organic compounds (VOCs, MDH 465 and 466, and TO-15), methyl tertiary-butyl ether (MTBE, Modified USEPA 8021B Method), and total petroleum hydrocarbons as gasoline and diesel range organics (Wisconsin Modified GRO and DRO Methods).

All samples collected for laboratory analysis were placed in appropriate sample containers, properly labeled and preserved, immediately placed in a cooler on ice and submitted to ESC following quality assurance/quality control (QA/QC) procedures and chain of custody documentation. Samples analyzed by the fixed-laboratory were handled in accordance with laboratory specified guidelines in accordance with the specified EPA methods.

ATC Associates Inc.
1929 County Road C2 West
Roseville, MN 55113

Alternate billing information:

Report to: Mike Hultgren

Email to: mike.hultgren@atcassociates

Project Description: Former Jiffy Gas Station - GWM

City/State Collected: Roseville, Minnesota

Phone: (651) 635-9050
FAX: (651) 635-9080

Client Project #: 22.30552.0014

ESC Key:

Collected by: Jason Hoffmann

Site/Facility ID#:

P.O.#:

Collected by (signature):

Packed on Ice N ☐ Y ☑

Rush? (Lab MUST Be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed:

Email? __No ✓Yes

FAX? __No __Yes

Analysis/Container/Preservative

Chain of Custody
Page 1 of 1

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859
F239

CoCode (lab use only)

Template/Prelogin

Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	BTEX/MTBE/GRO	DRO							Remarks/Contaminant	Sample # (lab only)
MW-01B	Grab	GW	63 ft	06/28/10	14:00	4	✓	✓								L466643-01

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks:

4239732034 96 Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	06/28/10	1600 hrs	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐

Temp: 2.4°C

Bottles Received: 4

Date: 6/29/10

Time: 0900

Condition: COC'S OK (lab use only)

pH Checked:

NCF:

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12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

ATC Associates, Inc. - MN
Mike Hultgren
1929 County Rd C-2 W

Roseville, MN 55113

Quality Assurance Report
Level II

L466643

July 07, 2010

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

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ATC Associates, Inc. - MN
Mike Hultgren
1929 County Rd C-2 W

Roseville, MN 55113

Quality Assurance Report
Level II

L466643

July 07, 2010

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Matrix Spike								
Benzene	mg/l	0.0492	0	.05	98.4	35-147	L466642-03	WG486568
Ethylbenzene	mg/l	0.0478	0	.05	95.6	39-141	L466642-03	WG486568
Gasoline (C6-C10)	mg/l	0.453	0	.5	90.5	80-120	L466642-03	WG486568
m&p-Xylene	mg/l	0.0919	0	.1	91.9	26-157	L466642-03	WG486568
Methyl tert-butyl ether	mg/l	0.0344	0	.05	68.7	37-147	L466642-03	WG486568
Naphthalene	mg/l	0.0363	0.0000960	.05	72.4*	80-120	L466642-03	WG486568
o-Xylene	mg/l	0.0486	0	.05	97.3	40-145	L466642-03	WG486568
Toluene	mg/l	0.0469	0	.05	93.7	35-148	L466642-03	WG486568
a,a,a-Trifluorotoluene(PID)					99.05	80-120		WG486568

Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Matrix Spike Duplicate									
1,2,4-Trimethylbenzene	mg/l	0.0484	0.0461	96.5	80-120	4.87	20	L466642-03	WG486568
1,3,5-Trimethylbenzene	mg/l	0.0494	0.0465	98.6	80-120	5.96	20	L466642-03	WG486568
Benzene	mg/l	0.0532	0.0492	106.	35-147	7.73	20	L466642-03	WG486568
Ethylbenzene	mg/l	0.0513	0.0478	102.	39-141	7.07	20	L466642-03	WG486568
Gasoline (C6-C10)	mg/l	0.434	0.453	86.8	80-120	4.26	20	L466642-03	WG486568
m&p-Xylene	mg/l	0.0989	0.0919	98.9	26-157	7.29	20	L466642-03	WG486568
Methyl tert-butyl ether	mg/l	0.0400	0.0344	80.0	37-147	15.1	20	L466642-03	WG486568
Naphthalene	mg/l	0.0421	0.0363	84.0	80-120	14.8	20	L466642-03	WG486568
o-Xylene	mg/l	0.0520	0.0486	104.	40-145	6.66	20	L466642-03	WG486568
Toluene	mg/l	0.0501	0.0469	100.	35-148	6.69	20	L466642-03	WG486568
a,a,a-Trifluorotoluene(PID)				98.93	80-120				WG486568

Batch number /Run number / Sample number cross reference

WG486222: R1273928: L466643-01
WG486568: R1278328: L466643-01

* * Calculations are performed prior to rounding of reported values .
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Mike Hultgren
1929 County Rd C-2 W

Roseville, MN 55113

Quality Assurance Report
Level II

L466643

July 07, 2010

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
TPH (GC/FID) High Fraction	< .1	ppm			WG486222	07/01/10 20:58
Triacontane		% Rec.	125.4	50-150	WG486222	07/01/10 20:58
1,2,4-Trimethylbenzene	< .001	mg/l			WG486568	07/01/10 19:22
1,3,5-Trimethylbenzene	< .001	mg/l			WG486568	07/01/10 19:22
Benzene	< .0005	mg/l			WG486568	07/01/10 19:22
Ethylbenzene	< .0005	mg/l			WG486568	07/01/10 19:22
Gasoline (C6-C10)	< .1	mg/l			WG486568	07/01/10 19:22
m&p-Xylene	< .001	mg/l			WG486568	07/01/10 19:22
Methyl tert-butyl ether	< .001	mg/l			WG486568	07/01/10 19:22
Naphthalene	< .005	mg/l			WG486568	07/01/10 19:22
o-Xylene	< .0005	mg/l			WG486568	07/01/10 19:22
Toluene	< .005	mg/l			WG486568	07/01/10 19:22
a,a,a-Trifluorotoluene(PID)		% Rec.	96.26	80-120	WG486568	07/01/10 19:22

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
TPH (GC/FID) High Fraction	mg/l	1	0.931	93.1	75-115	WG486222
Triacontane				116.1	50-150	WG486222
1,2,4-Trimethylbenzene	mg/l	.05	0.0537	107.	80-120	WG486568
1,3,5-Trimethylbenzene	mg/l	.05	0.0542	109.	80-120	WG486568
Benzene	mg/l	.05	0.0555	111.	79-114	WG486568
Ethylbenzene	mg/l	.05	0.0556	111.	80-116	WG486568
Gasoline (C6-C10)	mg/l	.5	0.514	103.	80-120	WG486568
m&p-Xylene	mg/l	.1	0.107	107.	85-120	WG486568
Methyl tert-butyl ether	mg/l	.05	0.0422	84.4	64-125	WG486568
Naphthalene	mg/l	.05	0.0429	85.8	80-120	WG486568
o-Xylene	mg/l	.05	0.0561	112.	82-116	WG486568
Toluene	mg/l	.05	0.0540	108.	79-112	WG486568
a,a,a-Trifluorotoluene(PID)				99.34	80-120	WG486568

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
TPH (GC/FID) High Fraction	mg/l	0.956	0.931	96.0	75-115	2.64	20	WG486222
Triacontane				126.6	50-150			WG486222
1,2,4-Trimethylbenzene	mg/l	0.0524	0.0537	105.	80-120	2.29	20	WG486568
1,3,5-Trimethylbenzene	mg/l	0.0535	0.0542	107.	80-120	1.37	20	WG486568
Benzene	mg/l	0.0559	0.0555	112.	79-114	0.670	20	WG486568
Ethylbenzene	mg/l	0.0556	0.0556	111.	80-116	0.0300	20	WG486568
Gasoline (C6-C10)	mg/l	0.536	0.514	107.	80-120	4.26	20	WG486568
m&p-Xylene	mg/l	0.106	0.107	106.	85-120	0.210	20	WG486568
Methyl tert-butyl ether	mg/l	0.0484	0.0422	97.0	64-125	13.7	20	WG486568
Naphthalene	mg/l	0.0447	0.0429	89.0	80-120	4.20	20	WG486568
o-Xylene	mg/l	0.0569	0.0561	114.	82-116	1.38	20	WG486568
Toluene	mg/l	0.0536	0.0540	107.	79-112	0.640	20	WG486568
a,a,a-Trifluorotoluene(PID)				98.86	80-120			WG486568

Matrix Spike

Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
1,2,4-Trimethylbenzene	mg/l	0.0461	0.000106	.05	91.9	80-120	L466642-03	WG486568
1,3,5-Trimethylbenzene	mg/l	0.0465	0.0000441	.05	92.9	80-120	L466642-03	WG486568

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

Summary of Remarks For Samples Printed
07/07/10 at 15:58:49

TSR Signing Reports: 341
R5 - Desired TAT

For all SSA projects they need project number and EDD logged All SSA projects need COC attached to Invoice

Sample: L466643-01 Account: ATCRSMN Received: 06/29/10 09:00 Due Date: 07/07/10 00:00 RPT Date: 07/07/10 15:58

DPRA
Creative People. Smart Solutions.

January 30, 2009

Andrew Eddy
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155

RE: Remedial Investigation Report
Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota
MPCA Leak #17354

N 44 DEG 56 MIN 45 SEC
W 93 DEG 05 MIN 27 SEC

332 Minnesota Street
Suite E-1500
St. Paul, MN 55101-1323

651.227.6500 Voice
651.227.5522 Fax

www.dpra.com

Dear Mr. Eddy:

Enclosed is a Remedial Investigation Report for the above-referenced site. Petroleum contamination existed to a depth of 65 feet throughout the site prior to the opening of MPCA Leak #17354, so the primary purpose of this investigation was to determine the need for additional activities. Based on this investigation, DPRA recommends site closure for Leak #17354.

If you have any questions or concerns regarding this report or anything else regarding the project site, please contact me at (651) 215-4258 or by e-mail at Donovan.hannu@dpra.com.

Sincerely,

Donovan Hannu, P.E.
Senior Civil Engineer

cc: Sonja Simonsen – Wellington Management
DPRA File #5381.0044.0003

Minnesota Pollution Control Agency

Investigation Report Form

Guidance Document 4-06

Complete this form to document site investigation activities, including Limited Site Investigations (LSIs) and Remedial Investigations (RIs). Do not revise or delete any text or questions from this report form. Include any additional information that is important for making a site management decision. If only an LSI is necessary, some questions do not need to be answered and have been identified in the form. Highlighted text contains instructions and references to related guidance documents for that section or question. Refer to Minnesota Pollution Control Agency (MPCA) Guidance Document 1-01 *Petroleum Remediation Program General Policy* for the overall site investigation objectives and to other MPCA guidance documents for details on investigation requirements and methods.

MPCA Site ID: Leak00017354 Date: *January 27, 2009*

Responsible Party Information

Name: *Wellington Management* Phone #: *651-292-9844*

Mailing Address: *1625 Energy Park Drive, Suite 100*

City: *St. Paul* Zip Code: *55108*

Alternate Contact (if any) for Responsible Party: *Sonja Simonsen*

Leak Site Information

Leak Site Name: *Former Jiffy Gas Station* Phone #: *NA*

Leak Site Address: *2154 Lexington Avenue North*

City: *Roseville* Zip Code: *55113* County: *Ramsey*

Environmental Professional Information

By signing this document, I/we acknowledge that we are submitting this document on behalf of and as agents of the responsible person or volunteer for this leak site. I/we acknowledge that if information in this document is inaccurate or incomplete, it will delay the completion of remediation and may harm the environment and may result in a reduction in Petrofund reimbursement. In addition, I/we acknowledge on behalf of the responsible person or volunteer for this leak site that if this document is determined to contain a false material statement, representation, or certification, or if it omits material information, the responsible person or volunteer may be found to be in violation of Minn. Stat. § 115.075 (2007) or Minn. R. 7000.0300 (Duty of Candor), and that the responsible person or volunteer may be liable for civil penalties.

MPCA staff are instructed to reject unsigned reports and reports that have been altered.

Name and Title of Report Author(s)	Signature	Date Signed
William Miley *Environmental Analyst*	Brett Godsey for	2/02/09

Name and Title of Report Reviewer(s)	Signature	Date Signed
Donovan Hannu, P.E. *Senior Engineer*	Donovan Hannu	2/02/09

Name(s) of Field Technician(s): *Curtis Pranger*

Company and Mailing Address: *DPRA Incorporated*
332 Minnesota Street, Suite E-1500
St. Paul, MN 55101

Project Manager E-mail Address: *Donovan.hannu@dpra.com*
Phone: *(651) 215-4258*
Fax: *(651) 227-5522*

Emergency and High Priority Sites

A. Is an existing drinking water well impacted or likely to be impacted within a two-year travel time? ☐ *Yes* ☒ *No*

B. Is a hydrogeologically sensitive aquifer impacted that is tapped by water wells that are within 500 feet from the release source? **If *YES***, explain below. ☐ *Yes* ☒ *No*

C. Has the public water supply risk assessment concluded that the site is a high priority site with respect to a public water supply well (see Guidance Document 4-18 *Public Water Supply Risk Assessment at Petroleum Remediation Sites*)? ☐ *Yes* ☒ *No*

D. Is there an existing surface water impact as indicated by 1) a petroleum sheen on the surface water or 2) a petroleum sheen or volatile organic compounds in the part per million range observed in a ground water sample collected close to the surface water? ☐ *Yes* ☒ *No*

E. Has free product been detected at the site? **If *YES***, attach Guidance Document 2-03 *Free Product Recovery Report Worksheet* in Section 6. ☐ *Yes* ☒ *No*

F. Are there any existing field-detectable vapor impacts (photoionization detector, explosimeter, odors, etc.) to a receptor? ☐ *Yes* ☒ *No*

G. Did the vapor intrusion assessment detect contaminants in excess of acute intrusion screening values (see Guidance Document 4-01a *Vapor Intrusion Assessments Performed during Site Investigations*)? ☒ *Yes* ☐ *No*

If you answered ***YES*** to any of questions A through G above, describe below the actions taken to date to reduce or eliminate the risk posed by the release.

Contaminant concentrations exceeding the acute ISVs were detected in the worst-case soil gas sample, collected from the former tank basin at the site. An off-site building, without a basement or sump, is located directly east of the former tank basin. This building is used by Larson Motors, an automotive repair shop. Automotive repair has been conducted in that building since at least 1957. Due to the sources of petroleum that likely exist within and around this automotive repair shop, no immediate action was taken regarding the potential vapor intrusion risk to this building.

Section 1: Site Assessment

Site and Release Information

Complete Guidance Document 1-03a *Spatial Data Reporting Form*, Guidance Document 2-05 *Release Information Worksheet* if 3-02 *General Excavation Report Worksheet* was not completed, and include in Section 6.

1.1 Describe the land use and pertinent geographic features (e.g., topographic changes, surface waters, etc.) within 1,000 feet of the site. Illustrate these features using the Site Location Map, aerial photographs, and Sanborn Fire Insurance Maps™ for the various time periods they are available in Section 4.

The Site is located in an area of mixed commercial and residential land uses. The topography throughout the surrounding area is relatively flat, with an elevation of approximately 950 feet above mean sea level (MSL). There are no surface waters within 1,000 feet of the Site. A Site Location Map is attached as Figure 1.

DPRA obtained historical aerial photographs for the area of the Site for the years 1937, 1940, 1947, 1953, 1957, 1966, 1974, 1980, 1984, 1991, 1997, 2000, 2003 and 2008 from the digital map library of Historical Information Gatherers, Inc. (HIG), a private historical data research company. Copies of the aerial photographs are included, following Figure 1. The photographs were reviewed for an indication of the historical use/occupancy of the Site and immediately adjacent properties and for a general indication of the developmental history of the areas within approximately ¼ mile of the Site.

In the 1937 and 1940 photographs, the Site appears undeveloped and utilized as farmland. Roads corresponding to County Road B and Lexington Avenue North are adjacent to the north and west of the Site, respectively. The surrounding land use appears to be primarily agricultural and residential.

In the 1947, 1953, and 1957 photographs, the east side of the Site appears to be occupied by a commercial-size structure. In the 1957 photograph, a structure is present directly east of the Site that corresponds to the current automotive maintenance facility. More commercial and residential development is present throughout the surrounding area.

In the 1966, 1974, 1980, 1984, 1991, 1997, 2000, and 2003 photographs, the southeast corner of the Site is occupied by a structure that corresponds to the previous service station. Small structures that correspond to the previous dispensers are also present on the Site. Beginning in the 1991 photograph, structures are present that appear to be the existing gasoline station located north of the Site.

In the 2008 photograph, the Site is vacant and without structures, as it appears today.

Sanborn Fire Insurance Maps are not available for the area of the Site.

1.2 Briefly describe the history of the site and any past site investigation work that may have been completed. If a Phase I or Phase II report has been prepared for this site, include a copy in Section 6.

Clark Service Station #785 was previously located on the Site. In January 1961, two 6000-gallon steel gasoline USTs were installed at the Site. A petroleum release was reported on this site in October 1995; the site was assigned MPCA Leak #8898. Highly contaminated soil and groundwater were detected during the Remedial Investigation. No soil or groundwater samples were collected directly adjacent to the UST basin during this investigation. Contaminated groundwater existed at a depth of approximately 65 feet. A Remedial Investigation report was submitted to the MPCA in November 1997 that recommended groundwater monitoring. After several years of groundwater monitoring, MPCA Leak #8898 was closed in November 2004. Ownership of monitoring well MW-3, located on the Site, was transferred to SA #4210 after MPCA Leak #8898 was closed.

1.3 List other potential petroleum sources within 500 feet of the site and identify them on the Potential Receptor Map in Section 4.

Super America (SA) Station No. 4210 is located directly north of the Site, across County Road B. This site is located approximately 200 feet upgradient from the Site. SA No. 4210 has four active USTs containing gasoline and diesel. These USTs were installed in September 1985. In November 1990, a release was reported at SA No. 4210 and assigned MPCA Leak #3591. A Remedial Investigation report was submitted and groundwater monitoring began in 1993. The site was closed in 1994 by the MPCA, re-opened in 1995, and groundwater monitoring continues. The MPCA files indicate that some groundwater contamination from MPCA Leak #3591 has migrated onto the Site.

DPRA reviewed the MPCA database of Aboveground / Underground Storage Tank Sites for further information regarding the SA site on January 6, 2009. The database indicated that, after reviewing a report for MPCA Leak #3591 in February 2008, the MPCA requested additional work.

1.4 Describe the status of the tank system(s) including current and former tanks, piping, and dispensers. Summarize the status and characteristics of all past and present tanks in Table 1 and identify all components on a Site Map.

Two 6,000-gallon gasoline USTs were emptied and all operation of them ceased when the Former Jiffy Station closed in November 2004. These two USTs and all associated piping and dispensers were excavated and removed from the Site on July 8, 2008. During removal, the USTs were observed to be rusted and pitted; however, no holes or cracks were observed.

1.5 Briefly describe the known or suspected source(s) of the release and how it was discovered.

On July 8, 2008, during the removal of the USTs and associated dispensers, petroleum impacted soil was encountered in the UST basin and beneath one of the dispensers. The source(s) of this release appeared to be a leaking dispenser and a leak at one of the submersible pumps in the UST basin. These USTs and dispensers were not operated since November 2004.

1.6 When did the release occur (if known)? *Unknown, but it is likely that the release occurred prior to November 2004.*

1.7 What was the volume and type(s) of petroleum product released (if known)? *unknown*
Released product type(s): *Gasoline*

When a tank has been excavated, refer to Guidance Documents 3-01 *Excavation of Petroleum Contaminated Soil and Tank Removal Sampling* and 3-02 *General Excavation Report Worksheet* for reporting requirements. If a tank has been excavated or if contaminated soil was removed for off-site treatment prior to this investigation, include Guidance Document 3-02 in Section 6.

1.8 Was soil excavated for off-site treatment? ☐ *Yes* ☒ *No*

Date(s) soil was excavated: Total volume removed:

Volume of total soil removed that was petroleum saturated:

Soil treatment method:
- ☐ Land treatment
- ☐ Thermal treatment
- ☐ Composting/Biopiling
- ☐ Other ( )

Name and location of treatment facility:

If you checked "Other", describe how the soil was treated and attach applicable documentation at the end of the reporting form.

Site-Specific Geology and Hydrogeology

1.9 Discuss the soil borings drilled and provide rationale for their locations. Include boring logs in Section 6. Boring logs must include all the information required in Guidance Document 4-01 *Soil and Ground Water Assessments Performed during Site Investigations.*

On November 17, 2008, DPRA installed monitoring well MW-1B and advanced soil probes SP-1 and SP-2 at the Site. Monitoring well MW-1B was completed to a depth of 66 feet within the former UST basin to determine the worst-case impacts to soil and groundwater at the Site.

Soil probe SP-1 was advanced to a depth of 20 feet south of the former UST basin, as near as possible to the location of former monitoring well MW#4, advanced as part of the investigation of MPCA Leak #8898 in December 1996. (Monitoring well MW#4 was abandoned following site closure of Leak #8898.)

Soil probe SP-2 was advanced to a depth of 20 feet just northeast of the center dispenser, as near as possible to the location of former soil boring SB#2, which was also advanced in December 1996 during the investigation of MPCA Leak #8898. Soil probes SP-1 and SP-2 were advanced in these locations to compare the existing contaminant concentrations in the soil with those detected in these locations during the investigation of MPCA Leak #8898. The results of this comparison would also determine if additional drilling was required to define the extent of the soil contamination detected during the UST removal. The monitoring well and soil probe locations are depicted on the Site Map attached as Figure 2.

1.10 Indicate the locations and depths of soil samples submitted for grain size analysis.

Soil sample MW-1B collected from an approximate depth of 62 to 64 feet was submitted for grain size analysis.

1.11 Discuss in detail the site geology based on soil boring data, grain size analyses, cross sections, geologic logs of nearby water wells, and available published information. Include detailed descriptions of more porous lenses or stringers within tighter soil types.

The soil is characterized as brown gravelly sand (likely fill) to an approximate depth of two feet at the Site. The soil is characterized as tan/grey sandy clay with gravel from depths of 2 to 15 feet. Beneath the sandy clay, from depths of 15 to 30 feet, the soil is characterized as light-gray gravelly sand. Beneath the gravelly sand, from depths of 30 to 66 feet, the soil is characterized as grey fine- to medium-grained sand. Groundwater was encountered at an approximate depth of 62 feet. A geologic cross-section of the Site is attached as Figure 3.

The grain size analysis indicates that the water-bearing strata is well sorted fine- to medium-grained sand, with no measured gravel and very little fines.

According to the Geologic Atlas of Ramsey County, Minnesota, prepared and published by the Minnesota Geological Survey, bedrock in the area of the Site is Ordovician Sandstone of the St. Peter Formation. Depth to bedrock is approximately 150 feet below the ground surface. According to the well log of a water supply well approximately 550 feet north of the Site, the St. Peter bedrock aquifer exists at an approximate depth of 177 feet and there are clay, sandstone, limestone, and shale layers between the St. Peter bedrock aquifer and the impacted aquifer.

The Geologic Atlas indicates unconsolidated surficial materials in the area of the Site are till, ranging from loamy sand to clay, beneath which are up to 20 feet of stream deposits composed of medium to coarse sand with pebbles.

1.12 Discuss in detail the local and regional hydrogeology based geologic logs of nearby water wells and available published information.

Groundwater was encountered at an approximate depth of 62 feet in monitoring well MW-1B installed at the Site. The grain size analysis indicates that the water bearing strata is well sorted fine- to medium-grained sand with no measured gravel and very little fines.

According to the Geologic Atlas of Ramsey County, regional groundwater flow is to the south-southeast toward the Mississippi River, located approximately five miles from the Site.

1.13 Discuss site ground water flow direction using soil boring data, monitoring well data if collected, plume geometry, and available published information.

According to the Geologic Atlas of Ramsey County, regional groundwater flow is to the south-southeast toward the Mississippi River, located approximately five miles from the Site. Previous groundwater elevation data collected during the investigation of MPCA Leak #8898 and #3591 (located directly north of the site) also indicate a similar groundwater flow direction.

1.14 Describe any evidence of a fluctuating water table or a seasonal high water table (e.g., mottling, saturated soil color or gleyed soils, monitoring well observations). Also, from other sources of information describe the range of natural water table fluctuations in the area.

There is no evidence of a fluctuating water table.

Extent and Magnitude of Soil Contamination

1.15 Were soil borings conducted in or adjacent to the following source areas?

Dispensers	☒ *yes* ☐ *no* ☐ *not present*	Piping	☒ *yes* ☐ *no* ☐ *not present*
Transfer areas	☐ *yes* ☐ *no* ☒ *not present*	Remote fill pipes	☐ *yes* ☐ *no* ☒ *not present*
UST basins	☒ *yes* ☐ *no* ☐ *not present*	Valves	☐ *yes* ☐ *no* ☒ *not present*
AST basins	☐ *yes* ☐ *no* ☒ *not present*	Known spill areas	☐ *yes* ☐ *no* ☒ *not present*

1.16 Horizontal Definition: Based on requirements described in Guidance Document 4-01, were a sufficient number of soil borings completed to define the horizontal extent of soil contamination in all directions? ☐ *Yes* ☒ *No*

1.17 Vertical Definition: Based on requirements described in Guidance Document 4-01, were all soil borings completed to the required depth? ☐ *Yes* ☒ *No*

1.18 Site Stratigraphy: Based on requirements described in Guidance Document 4-01, was the stratigraphy boring completed to the required depth? ☐ *Yes* ☒ *No*

If you answered ***NO*** to any of the four previous questions, explain why the borings were not conducted in the required locations or to the required depths. See Guidance Document 4-01 *Soil and Ground Water Assessments Performed during Site Investigations* regarding exceptions and MPCA approval for depth of drilling.

DPRA concludes that the contamination detected at the Site during the UST removal and during the current site investigation is associated with the previously closed release (MPCA Leak #8898). Detailed rationale for this conclusion will be spelled out in the following sections; however, a brief summary of the rationale is as follows:

- *The USTs and dispensers were not operated after November 2004.*
- *Soil sampling conducted during the current investigation in the same locations as previous soil sample locations detected similar or lower hydrocarbon concentrations than those previously detected.*
- *No soil or groundwater sampling was previously conducted directly beneath the UST basin during the previous investigation. The primary reason that the contaminant concentrations detected in the soil directly beneath the USTs are higher than those previously detected is that this source area was not previously investigated.*
- *Groundwater sampling within the former UST basin in the current investigation detected hydrocarbon concentrations that were less than those previously detected at the site, despite the fact that new monitoring well MW-1B was installed in the worst-case area that was not previously investigated.*

Because MPCA Leak #8898 was previously investigated and closed in December 2004, DPRA concluded that additional investigation to define the "extent" of MPCA Leak #17354 is not necessary. The contamination that was assigned MPCA Leak #17354 appears to be the same contamination as detected during the previous release investigation of MPCA Leak #8898.

1.19 Describe the vertical and horizontal extent and magnitude of soil contamination based on field observations, soil headspace measurements (Table 2), and soil analytical results (Tables 3 and 4). If non-petroleum contaminants are present, discuss the possible sources of these compounds. Provide a map and two cross sections that illustrate both soil headspace and laboratory analytical results in Section 4. Include laboratory analytical reports and soil sampling methodology in Section 6.

Worst-Case Conditions:

Monitoring well MW-1B was advanced in the former tank basin, which was not previously sampled during the investigation of MPCA Leak #8898. Organic vapors were detected in soil samples collected from monitoring well MW-1B at concentrations ranging from 44 to 230 parts per million (ppm). These organic vapor concentrations extended to groundwater, which exists at an approximate depth of 62 feet.

GRO was detected in a soil sample collected at a depth of 58-60 feet, just above the water table, from monitoring well MW-1 at a concentration of 59.0 mg/kg. During the previous investigation in 1996, GRO concentrations at this depth ranged from 52.7 mg/kg to 3,570 mg/kg throughout the Site.

South of UST basin:

Soil probe SP-1 was advanced to a depth of 20 feet south of the former UST basin, as near as possible to the location of former monitoring well MW-4, advanced during the investigation of MPCA Leak #8898 in December 1996. During DPRA's investigation, organic vapors were detected in soil samples collected from soil probe SP-1 at concentrations ranging from 2.2 to 8.4 ppm. In comparison, organic vapors were detected in soil samples collected from monitoring well MW#4 at concentrations ranging from 50.3 to 4,231 ppm in the upper 20 feet of this boring in 1996.

Because the highest organic vapor readings in soil probe SP-1 were detected at a depth of 6-8 feet, DPRA submitted this soil sample to the laboratory for chemical analysis of BETX, GRO, and DRO. While no individual hydrocarbons were detected, GRO was detected at a concentration of 7.4 mg/kg. The only soil sample analyzed during the previous investigation from boring MW#4 was from a depth of 38-40 feet. Benzene and GRO were detected in that sample at concentrations of 10.6 mg/kg and 5,170 mg/kg, respectively. These analytical samples were not collected from the same depths, so a direct comparison of these results was not made.

Center Dispenser:

Soil probe SP-2 was advanced by DPRA to a depth of 20 feet just northeast of the center dispenser, as near as possible to the location of former soil boring SB#2, which was advanced in December 1996 during the investigation of MPCA Leak #8898. During DPRA's investigation, organic vapors were detected in soil samples collected from soil probe SP-2 at concentrations ranging from 5.2 to 162 ppm. In comparison, organic vapors were detected in soil samples collected from soil boring SB#2 at concentrations ranging from 733 to 2,924 ppm at the same depths in 1996.

DPRA submitted a soil sample from a depth of 5-7 feet from soil probe SP-2 to the laboratory for analysis of BETX, GRO, and DRO. Benzene was not detected in this sample, while GRO was detected at a concentration of

207 mg/kg. During the previous investigation in 1996, benzene and GRO were detected in soil boring SB#2 at a depth of 5-7 feet at concentrations of 15.0 mg/kg and 1,130 mg/kg, respectively.

Based upon these results, DPRA concluded that the contamination detected in soil borings MW-1B, SP-1, and SP-2 is the same contamination previously detected during the investigation of MPCA Leak #8898 in 1996. Additional definition of this soil contamination would be redundant.

1.20 Is contaminated soil in contact with ground water? ☒ *Yes* ☐ *No*

If *YES*, or if ground water contamination appears likely, then complete the **Aquifer Determination** section below.

If *NO*, complete question 1.21.

1.21 a) What is the distance separating the deepest contamination from the surface of the water table?
feet

b) Was this distance measured during site activities, referenced from geologic information, or estimated based on professional opinion during a site visit?

c) In your judgment, is there a sufficient distance separating the petroleum contaminated soil from the underlying aquifer to prevent contamination of the aquifer? ☐ *Yes* ☐ *No*

Please explain in detail. In your explanation, consider the site-specific geology, the data in this section, and the nature of the petroleum release (i.e., volume, age, released product type).

If *YES*, the **Aquifer Determination** is not necessary as part of the LSI.

If *NO*, complete the **Aquifer Determination** section below.

1.22 Is contaminated surface soil (0-2 feet) present at the site? ☐ *Yes* ☒ *No*

If *YES*, delineate the extent of contaminated surface soil, identify the extent(s) of contaminated surface soil on a Site Map, and propose a corrective action in Section 3 to mitigate the impacts. If borings were used to define the extent, complete Table 5. See Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil and Tank Removal Sampling* for more information regarding contaminated surface soil identification, delineation, and excavation.

Aquifer Determination

Complete this section if ground water has been contaminated or may become contaminated based on questions 1.20 and 1.21. Aquifer determination is made during the LSI. It is based upon the stratigraphy and a hydraulic conductivity measurement calculated from grain size analyses. The site stratigraphy gives the context within which the hydraulic conductivity measurement can be interpreted. Please refer to Guidance Document 4-01 *Soil and Ground Water Assessments Performed during Site Investigations* for methods and requirements. Provide the results of grain size analyses, calculations, and other information used for the determination of hydraulic conductivity in Section 6. Determine the aquifer thickness (b) from geologic logs of soil borings, water well logs, and available published information.

1.23 Calculate an average hydraulic conductivity value (K). K = *56.39 ft/day*

Indicate the calculation method (e.g. Hazen, Masch and Denny, Kozeny-Carmen, etc.).

The Hazen method was used with a coefficient of 40 for fine sands to calculate the hydraulic conductivity

1.24 Calculate a range for aquifer transmissivity (T) using the equation T = Kb, where b is the thickness of the aquifer.

T_{High} = ft^2/day

T_{Low} = *225.56 ft^2/day*

If the transmissivity of a contaminated hydrogeologic unit is greater than 50 ft^2/day, it is considered an aquifer for the purpose of the Petroleum Remediation Program. If the hydrogeologic unit meets the definition of an aquifer, then monitoring wells are required if any of the following conditions are met: 1) ground water is impacted at or above Minnesota Department of Health (MDH) Health Risk Limits (HRLs) or 1,000 µg/L GRO or DRO; 2) ground water is impacted below the HRLs but levels are likely to reach the HRLs; or 3) there is an insufficient distance separating the petroleum contaminated soil (or an impacted non-aquifer) from an underlying aquifer. If monitoring wells were installed complete the **Aquifer Characterization** section below as part of an RI.

Aquifer Characterization

1.25 Discuss the drilling and installation of monitoring wells including the rationale for their locations. Summarize their construction in Table 9. Attach boring logs, well construction diagrams, and well logs in Section 6.

Monitoring well MW-1B was completed to a depth of 66 feet in the former UST basin to evaluate worst-case groundwater conditions at the site, especially considering that this area was not previously investigated as part of MPCA Leak #8898.

1.26 Is there a clean or nearly clean (below HRLs) downgradient monitoring well located along the longitudinal axis of the contaminant plume (approximately 20 degrees plus or minus the axis)? ☐ *Yes* ☒ *No*

1.27 Is there a worst case well completed through the source area(s) of the release? ☒ *Yes* ☐ *No*

If you answered ***NO*** to any of the above two questions, please explain why a well was not completed in the required location(s).

MPCA Leak #8898 was closed at the subject property with a substantial amount of groundwater contamination in place. The contaminant concentrations currently detected in monitoring well MW-1B are less than dissolved contaminant concentrations detected as part of the investigation of MPCA Leak #8898, despite being installed in a worst-case location that was not previously investigated. Once DPRA concluded that we were not detecting anything new, additional groundwater investigation was redundant.

1.28 Provide an estimate of the longitudinal length of the dissolved contaminant plume: *150* feet

This estimate is based upon a file review of MPCA Leak #8898.

1. 29 Calculate ground water flow velocity (based on Darcy's Law) using the average hydraulic conductivity (K), average horizontal hydraulic gradient (dh/dl), and effective porosity (n). Provide documentation and show calculations in Section 6.

Hydraulic conductivity (K) = *56.4* ft/day
(Method if different than that used in 1.23: *n/a*)
Porosity (n) = *0.20*
Average horizontal gradient (dh/dl) = *0.002* (unitless) *(based upon #8898 file review)*
Calculated ground water velocity (v) = *0.56* ft/day

1.30 Using the calculated ground water flow velocity from question 1.29, is there a receptor(s) located within a five-year travel time from the source area? ☐ *Yes* ☒ *No*

If *YES*, describe the location and type of receptor(s).

1.31 Were any deep monitoring wells completed at the site? ☐ *Yes* ☒ *No*

If *YES*, list them and indicate their depths:

Contact the MPCA project hydrologist before installing a deep monitoring well. A deep monitoring well **may** be necessary if: 1) contamination exists more than 10 feet below the water table or 2) the impacted aquifer is a drinking water aquifer or is hydraulically connected to the aquifer(s) presently used by a water supply well located within 500 feet of the release source.

If contamination is present at depth in the aquifer or in deeper aquifers, additional deep wells may be required. Provide the following information if deep wells were installed:

Vertical gradient (dv/dl)
Inferred ground water flow direction

Provide the following information for the deep aquifer unit if it appears to be hydrogeologically distinct from the upper unit.

Porosity (n):
Hydraulic conductivity (K) ft/day

Submit this RI report after completing a minimum of *two quarterly sampling events*. Quarterly ground water monitoring and sampling should continue until MPCA response is received.

Extent and Magnitude of Ground Water Contamination

1.32 Describe the extent and magnitude of ground water contamination based on the analytical results of samples collected as part of an LSI (Tables 6, 7, and 8) and, if applicable, monitoring well samples collected as part of an RI (Tables 10, 11, and 12). Provide Site Maps that illustrate both the laboratory analytical results and, if applicable, ground water gradients in Section 4.

During DPRA's current investigation, benzene was detected in the former tank basin in monitoring well MW-1B at a concentration of 484 micrograms per liter (µg/l).

On December 3, 2003, during the last groundwater monitoring event conducted at the Site for MPCA Leak #8898, benzene was detected in monitoring wells MW-3 and Former MW-4 at concentrations of 700 and 450 µg/l, respectively. Monitoring wells MW#3 and MW#4 were not located in the worst-case source area. Still, the benzene concentrations currently detected are not higher than those previously detected. Contaminants detected in the groundwater during the current investigation appear to be the same as those previously detected during the investigation of closed MPCA Leak #8898. Additional groundwater investigation and monitoring would be redundant.

1.33 If non-petroleum contaminants are present, discuss the possible sources of these compounds.

1.34 Provide a discussion on QA/QC, including information on the samples collected and laboratory analyses performed. Include laboratory analytical reports and ground water sampling methodology in Section 6.

Groundwater sample MW-1B was collected with a disposable bailer using neoprene gloves and submitted to a certified laboratory in appropriately sealed sample bottles provided by the laboratory.

1.35 Laboratory certification number: *027-053-137*

Evaluation of Natural Attenuation

Refer to the Guidance Document 4-03 *Assessment of Natural Attenuation at Petroleum Release Sites.* **Note**: Evaluation of natural attenuation is not required unless requested by MPCA staff.

1.36 Discuss the results of the natural attenuation assessment (Table 13). Specifically, compare the concentrations of the inorganic parameters inside and outside the plume and whether the data indicate natural biodegradation is occurring at the site.

1.37 If active remediation is anticipated, discuss reasons why natural attenuation (including biodegradation) can not adequately remediate the contaminants to acceptable risk levels.

Extent and Recovery of Free Product

If free product is encountered during the investigation, include Guidance Document 2-03 *Free Product Recovery Report Worksheet* in Section 6. See Guidance Document 2-02 *Free Product: Evaluation and Recovery* for additional information.

1.38 If free product was encountered during the site investigation, describe the work completed to delineate the extent of the free product zone and what efforts were or are being completed to recover it. Tabulate the volume of product recovered in Table 14. Illustrate the estimated horizontal extent of the free product zone on a Site Map in Section 4.

Section 2: Risk Assessment

Well Receptors

List all properties located within 500 feet of the site in Table 15. Identify all properties listed in Table 15 on the Potential Receptor Map in Section 4.

List all wells located within 500 feet of the site and any municipal or industrial wells within ½ mile in Table 16. All water wells within 500 feet of the release source must be listed even if construction information was not obtained or available. Include all available water supply well logs obtained from Minnesota Geological Survey, MDH, drillers, or county well management authorities, and any other well construction documentation in Section 6. Identify all wells listed in Table 16 on the Well Receptor Survey Map in Section 4.

2.1 Were all property owners within 500 feet of the site successfully contacted to determine if water wells are present? ☐ *Yes* ☒ *No*

If *NO*, please explain.

On November 12, 2008, a door-to-door survey of all properties within 500 feet of the Site was conducted. If nobody answered the door, a postcard was left at the property. The Potential Receptor Map is attached as Figure 4.

2.2 Discuss any physical limitation to the inspection of properties within the 500-foot survey radius.

Not all postcards were returned.

2.3 Discuss the results of the ground water receptor survey. Comment on the risks to water supply wells identified within 500 feet from the site as well as the risk posed by or to any municipal or industrial wells found within ½ mile. Specifically indicate whether identified water supply wells use the impacted aquifer. (Note: an impacted aquifer separated from another aquifer by a clay lens may not be considered a separate aquifer).

One water supply well was identified approximately 550 feet north of the Site. It is a domestic well (unique #200105) located upgradient from the Site. This well utilizes the St. Peter bedrock aquifer encountered at an approximate depth of 177 feet. According to the boring log, there are clay, sandstone, limestone, and shale layers between the St. Peter bedrock aquifer and the impacted aquifer. This well is depicted on Figure 4.

One industrial well (unique# 200102) was identified approximately 2,500 feet northwest and upgradient of the Site. This well utilizes the Platteville bedrock aquifer encountered at an approximate depth of 144 feet. According to that well's boring log, there are two approximately 30-foot thick clay layers between the Platteville bedrock aquifer and the impacted aquifer.

The groundwater contamination at the Site does not appear to pose a risk to surrounding water supply wells.

2.4 If water samples were collected from nearby water wells, discuss the analytical results below and tabulate them in Tables 11 and 12.

2.5 Is municipal water available in the area? ☒ *Yes* ☐ *No*

2.6 Based on the public water supply risk assessment, is the site located in a Source Water Assessment Area or Drinking Water Supply Management Area (see Guidance Document 4-18 *Public Water Supply Risk Assessment at Petroleum Remediation Sites*)? ☐ *Yes* ☒ *No*

If *YES*, provide the name of the area and include the required documentation in Section 6.

2.7 Are there any plans for ground water development in the impacted aquifer within ½ mile of the site or one mile downgradient of the site if the aquifer is fractured? ☐ *Yes* ☒ *No*

Provide the name, title and telephone number of the person that was contacted for this information.

Name: *Tony Thury* Title: *Utilities Supervisor* Telephone: *651-792-7053*

Surface Water Receptors

2.8 Are there any surface waters or wetlands located within ¼ mile of the site? ☐ *Yes* ☒ *No*

If *YES*, list them along with their distance and direction from the site in Table 17.

Also, list below any potential pathways such as ditches, drain tiles, storm sewers, etc., that may lead to the identified surface water features.

2.9 If surface water is present downgradient of the site, is there a clean downgradient soil boring or monitoring well located between the site and the surface water?
☐ *Yes*
☐ *No*
☒ *NA*

If *YES*, identify the clean downgradient boring or well, distance to the surface water feature, and discuss the contamination risk potential.

If *NO*, and ground water from a downgradient boring or well is contaminated, we assume that contamination discharges to the surface water. Therefore, provide the following information:

Name of receiving water:	
Plume width, (W):	feet
Plume thickness, (H):	feet
Hydraulic conductivity, (K):	gal/day/ft^2
Horizontal gradient, (dh/dl):	(unitless)
Discharge, (Q) = H*W*K*(dh/dl)/1440	gal/min

Utilities and Subsurface Structures

2.10 Compare the relationship between the distribution of contaminant phases (soil, ground water, vapor, and non-aqueous phase liquid) to the location of all underground utility lines, utility service lines, and nearby basements and sumps. Include all identified utilities in Table 18. Show all utilities, utility service lines, and other subsurface structures on applicable cross sections in Section 4.

Soil, groundwater, and soil-gas contamination at the Site is concentrated in the area of the former tank basin, located along the east side of the property. No underground utilities were identified along the east side of the Site. Larsen Motors, an automotive repair business since at least 1957, is located directly east of the Site at 1088 County Road B. This building does not have a basement or sump. No other buildings within 250 feet of the Site have basements and/or sumps.

2.11 Is there any evidence that free product or contaminated ground water may be traveling off site within the utility corridors? ☐ *Yes* ☒ *No*

If *YES*, a utility backfill investigation is required (refer to Guidance Document 4-01). Discuss the investigation rationale and results.

2.12 Is there a history of field-detectable vapor impacts in the vicinity of the site? ☐ *Yes* ☒ *No*

If *YES*, describe:

Conduct a vapor survey if the vapor receptor survey and risk evaluation indicate a risk of vapor impact or an infiltration risk from contaminated ground water or free product to utilities or subsurface structures. See Guidance Document 4-02 *Potential Receptor Surveys and Risk Evaluation Procedures at Petroleum Release Sites*. Identify all vapor monitoring locations on the Vapor Survey Map by labeling each monitoring location with a number that corresponds to vapor monitoring locations listed in Table 19. Vapor monitoring methods, including instruments used, must be discussed in Section 6.

2.13 Provide a detailed description of each vapor monitoring location and indicate if vapors were detected.

The storm sewer catch basins and man-hole access covers identified within 500 feet of the Site during the potential receptor survey were screened for organic vapors using a photo-ionization detector (PID). No organic vapors were detected during the potential receptor survey. The storm sewer catch basin and man-hole access cover vapor monitoring locations are depicted on Figure 4.

Vapor Intrusion Receptors

When vapor intrusion receptors are present, a preliminary vapor intrusion risk assessment must be completed (see Guidance Document 4-01a *Vapor Intrusion Assessments Performed during Site Investigations*). If completed, include the Vapor Intrusion Assessment Map in Section 4 that identifies all vapor intrusion samples and receptors at and within the 100-foot preliminary assessment area.

2.14 Was a preliminary vapor intrusion risk assessment completed? ☒ *Yes* ☐ *No*

If ***NO***, explain why.

2.15 Do any of the soil gas samples from locations near inhabited buildings exceed the ISVs by ten times (10X) for petroleum related compounds? ☒ *Yes* ☐ *No*

If you answered ***YES***, is additional characterization of the vapor intrusion pathway needed for these buildings (e.g. sub-slab soil gas, an indoor building survey, or indoor air sampling)? **If *YES***, complete question 3.4. **If *NO***, explain why. ☒ *Yes* ☐ *No*

Several constituents were detected at concentrations greater than 100 times the ISVs in soil gas sample SG-4, collected from a depth of 8 feet within the former tank basin. As previously discussed, Larsen Motors is located east of the site, directly adjacent to the former UST basin. While there are several likely sources of petroleum within the Larsen Motors building, an indoor air survey would verify this fact, if necessary. Table 19 provides the soil gas sampling information and Table 20 provides the soil gas sampling results.

2.16 Have sufficient data been collected to propose a Conceptual Corrective Action Design for buildings that are likely to be impacted by petroleum vapors? ☐ *Yes* ☒ *No*

If *YES*, describe your justification for corrective action.

2.17 Based on the horizontal extent of impacted ground water or free product from the release, is additional soil gas sampling required beyond the 100-foot preliminary assessment area near inhabited buildings? ☐ *Yes* ☒ *No*

If *YES*, describe your proposal for additional vapor intrusion sampling.

If *NO*, explain why.

Additional soil gas samples to the north, south, and west of the Site are not required because the results of the preliminary assessment indicate that the potential risk of vapor migration toward receptors in these directions is low. The Larsen Motors building is located within 100 feet of the release area. DPRA does not recommend any additional soil-gas sampling associated with the Larsen Motors building due to the likelihood of many petroleum sources within that potential receptor.

2.18 Were recommended field sampling procedures and laboratory QA/QC from Guidance Document 4-01a followed? ☒ *Yes* ☐ *No*

If *NO*, explain why and discuss implications on data quality.

Site Conceptual Model Discussion

2.19 Provide a detailed site conceptual model (SCM). The SCM should integrate site-specific geology, hydrogeology, and the contaminant distribution with respect to identified exposure pathways (well receptors, surface water receptors, utilities and subsurface receptors, and vapor intrusion receptors). For additional information on SCM development, see Guidance Document 1-01 *Petroleum Remediation Program General Policy.*

The soil at the site is primarily sand and gravelly sand. No surface soil contamination was detected at the site. Groundwater at the site, which was encountered at an approximate depth of 62 feet, is located within this sand and meets the MPCA's definition of an aquifer. No receptors are currently using this impacted aquifer and the impacted aquifer is separated from lower drinking water aquifers by clay and shale layers. No groundwater or surface water receptors were identified within a five-year travel time of the site.

Operation of the USTs and dispensers ceased in November 2004, when the Jiffy Station closed. MPCA Leak #8898 was detected at the site in 1996, was previously investigated, and was closed by the MPCA in December 2004 with substantial soil and groundwater contamination remaining in place. After petroleum contamination was detected beneath the USTs during their removal in 2008, the MPCA opened up Leak #17354. To evaluate Leak #17354, DPRA installed a worst-case monitoring well and advanced two soil probes in previously investigated areas. We conclude that no new contamination exists at the site since Leak #8898 was closed. The only reason new contamination appeared to exist is that the previous investigation did not involve any sampling within the UST basin beneath the USTs (probably because the USTs were in place at that time). Further soil and groundwater investigation of this site would be redundant. DPRA recommends that the MPCA close Leak #17354.

Soil, groundwater, and soil gas contamination at the Site is concentrated in the area of the former tank basin, located along the east side of the property. No underground utilities were identified along the east side of the Site, indicating that no preferential contaminant migration pathways exist, but a building used as an automotive repair shop since 1957 is located directly adjacent to the former tank basin. This building does not have a basement or sump; however, there appears to be a possible risk of vapor migration to this building. An indoor air survey could be conducted to verify these sources, if necessary. Because this site is likely to have numerous petroleum sources over the past 50 years, DPRA does not recommend additional soil-gas sampling associated with this receptor. Soil-gas samples collected between the release area and other possible vapor receptors were less than the MPCA ISVs, indicating that additional vapor intrusion investigation for these receptors is not required.

2.20 Discuss any other site concerns not included in the above discussion

Wellington Management purchased this property after UST operation ceased and after the MPCA closed Leak #8898. The MPCA opened Leak #17354 based upon soil samples collected from directly beneath the USTs, in an area that was not previously investigated. Because the contamination detected during DPRA's investigation appears to be associated with Leak #8898, Wellington Management should not be listed as the responsible party for the contamination at this site. Please note that Wellington, as the current property owner, is still likely to be willing to voluntarily conduct additional activities that may be required.

Section 3: Site Management Decision

The site management decision should be based on the Program's objectives described in Guidance Document 1-01 *Petroleum Remediation Program General Policy.*

3.1 Recommendation for site:

- ☒ site closure **(Leak #17354)**
- ☐ additional ground water monitoring
- ☐ additional field-detectable vapor monitoring
- ☒ additional soil gas/vapor intrusion investigation **(Leak #8898)**
- ☐ corrective action

3.2 If closure is recommended, summarize significant investigative events and describe how site-specific exposure pathways identified in question 2.19 have been adequately addressed.

Soil and groundwater analytical results for the current investigation show lower contaminant concentrations than the soil and groundwater analytical results for the previous investigation. The contamination detected in the soil and groundwater at the Site during the current investigation appears to be associated with the previously-closed release (Leak #8898). Leak #17354 should be closed.

No surface soil contamination exists and no utilities or other preferential pathways are located near the contaminated soil. While the impacted groundwater is an aquifer, monitoring of the dissolved contamination has already been conducted for nearly ten years. No groundwater receptors exist and the uppermost drinking water aquifer is separated from the impacted aquifer by clay and shale layers. No further subsurface investigation of the soil and groundwater contamination is necessary.

One building, used for an automotive repair shop for over 50 years, is located directly adjacent to the former UST basin. The worst-case soil-gas sample in this location exhibited contaminant concentrations exceeding the acute ISVs. DPRA does not recommend additional soil-gas sampling due to the likely petroleum sources that have existed in the adjacent building for the past 50 years; however, an indoor air survey might be considered to verify this. Because MPCA Leak #8898 was closed prior to the development of vapor intrusion guidance documents, this release should be re-opened if additional activities are required..

Soil-gas samples collected between the source area and other surrounding vapor receptors were less than the MPCA ISVs, indicating that further vapor intrusion evaluation in these directions is not necessary.

3.3 If additional ground water or field-detectable vapor monitoring is recommended, indicate the proposed monitoring locations, sampling frequency, and target analytes. Conduct quarterly ground water monitoring and sampling until the MPCA responds to this report.

3.4 If additional vapor intrusion investigation is recommended, provide details of proposed activities such as completing an indoor building survey, sub-slab vapor sampling, indoor air sampling, or locations for additional soil gas sampling.

Based upon the soil-gas results in the former UST basin, DPRA recommends that the MPCA consider an indoor building survey at the Larsen Motors automotive repair shop, located directly east of the former tank basin. Because this facility has been used as an automotive repair shop for over 50 years, it is highly likely that several sources of petroleum have existed within the structure, making an indoor air survey unnecessary. As previously discussed, any additional work that the MPCA requests should be conducted under MPCA Leak #8898.

3.5 If corrective action is recommended, provide a conceptual approach by completing Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet* and include in Section 6. See Guidance Document 4-10 *Elements of the Corrective Action Design* for more information on the corrective action design process and other requirements. (Note: MPCA staff will review this report at a higher-than-normal priority to determine if corrective action is required.)

Section 4: Figures

Attach the following figures in order of discussion in the text. All figures must include a north arrow, scale, and legend. Approximate scales are not acceptable.

☒ Site Location Map using a U.S. Geological Survey 7.5 minute quadrangle map.

☒ Aerial photos and Sanborn Fire Insurance Maps™ (if available) of the immediate area.

☒ One or more Site Maps showing:

- Structures
- Locations and depths of on-site buried utilities
- All past and present petroleum storage tanks, piping, dispensers, and transfer areas
- Extent of soil excavation
- Boring and well locations (including any drinking water wells on site)
- Horizontal extent of soil contamination
- Extent of contaminated surface soil
- Horizontal extent of ground water contamination
- Horizontal extent of NAPL
- Location of end points for all geologic cross sections
- Potential pathways that lead to surface water features within ¼ mile of the site

Distinguish sequential elements of investigations by dates, symbols, etc. in the key.

☒ At least two (2) geologic cross sections depicting stratigraphy, soil headspace results, laboratory analytical results, water table elevation, and underground utilities.
One cross section was provided since only three soil borings were advanced during the current investigation.

☐ Ground water gradient contour maps (for sites with monitoring wells) for each gauging event.
(see file for Leak #8898)

☒ Potential Receptor Map (scale 1 inch = 50 to 100 feet), centered on the release area, showing property boundaries and roads, and potential receptors such as buildings, water wells, underground utilities (distinguish between water, storm sewer, and sanitary sewer), surface waters, ditches, and any other pertinent items within 500 feet of the release source.

☒ Well Receptor Survey Map showing ½-mile radius, 500-foot radius, water supply wells, and other potential sources of contamination on a U.S. Geological Survey 7.5 minute quadrangle map. *(NOTE: Included on Figure 4 Potential Receptor Map)*

☐ Vapor Survey Map showing utilities and buildings with basements and monitoring locations within 500 feet (if a survey was required). If the survey area has been expanded beyond 500 feet, adjust the map to encompass the entire surveyed area.

☒ Vapor Intrusion Assessment Map showing all vapor intrusion samples and receptors at and within the 100-foot preliminary assessment area. If the assessment area has been expanded beyond 100 feet, adjust the map to encompass the entire assessment area.
NOTE: Included on Figure 2 Site Map.

Section 5: Tables

Attached to report

Section 6: Appendices

Attach all required or applicable appendices in the following order. Indicate those appendices that are included in this report by marking the check box. All reproduced data must be legible. Reports missing required documentation are subject to rejection.

☒	*Appendix A*	Guidance Document 3-02 *General Excavation Report Worksheet.*
☒	*Appendix B*	Guidance Document 1-03a *Spatial Data Reporting Form.*
☒	*Appendix C*	Guidance Document 2-05 *Release Information Worksheet.*
☐	*Appendix D*	Copies of applicable Phase I and Phase II reports or supplemental sampling information such as aboveground storage tank (AST) upgrading and decommissioning sampling.
☒	*Appendix E*	Geologic Logs of Soil Borings, Including Construction Diagrams of Temporary and Permanent Wells, and Copies of the Minnesota Department of Health Well Record.
☒	*Appendix F*	Laboratory Analytical Reports for Soil, Soil Gas/Sub-slab Vapor/Indoor Air/Ambient Air, and Ground Water. Include laboratory QA/QC data, Chromatograms, and laboratory certification number.
☒	*Appendix G*	Methodologies and Procedures, Including Field Screening of Soil, Other Field Analyses, Soil Boring, Soil Sampling, Soil Gas/Sub-Slab/Indoor air/Ambient Air Sampling, Vapor Monitoring, Well Installation, and Water Sampling.
☒	*Appendix H*	Field or sampling data sheets (sampling forms, field crew notes, etc.).
☒	*Appendix I*	Grain Size Analysis, Hydraulic Conductivity Measurements, and Other Calculations.
☐	*Appendix J*	Guidance Document 2-03 *Free Product Recovery Report Worksheet.*
☒	*Appendix K*	Copies of Water Supply Well Logs with Legible Unique Numbers.
☐	*Appendix L*	Results of the Public Water Supply Risk Assessment. If the site is within a designated source water protection area, include a copy of the MDH Source Water Assessment and a map from the MPCA Petroleum Remediation Program Maps Online website.
☐	*Appendix M*	Guidance Document 4-19 *Conceptual Corrective Action Design Worksheet.*

Web pages and phone numbers	
MPCA staff	http://www.pca.state.mn.us/pca/staff/index.cfm
MPCA toll free	**1-800-657-3864**
Petroleum Remediation Program web page	http://www.pca.state.mn.us/programs/lust_p.html
MPCA Info. Request	http://www.pca.state.mn.us/about/inforequest.html
MPCA VIC program	http://www.pca.state.mn.us/cleanup/vic.html
MPCA Petroleum Brownfields Program.	http://www.pca.state.mn.us/programs/vpic_p.html
MPCA SRS guidance documents	http://www.pca.state.mn.us/cleanup/riskbasedoc.html http://www.pca.state.mn.us/cleanup/riskbasedoc.html#surfacewaterpathway
MDH HRLs	http://www.health.state.mn.us/divs/eh/groundwater/hrltable.html
MDH DW hotline	**1-800-818-9318**
Petrofund Web Page	http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=-536881377&agency=Commerce
Petrofund Phone	**651-215-1775 or 1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**

TABLE 2

DPRA
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PID MEASUREMENTS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

	Sample Location:	MW-1B	SP-1	MW#4	SP-2	SB#2
Depth (ft.)	Date:	11/17/2008	11/17/2008	12/20/1996	11/17/2008	12/19/1996
0-2		62	0.0	---	5.2	---
2-4		---	0.0	---	111	---
4-6		132	3.1	50.3	58	733
6-8		172	8.4	238	162	2,924
8-10		110	3.2	340	152	---
10-12		66	4.0	229	36	---
12-14		194	5.2	---	149	1,449
14-16		172	3.8	210	54	1,630
16-18		178	2.2	4231	5.4	---
18-20		230	2.6	23.2	52	1,791
20-22		---		3,001		---
22-24		220		---		174
24-26		205		95.5		270
26-28		210		35.2		325
28-30		220		57.0		187
30-32		205		---		---
32-34		195		4,052		---
34-36		200		5,025		113
36-38		205		6,518		1,108
38-40		210		8,580		2,115
40-42		182		---		---
42-44		58		8,320		2,218
44-46		44		8,182		415
46-48		---		7,860		161
48-50		198		6,871		175
50-52		190		---		---
52-54		58		7,126		396
54-56		132		1,220		69.2
56-58		190		1,287		1,620
58-60		132		1,241		1,924
60-62		62		---		---
62-64		50		199		1,825
64-66		71		1,012		1,932
66-68				140		
68-70				23.2		

PID = Photoionization detector
--- = Not measured
All results in parts per million (ppm).
Shaded cells indicate PID measurements from previous investigation

TABLE 2

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PID MEASUREMENTS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

	Sample Location:	MW-1B	SP-1	MW#4	SP-2	SB#2
Depth (ft.)	Date:	11/17/2008	11/17/2008	12/20/1996	11/17/2008	12/19/1996
0-2		62	0.0	---	5.2	---
2-4		---	0.0	---	111	---
4-6		132	3.1	50.3	58	733
6-8		172	8.4	238	162	2,924
8-10		110	3.2	340	152	---
10-12		66	4.0	229	36	---
12-14		194	5.2	---	149	1,449
14-16		172	3.8	210	54	1,630
16-18		178	2.2	4231	5.4	---
18-20		230	2.6	23.2	52	1,791
20-22		---		3,001		---
22-24		220		---		174
24-26		205		95.5		270
26-28		210		35.2		325
28-30		220		57.0		187
30-32		205		---		---
32-34		195		4,052		---
34-36		200		5,025		113
36-38		205		6,518		1,108
38-40		210		8,580		2,115
40-42		182		---		---
42-44		58		8,320		2,218
44-46		44		8,182		415
46-48		---		7,860		161
48-50		198		6,871		175
50-52		190		---		---
52-54		58		7,126		396
54-56		132		1,220		69.2
56-58		190		1,287		1,620
58-60		132		1,241		1,924
60-62		62		---		---
62-64		50		199		1,825
64-66		71		1,012		1,932
66-68				140		
68-70				23.2		

PID = Photoionization detector
--- = Not measured
All results in parts per million (ppm).
Shaded cells indicate PID measurements from Leak #8898 investigation.

TABLE 3

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NON-AQUEOUS ANALYTICAL RESULTS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota.

Sample	Sample Date	Sample Depth (feet)	Benzene (mg/kg)	Ethyl-Benzene (mg/kg)	Toluene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	GRO (mg/kg)	DRO (mg/kg)
MW-1B	11/17/08	28-30	<0.052	1.2	0.13	7.4	<0.21	107	20.0
MW-1B	11/17/08	58-60	<0.055	0.25	<0.055	0.76	<0.22	59.0	10.8
SP-1	11/17/08	6-8	<0.061	<0.061	<0.061	<0.18	<0.24	7.4	<10.3
MW#4	12/20/96	38-40	10.6	166	210	721	NA	5,170	81.1
SP-2	11/17/08	5-7	<0.058	4.7	<0.058	17.3	<2.3	207	19.0
SB#2	12/20/96	5-7	15.0	32.7	57.2	107	8.33	1,130	<4.0

mg/kg = milligrams per killogram
MTBE = methyl-tert-butyl ether
GRO = gasoline range organics
DRO = diesel range organics
Shaded cells indicate sampling results from Leak #8898 investigation
* All lab types are fixed

TABLE 9

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MONITORING WELL CONSTRUCTION SUMMARY

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Monitoring Well	Unique Well Number	Date Installed	Top of Casing (feet)*	Ground Surface (feet)*	Top of Well Screen (feet)*	Bottom of Well Screen (feet)*	Screened Interval (feet)*	Bottom of Well (feet)*
MW-1B	764235	11/17/08	104.48	100.34	48.48	38.48	38.48-48.48	38.48

* Referenced to benchmark elevation of 100.00 feet at MW-3 on the NE corner of the site.

TABLE 10

GROUNDWATER ELEVATIONS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Well	Date Measured	Top of Casing Elevation [1] (feet)	Depth to Groundwater [2] (feet)	Groundwater Elevation (feet)	Water Level Above Screen Y/N
MW-1B	11/19/08	104.48	61.92	42.56	N

(1) Referenced to benchmark elevation of 100.00 feet at MW-3 on the NE corner of the Site.

(2) Measured from top of well casing.

TABLE 11

DPRA
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AQUEOUS ANALYTICAL RESULTS (PETROLEUM)

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample	Sample Date	Benzene (µg/l)	Ethyl-Benzene (µg/l)	Toluene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)	GRO (µg/l)	DRO (µg/l)
MW-1B	11/18/08	484	810	345	2,210	<5.0	11,800	4,400
MW-3	05/21/02	1,200	750	810	2,140	18	11,000	NA
MW-3	11/25/02	900	790	1,500	2,450	ND	11,000	NA
MW-3	05/22/03	1,200	860	3,600	3,290	ND	14,000	NA
MW-3	12/03/03	700	760	1,200	3,010	ND	9,500	NA
Former MW-4	05/21/02	1,400	630	340	1,530	ND	9,600	NA
Former MW-4	11/25/02	690	600	240	1,560	ND	8,200	NA
Former MW-4	05/22/03	710	560	210	940	ND	5,200	NA
Former MW-4	12/03/03	450	410	200	860	7.7	7,500	NA
	HRL	**10**	**700**	**1,000**	**10,000**	**NE**	**NE**	**NE**

µg/l	Micrograms per liter
MTBE	Methyl-tertiary butyl ether
GRO	Gasoline-range organics
DRO	Diesel-range organics
HRL	Minnesota Department of Health - Health Risk Limit
<	Less than Report Limit
ND	Not detected, no report limit was provided in previous investigation data tables
NA	Not analyzed

Shaded cells indicate data from Leak #8898 investigation

* All lab types are fixed

TABLE 12

AQUEOUS ANALYTICAL RESULTS - OTHER VOCs

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample	Sample Date	n-Butyl-benzene (µg/l)	sec-Butyl-benzene (µg/l)	Isopropyl-benzene (µg/l)	p-Isopropyl-toluene (µg/l)	Napthalene (µg/l)	n-Propyl-benzene (µg/l)	1,2,4-Tri methyl-benzene (µg/l)	1,3,5-Tri methyl-benzene (µg/l)
MW-1B	11/18/08	57.4	28.4	134	134	428	154	757	202
	HRL	**NE**	**NE**	**NE**	**NE**	**300**	**NE**	**NE**	**NE**

µg/l Micrograms per liter
HRL Minnesota Department of Health - Health Risk Limit
NE Not established
* All lab types are fixed

TABLE 14

Properties Located Within 500 Feet of the Release Source

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

ID # (From Map)	Property Address	Water Well (Y or N)	How Determined*	Well Use**	Public Water Supply (Y or N)	Confirmed By City (Y or N)	Basement Or Sumps (Y or N)	Possible Petroleum Sources (Y or N)	Residential or Commercial?	Comments (including property use)
Site	2154 Lexington Ave N	N	PC	NA		Y		Y	Commercial	
1	2150 Lexington Ave N	N	Postcard	NA	Y	Y	N/N	N	Commercial	Teacher Federal Credit Union
2	2120 Lexington Ave N	N	PC	NA	Y	Y	Y/N	N	Residential	
3	1065 Burke Ave	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
4	1059 Burke Ave	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
5	1051 Burke Ave	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
6	1047 Burke Ave	Sealed	PC	NA	Y	Y	Y/Y	N	Residential	Korf Residence
7	1088 County Road B	N	PC	NA	Y	Y	N/N	Y	Commercial	Larsen Motors Auto Repair
8	1076 County Road B	N	PC	NA	Y	Y	N/N	N	Commercial	MN Low Vision Store
9	1066 County Road B	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
10	1060 County Road B	Sealed	Postcard	NA	Y	Y	Y/N	N	Residential	Dec Residence
11	1052 County Road B	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
12	1044 County Road B	Sealed	Postcard	NA	Y	Y	Y/N	N	Residential	Lowe Residence
13	1043 County Road B	Sealed	Postcard	NA	Y	Y	N/N	N	Residential	Radatz Residence
14	1045 County Road B	Sealed	PC	NA	Y	Y	Y/N	N	Residential	
15	1047 County Road B	Sealed	Postcard	NA	Y	Y	Y/Y	N	Residential	Bolek Residence
16	1061 County Road B	Sealed	Postcard	NA	Y	Y	Y/N	N	Residential	
17	1065 County Road B	N	PC	NA	Y	Y	Y/N	N	Residential	
18	2172 Lexington Ave N	N	PC	NA	Y	Y	N/N	Y	Commercial	SA Gas Station
19	2194 Lexington Ave N	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	Lexington Crt Apts
20	2201 Lexington Ave N	N	Postcard	NA	Y	Y	Y/Y	N	Commercial	State Farm Insurance
21	1119 Lexington Ave N	*Resident not willing to provide information								
22	1125 Lexington Ave N	N	Assumed/VO	NA	Y		Y/?	N	Residential	
23	1136 Lexington Ave N	N	Assumed/VO	NA	Y		Y/?	N	Residential	
24	1130 Lexington Ave N	Sealed	PC	NA	Y		Y/Y	N	Residential	

TABLE 14

DPRA
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Properties Located Within 500 Feet of the Release Source

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

ID # (From Map)	Property Address	Water Well (Y or N)	How Determined*	Well Use**	Public Water Supply (Y or N)	Confirmed By City (Y or N)	Basement Or Sumps (Y or N)	Possible Petroleum Sources (Y or N)	Residential or Commercial?	Comments (including property use)
25	1126 Sandhurst Dr	Sealed	PC	NA	Y	Y	Y/Y	N	Residential	Mergens Residence
26	2167 Lexington Ave N	N	Assumed	NA	Y	Y	N/N	N	Commercial	TCF Bank
27	1123 County Road B	N	PC	NA	Y	Y	N/?	N	Commercial	Cheetah Auto Supply
28	1125 County Road B	N	Assumed	NA	Y		N/N	N	Commercial	Stephen's Salon
29	1131 County Road B	N	PC	NA	Y	Y	Y/N	N	Residential	
30	1139 County Road B	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	
31	1145 County Road B	N	Assumed/VO	NA	Y	Y	Y/?	N	Residential	

**E.g., visual observation, personal contact, telephone, returned postcard, assumed (i.e., no postcard returned).*
***E.g., domestic, industrial, municipal, livestock, lawn/gardening, irrigation.*
NA = Not applicable
PC = Personal Contact
VO = Visual Observation

TABLE 15

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Water Supply Wells Located Within 500 Feet of the
Release Source and Municipal or Industrial Wells Within ½ Mile

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Unique Well #	Ground Elevation	Total Depth (ft)	Base of Casing (ft)	Static Elevation	Aquifer	Use	Owner	Distance & Direction from Source
200105	945	325	192	108	St. Peter	Domestic	Spetz and Berg	500 feet North
200102	945	154	144	92	Platteville	Industrial	Conning House	2,500 feet NW

DPRA

Table 19
SOIL GAS SAMPLING INFORMATION

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Site Name	Former Jiffy Gas Station	Staff:	Curtis Pranger
Address	2154 Lexington Avenue North	Date	11/17/2008
City/State	Roseville, MN	Temperature (°F)	25
Weather Conditions :	Partly Cloudy	4 ml per foot of 1/8" tubing	9.65 ml per foot of 1/2" OD tubing

Sample Name	Method Temp./Perm.	Installer	Sample Depth	Reason	Tubing Diameter (inches)	Tubing Length (ft)	Tubing Volume (ml)	Volume Extracted (ml)	Extraction Method	Pre Sample Summa Can Vac. (in. Hg)	Sample Duration (min)	Post Sample Summa Can Vac. (in. Hg)	PID Reading (ppm)	Comments
SG-1	Temp	Bergerson Caswell	4'	Site definition	0.5	5	48	240	Syringe	-29	2 min	0	0	9:00
SG-2	Temp	Bergerson Caswell	4'	Site definition	0.5	6	58	240	Syringe	-29	30 sec	0	0	9:45
SG-3	Temp	Bergerson Caswell	4'	Site definition	0.5	6	58	240	Syringe	-29	35 sec	0	0	10:10
SG-4	Temp	Bergerson Caswell	8'	Worst Case	0.5	10	97	240	Syringe	-28	12 sec	0	120	10:30

TABLE 20

SOIL GAS ANALYTICAL RESULTS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample Location:	SG-1	SG-2	SG-3	SG-4		
Date:	11/17/2008	11/17/2008	11/17/2008	11/17/2008		
Depth (feet):	4	4	4	8		
PID (ppm):	0	0	0	120		
Compound	Result	Result	Result	Result	10X ISVs	100X ISVs
1,1,1-Trichloroethane	<1.4	8.4	<1.4	<3,770	10,000	100,000
1,1,2,2-Tetrachloroethane	<1.8	<1.8	<1.8	<4,800	2	20
1,1,2-Trichloroethane	<1.4	<1.4	<1.4	<3,770	6	60
1,1,2-Trichlorotrifluoroethane	44.5	6.6	<2.0	<5,490	300,000	3,000,000
1,1-Dichloroethane	<1.0	1.8	<1.0	<2,810	5,000	50,000
1,1-Dichloroethene	<1.0	<1.0	<1.0	<2,780	2,000	20,000
1,2,4-Trichlorobenzene	<1.2	<1.2	<1.2	<3,400	40	400
1,2,4-Trimethylbenzene	12.7	<3.1	4.9	**135,000**	70	700
1,2-Dibromoethane (EDB)	<2.0	<2.0	<2.0	<5,490	0.2	2
1,2-Dichlorobenzene	<1.5	<1.5	<1.5	<4,120	2,000	20,000
1,2-Dichloroethane	<1.0	<1.0	<1.0	<2,810	4	40
1,2-Dichloropropane	<1.2	<1.2	<1.2	<3,220	40	400
1,3,5-Trimethylbenzene	3.2	<3.1	<3.1	**61,500**	60	600
1,3-Butadiene	<0.56	<0.56	<0.56	<1,540	3	30
1,3-Dichlorobenzene	<1.5	<1.5	<1.5	<4,120	1,000	10,000
1,4-Dichlorobenzene	<1.5	<1.5	<1.5	<4,120	600	6,000
2-Butanone (MEK)	42.3	8.6	5.3	<2,060	50,000	500,000
2-Hexanone	<1.0	<1.0	<1.0	<2,850	NA	NA
2-Propanol	<3.1	<3.1	<3.1	<8,580	70,000	700,000
4-Ethyltoluene	6.1	<3.1	<3.1	98,700	NA	NA
4-Methyl-2-pentanone (MIBK)	<1.0	<1.0	<1.0	<2,850	30,000	300,000
Acetone	191	35	17.9	<1,650	4,000	40,000
Benzene	<0.81	<0.81	3.4	**18,500,000**	45	450
Bromodichloromethane	<1.8	<1.8	<1.8	<4,800	6	60
Bromoform	<2.6	<2.6	<2.6	<7,200	90	900
Bromomethane	<0.99	<0.99	<0.99	<2,710	50	500
Carbon disulfide	12.4	2.7	1.1	<2,160	7,000	70,000
Carbon tetrachloride	<1.6	<1.6	<1.6	<4,460	7	70
Chlorobenzene	<1.2	<1.2	<1.2	<3,220	500	5,000
Chloroethane	<0.68	<0.68	<0.68	<1,850	100,000	1,000,000
Chloroform	<1.2	<1.2	<1.2	<3,400	1,000	10,000
Chloromethane	<0.52	<0.52	<0.52	<1,440	60	600
cis-1,2-Dichloroethene	<1.0	<1.0	<1.0	<2,780	400	4,000
cis-1,3-Dichloropropene	<1.2	<1.2	<1.2	<3,160	30	300
Cyclohexane	34,200	130	3.9	**110,000,000**	60,000	600,000
Dibromochloromethane	<2.1	<2.1	<2.1	<5,830	4	40
Dichlorodifluoromethane	13.2	<1.2	3.3	<3,430	2,000	20,000
Dichlorotetrafluoroethane	<1.8	<1.8	<1.8	<4,800	NA	NA
Ethanol	33	4.8	2.5	<6,520	150,000	1,500,000
Ethyl acetate	<0.91	<0.91	<0.91	<2,500	30,000	300,000
Ethylbenzene	<1.1	1.2	2.6	**7,970,000**	10,000	100,000
Hexachloro-1,3-butadiene	<2.8	<2.8	<2.8	<7,550	5	50
m&p-Xylene	28.5	4.7	8.0	**35,800,000**	1,000	10,000
Methylene Chloride	<0.89	<0.89	1.6	<2,440	200	2,000

TABLE 20

SOIL GAS ANALYTICAL RESULTS

Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, Minnesota

Sample Location:	SG-1	SG-2	SG-3	SG-4		
Date:	11/17/2008	11/17/2008	11/17/2008	11/17/2008		
Depth (feet):	4	4	4	8		
PID (ppm):	0	0	0	120		
Compound	Result	Result	Result	Result	10X ISVs	100X ISVs
Methyl-tert-butyl ether	<0.91	<0.91	<0.91	<2,500	30,000	300,000
Naphthalene	<3.4	<3.4	<3.4	<9,260	90	900
n-Heptane	9,180	<1.0	3.9	60,000,000	NA	NA
n-Hexane	**33,300**	7.3	6.3	**140,000,000**	20,000	200,000
o-Xylene	7.1	1.5	3.0	**11,600,000**	1,000	10,000
Propylene	<0.44	<0.44	23.9	<1,200	30,000	300,000
Styrene	<1.1	<1.1	<1.1	<2,980	10,000	100,000
Tetrachloroethene	<1.8	<1.8	54.8	<4,800	200	2,000
Tetrahydrofuran	<0.75	<0.75	<0.75	<2,060	NA	NA
Toluene	<0.96	6.6	14.6	**40,900,000**	50,000	500,000
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<2,780	600	6,000
trans-1,3-Dichloropropene	<1.2	<1.2	<1.2	<3,160	30	300
Trichloroethene	<1.4	<1.4	<1.4	<3,770	30	300
Trichlorofluoromethane	<1.4	<1.4	<1.4	<3,770	7,000	70,000
Vinyl acetate	<0.89	<0.89	<0.89	<2,440	2,000	20,000
Vinyl chloride	<0.65	<0.65	<0.65	<1,780	10	100

All results are in micrograms per cubic meter (µg/m3)
ISV = MPCA Intrusion Screening Value
NA - No toxicity data available
BOLD: Indicates that the detected concentration exceeds 10 times the ISV
BOLD IN SHADED BOX : Indicates that the detected concentration exceeds 100 times the ISV

Minnesota Pollution Control Agency

General Excavation Report Worksheet

Guidance Document 3-02

Complete the worksheet below to document excavation and treatment of petroleum contaminated soil removed **prior to** a Site Investigation and/or during tank removals and/or upgrades. If soil is excavated as an MPCA-approved corrective action **after** a Site Investigation is conducted, complete Guidance Document 3-02a *Corrective Action Excavation Report Worksheet.* Conduct excavations in accordance with Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil.* Please type or print clearly. Do not revise or delete text or questions from this report form.

The excavation worksheet 3-02 deadline is 10 months from the date of receipt of the MPCA "Petroleum Storage Tank Release Investigation and Corrective Action" letter. MPCA staff may establish a shorter deadline for high priority sites.

PART I: BACKGROUND

A. Site: *Former Jiffy Gas Station*
MPCA Site ID#: LEAK000 *17354*

Street: *2154 Lexington Ave N*
City, Zip: *Roseville, 55113*
County: *Ramsey*

B. Tank Owner/Operator: *Wellington Management*

Mailing Address:

Street/Box: *1625 Energy Park Drive Suite 100*
City, Zip: *St. Paul, 55108*
Telephone: *651-292-9844*

C. Excavating Contractor: *Griffin Contracting*

Contact: *Marty Habisch*
Telephone: *763-780-6332*
Tank Contractor Certification Number:

D. Consultant: *DPRA*

Contact: *Mary Sands*
Street/Box: *332 Minnesota Street Suite E1500*
City, Zip: *St. Paul, 55101*
Telephone: *651-227-6500*

E. Others on-site during site work (e.g., fire marshal, local officials, MPCA staff, etc.):
John Loftus (Fire Marshal)

F. Site Location Information: Attach Guidance Document 1-03a *Spatial Data Reporting Form* if it has not already been submitted or will not be submitted as part of Guidance Document 4-06 *Investigation Report Form.*

Note: If person other than tank owner and/or operator is conducting the cleanup, provide name, address, and relationship to site on a separate attached sheet.

PART II: DATES

A. Date release reported to MPCA:

B. Dates site work performed (tanks removed, piping removed, soil excavation, soil borings, etc.):

Work Performed	Date
Two 6,000 gallon USTs removed	*July 8, 2008*

PART III: SITE AND RELEASE INFORMATION

A. Describe the land use and pertinent geographic features within 1,000 feet of the site.
The Site is located in an area of mixed commercial and residential land uses. The topography is relatively flat.

B. Provide the following information for all tanks removed and any remaining at the site:

Table 1.

Tank #	Tank ** Material	UST or AST	Capacity (gallons)	Contents (product type)	Year installed	Tank Status*	Condition of Tank
001	Steel	UST	6,000	Gasoline	Jan 1, 1961	Removed July 8, 2008	Rusted/pitted (no cracks or holes)
002	Steel	UST	6,000	Gasoline	Jan 1, 1961	Removed July 8, 2008	Rusted/pitted (no cracks or holes)

*Indicate: *removed (date), abandoned in place (date), or currently used, upgraded tank, installation of new tank.* ** *F for fiberglass or S for Steel*
Notes:

Piping Material (check all that apply): [X] Steel, [ ] Fiberglass, [X] Flexible Plastic

C. Describe the location and status of the other components of the tank system(s) (i.e., transfer locations, valves, piping and dispensers) for those tanks listed above.

All components of the underground storage tanks have been removed.

D. Identify and describe the source(s) or suspected source(s) of the release or contamination encountered, and how the release or contamination was discovered. *During tank removal*
Check all that apply: [ ] Piping, [ ] Tank, [X] Dispenser, [ ] Pump/Turbine, [X] Spill/Overfill

E. Identify the cause of the release (tank and/or piping).
Check all that apply: ☐ Corrosion, ☐ Loose Component, ☐ Puncture,
☐ Mechanical or Physical Damage, ☒ Unknown

F. Identify the method the release was detected.
Check all that apply: ☒ Removal, ☐ Line Leak Detection, ☐ Tank Leak Detection,
☐ Visual/Olfactory, ☐ Site Assessment, ☐ Other

G. Identify any surface soil contamination. *None (all under slab)*

H. What was the volume of the release? (if known): *unknown*

I. Historic contamination present (unknown origin?). ☒ Yes, ☐ No

J. When did the release occur? (if known): *unknown*

K. Describe source of on-site drinking water. *City Water*

L. Has the site ever, at any point had an E-85 tank? ☐ Yes, ☒ No

PART IV: EXCAVATION INFORMATION

A. Dimensions of excavation(s): Length Width Depth
30 feet *30 feet* *12 feet*

B. Original tank backfill material (sand, gravel, etc.), if applicable:
Sand

C. Native soil type (clay, sand, etc.):
Clayey Sand

D. Quantity of contaminated soil removed for treatment (cubic yards): *None*
(Indicate on the site map where the petroleum contaminated soil was excavated)

How many cubic yards of the removed soil was petroleum saturated?
(Indicate on the site map where the petroleum saturated soil was excavated)

[**Note**: If the volume removed is more than allowed in Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil*, please document MPCA staff approval.]

E. Were new tanks and/or piping and dispensers installed? (yes/no) If yes, what volume of contaminated soil was excavated to accommodate the installation of the new tanks and piping?

No

F. If contaminated soil was removed to accommodate the installation of new tanks and/or piping, show your calculations for the amount of soil removal allowed using Table 3 in Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil.*

G. Was ground water encountered or a suspected perched water layer or was there evidence of a seasonally high ground water table (i.e. mottling)? (yes/no) At what depth?

No

H. If ground water was not encountered during the excavation, what is the expected depth of ground water? *Approximately 60 feet*

I. Additional investigation to determine the need for a Limited Site Investigation is necessary at sites with sandy or silty sandy soil, a water table within 25 feet of the ground surface, and visual or other evidence of soil remaining contamination. See Table 2 in Guidance Document 3-01 *Excavation of Petroleum Contaminated Soil.* If a soil boring is necessary, describe the soil screening and analytical results. Attach the boring logs and laboratory results to this report.

J. If no soil boring was performed, explain.

Based upon the soil sampling results associated with the UST excavation activities, DPRA concludes that no new release has occurred at the site and that the contamination is associated with Leak #8898.

K. If ground water was encountered or if a soil boring was conducted, was there evidence of ground water contamination? (yes/no) Describe this evidence of contamination, e.g., free product (specify thickness), product sheen, ground water in contact with petroleum contaminated soil, water analytical

L. Was bedrock encountered in the excavation? (☐yes/ ☒no) At what depth?

M. Were other unique conditions associated with this site? (☐yes/ ☒no) If so, explain.

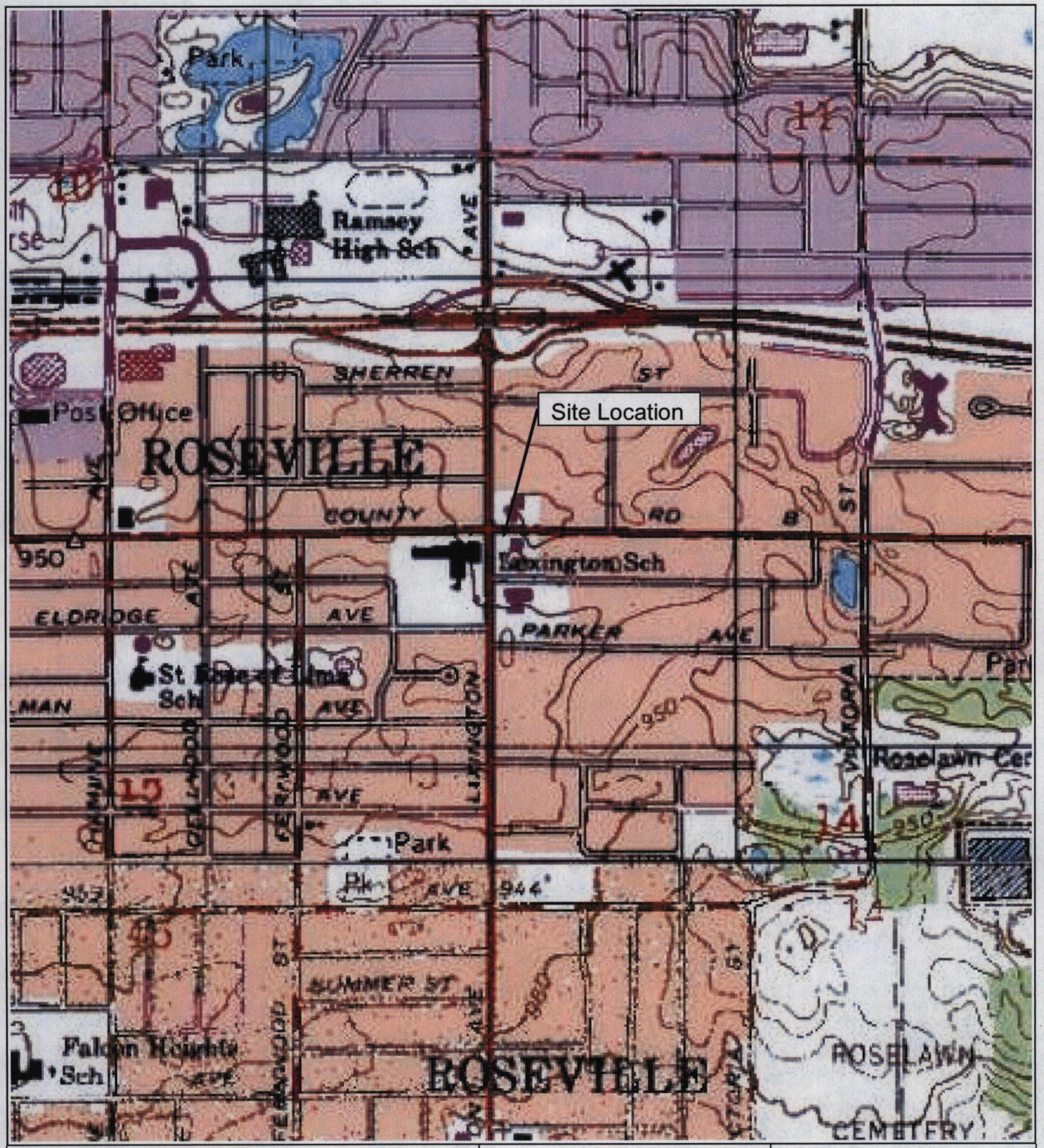
PART V: SAMPLING INFORMATION

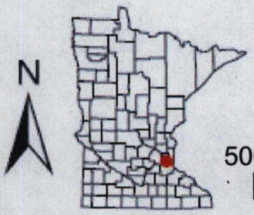
A. Briefly describe the field screening methods used to distinguish contaminated from uncontaminated soil: *Soil was screened with a PID around the excavation site. Samples were taken from the soil excavated and from the bottom of the excavation.*

B. List soil vapor headspace analysis results collected during excavation of tanks, lines and dispensers, valves, and transfer locations. (i.e., soils left in place when excavation is complete). Code the samples with sampling depths in parentheses as follows: sidewall samples S-1 (8 feet), S-2 (4 feet), etc.; bottom samples B-1 (13 feet), B-2 (14 feet), removed soil R-1 (4 feet), R-1 (8 feet), etc.; stockpile samples SP-1, etc; line samples L-1, L2, etc.; transfer locations T-1 (4 feet), T-1 (8 feet), etc.; dispensers D-1 (4 feet), etc. **Be sure the sample codes correspond with the site map in part VI, below.**

Sample Code	*Depth*	*Soil Type*	*Reading ppm*
D-1	*(1)*	*Brown Fine-Medium grained Sand*	*>2000*
D-2	*(1)*	*Brown Fine-Medium grained Sand*	*>2000*
D-3	*(1)*	*Brown Fine-Medium grained Sand*	*>2000*
B1-1	*(10)*	*Greenish Gray Clayey Sand*	*>2000*
B1-2	*(10)*	*Greenish Gray Clayey Sand*	*>2000*
B2-1	*(10)*	*Greenish Gray Clayey Sand*	*>2000*
B2-2	*(10)*	*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-1 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-2 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-3 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-4 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-5 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-6 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-7 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*1552*
P-8 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-9 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-10 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-11 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*
P-12 (stock pile)		*Brown Fine-Medium grained Sand/Clayey Sand*	*>2000*

Soil screening locations are within the "UST Basin" indicated on Figure 2.





ROSEVILLE, RAMSEY COUNTY
MINNESOTA

7.5 MINUTE SERIES (TOPOGRAPHIC)

500 0 500 1,000 Feet

FIGURE 1
SITE LOCATION MAP

2154 LEXINGTON AVENUE NORTH
ROSEVILLE, MINNESOTA

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Creative People. Smart Solutions.

DATE: 01/06/2009

PROJECT: #5381.0044.0003

FIGURE 2

2154 N Lexington Ave
Roseville, MN 55113

Subject Property

Former Tank Basin

Former Building

Former Dispensers

Sample Location

Background Image from
City of Roseville
Online Mapping

N

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DATE: 07/08/2008

PROJECT #005381.0044.0002

C. Was the "removed soil" placed back into the excavation basin? ([X]yes/ [ ]no)
If no, please complete Part VIII: Soil Treatment Information section. If yes, a Limited Site Investigation is necessary (see Guidance Document 4-01 *Soil and Ground Water Assessments Performed during Site Investigations*).

D. Briefly describe the soil analytical sampling and handling procedures used:

Soil samples were collected using neoprene gloves and appropriately prepared for analytical analysis. See DPRA's Field Methods and Procedures included in the Appendix A.

E. List below all soil sample analytical results from bottom and side wall samples collected after excavation of tanks, lines and dispensers, valves, and transfer locations (i.e., soils left in place when excavation is complete). Code the samples with sampling depths in parentheses as follows: sidewall samples S-1 (8 feet), S-2 (4 feet), etc.; bottom samples B-1 (13 feet), B-2 (14 feet), removed soil R-1 (4 feet), R-1 (8 feet), etc.; stockpile samples SP-1, etc; line samples L-1, L2, etc.; transfer locations T-1 (4 feet), T-1 (8 feet), etc.; dispensers D-1 (4 feet), etc.; **Be sure the sample codes correspond to the site map required in part VI.**

Sample Code	GRO/ mg/kg	Benzene mg/kg	Ethyl-benzene mg/kg	Toluene Mg/kg	Xylene mg/kg	MTBE mg/kg	Lead mg/kg
D-1 (1')	12.1	<0.052	<0.052	<0.052	<0.16	<0.21	NA
D-2 (1')	<5.1	<0.051	<0.051	<0.051	<0.15	<0.20	NA
D-3 (1')	6.4	<0.051	<0.051	<0.051	<0.15	<0.20	NA
B1-1 (10')	13,500	86.6	312	974	1,530	<45.0	NA
B1-2 (10')	24,200	251	712	2,110	3,290	<62.7	NA
B2-1 (10')	4,380	<2.3	28.1	4.8	226	<9.3	NA
B2-2 (10')	4,630	11.2	80.4	115	580	<11.3	NA

Note: Attach copies of laboratory reports and chain of custody forms.
See Appendix B

PART VI: FIGURES

Attach the following figures to this report:

1. Site location map.
2. Site map(s) drawn to scale illustrating the following:
   a. Location of all present and former tanks, piping, and dispensers;
   b. Location of surface soil contamination
   c. Location of other structures (buildings, canopies, etc.);
   d. Adjacent city, township, or county roadways;
   e. Dimensions of excavation(s), including contour lines (maximum 2-foot contour intervals) to represent the depths of the final excavation(s);
   f. Location of soil screening samples (e.g. R-1), soil analytical samples (e.g., S-1 or B-1), and any soil borings (e.g., SB-1). Also, attach all boring logs.
   g. North arrow, bar scale and map legend.

h. Provide location of any on-site water wells. If on-site water wells exist, please provide well logs and/or construction diagrams.
i. Locations of new tanks, piping and dispensers, if installed.

PART VII: CONCLUSIONS AND RECOMMENDATIONS

Recommendation for site: [X] site closure
[ ] additional investigation

GRO was detected at concentrations ranging from 4,380 to 24,200 milligrams per kilogram (mg/kg) in a soil samples collected beneath the USTs. Because the USTs have not operated since 2004 and the UST basin was not previously investigated, this contamination is likely associated with Leak #8898.

PART VIII: SOIL TREATMENT INFORMATION

A. Soil treatment method used (thermal, land application, composting, other). If you choose "other" specify treatment method:

B. Location of treatment site/facility:

C. Date MPCA approved soil treatment (if thermal treatment was used, indicate date that the MPCA-permitted thermal treatment facility agreed to accept soil):

D. Identify the location of stockpiled contaminated soil:

PART IX: CONSULTANT (OR OTHER) PREPARING THIS REPORT

By signing this document, I/we acknowledge that we are submitting this document on behalf of and as agents of the responsible person or volunteer for this leak site. I/we acknowledge that if information in this document is inaccurate or incomplete, it will delay the completion of remediation and may harm the environment and may result in reduction of reimbursement awards. In addition, I/we acknowledge on behalf of the responsible person or volunteer for this leak site that if this document is determined to contain a false material statement, representation, or certification, or if it omits material information, the responsible person or volunteer may be found to be in violation of Minn. Stat. § 115.075 (1994) or Minn. 7000.0300 (Duty of Candor), and that the responsible person or volunteer may be liable for civil penalties.

MPCA staff are instructed to reject unsigned excavation reports or if the report form has been altered.

Name and Title: Signature: Date signed:

DONOVAN HANNO
SR CIVIL ENGINEER

1/27/09

Company and mailing address:
332 Minnesota Street Suite E1500
St Paul, MN 55101

Telephone *651-227-6500* Fax: *651-227-5522*

If additional investigation is not necessary, please mail this form and all necessary attachments to the MPCA project manager. If additional investigation is necessary, include this form as an appendix to Guidance Document 4-06 *Investigation Report Form*. **MPCA staff will not review excavation reports indicating a limited site investigation is necessary unless the limited site investigation has been completed.**

Web pages and phone numbers

MPCA staff	http://pca.state.mn.us/pca/staff/index.cfm
MPCA toll free	**1-800-657-3864**
Petroleum Remediation Program web page	http://www.pca.state.mn.us/programs/lust_p.html
MPCA Infor. Request	http://www.pca.state.mn.us/about/inforequest.html
MPCA Petroleum Brownfields Program	http://www.pca.state.mn.us/programs/vpic_p.html
PetroFund Web Page	http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=-536881377&agency=Commerce
PetroFund Phone	**651-297-1119, or 1-800-638-0418**
State Duty Officer	**651-649-5451 or 1-800-422-0798**

Upon request, this document can be made available in other formats, including Braille, large print and audio tape. TTY users call 651/282-5332 or 1-800-657-3864 (voice/TTY).

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APPENDIX A

Field Methods and Procedures

May 2005 Edition

DPRA INCORPORATED
332 MINNESOTA STREET
SUITE E-1500
ST. PAUL, MN 55101

TABLE OF CONTENTS

1.0 CONSTITUENT MONITORING 1

1.1 General Monitoring Procedures 1
1.1.1 Duplicate Sampling 1
1.1.2 Calibration Procedures 1
1.1.3 Surveying 1
1.2 Soil Constituent Monitoring 2
1.2.1 Standard Penetration Soil Sampling 2
1.2.2 Soil Probe Sampling 2
1.2.3 Decontamination of Drilling Equipment 2
1.2.3.1 Organic and Inorganic Constituents 2
1.2.3.2 Agriculture Constituents 2
1.2.4 Soil Classification 3
1.2.5 Soil Organic Vapor Monitoring 3
1.2.6 Soil Sampling for Chemical Analysis 4
1.2.6.1 Organic Constituents 4
1.2.6.2 Agricultural Constituents 4
1.2.7 Petroleum Sheen Test 5
1.2.8 Bore Hole, Soil Probe, Well Construction, and Abandonment 6
1.2.9 Disposal of Drill Cuttings 6
1.3 Groundwater Constituent Monitoring 6
1.3.1 Groundwater Level Measurements 6
1.3.2 Well Development 6
1.3.3 Groundwater Sampling for Chemical Analysis 7
1.3.4 Residential Well Sampling for Chemical Analysis 8
1.3.5 Dissolved Oxygen, pH, Redox, Conductivity, Temperature Measurements. 8
1.3.6 Inorganic Biodegradation-Parameters 8
1.3.7 Hydraulic Conductivity Testing 9
1.4 Air Constituent Monitoring 9
1.4.1 Air Sampling 9
1.5 Soil Gas Constituent Monitoring 10
1.5.1 Surficial Soil Gas Sampling 10
1.5.2 Soil Gas Sampling 10
1.6 Other Contaminated Media 11
1.6.1 X-Ray Fluorescence 11
1.6.2 PCB Contaminated Surfaces 11
1.6.3 Mercury Contaminated Surfaces 11

2.0 RISK SURVEYS 12

2.1.1 Groundwater Receptor Survey 12
2.1.2 Surface Water Receptor Survey 12
2.1.3 Vapor Receptor Survey 12
2.1.4 Surface Soil Survey 12

1.0 Constituent Monitoring

Petroleum chemical soil sampling is done in accordance with the Minnesota Pollution Control Agency (MPCA) *Soil and Ground Water Investigations Performed During Remedial Investigations* (Guidance Document #4.01), *Potential Receptor Surveys and Risk Evaluation Procedures at Petroleum Release Sites* (Guidance Document #4.02), *Assessment of Natural Attenuation at Petroleum Release Sites* (Guidance Document #4.03), *Soil Sample Collection and Analysis Procedures* (Guidance Document #4.04), and *Ground Water Sample Collection and Analysis Procedures* (Guidance Document #4.05).

Non-petroleum soil sampling is performed using the Working Draft Minnesota Pollution Control Agency *Draft Guidelines: Risk Based Site Characterization and Sampling Guidance.*

Agriculture chemical soil sampling is done in accordance with the Minnesota Department of Agriculture (MDA) *Soil Sampling Guidance* (Guidance Document 11) and ground water sampling is done in accordance with MDA *Ground Water Sampling Guidance* (Guidance Document 12.) The following is a summary of DPRA's field methods and procedures.

1.1 General Monitoring Procedures

1.1.1 Duplicate Sampling

One duplicate sample is collected for every ten samples or less and submitted to a laboratory for chemical analysis. If requested by the MDA, DPRA will also submit verification duplicate soil samples to a different laboratory for confirmation analysis. Field duplicate samples for agriculture chemical soil samples are created by splitting composite samples that have been thoroughly mixed.

1.1.2 Calibration Procedures

Instruments used to measure field data are calibrated with sufficient frequency and in such a manner that measurement results produced by the instrument are consistent with the manufacturer's specifications. Each field measurement instrument is calibrated daily prior to use, as applicable, and calibration procedures are documented on a *Daily Calibration Record* form or in a field logbook.

1.1.3 Surveying

Elevations are measured using a transit-mounted automatic level. Elevations are recorded to the nearest 0.1 feet for soil boring surface elevations and 0.01 feet for elevations from a monitoring well top-of-riser pipe.

Global positioning system (GPS) locations are collected using Garmin GPS17 antenna or Garmin eTrex Legend unit. GPS locations are recorded in UTM coordinate system. The units have an accuracy of less than 3 meters.

1.2 Soil Constituent Monitoring

1.2.1 Standard Penetration Soil Sampling

Soil samples are obtained from soil borings advanced with a hollow-stem auger (HSA). Soil sampling is conducted in general accordance with ASTM: D 1586. Using this procedure, a two-inch O.D. split-barrel sampler is lowered down the HSA and driven into the soil by a 140-pound weight falling 30 inches. After an initial set of six inches, the sampler is driven an additional 12 to 18 inches to obtain a representative soil sample and is then retrieved. The number of blows required to drive the sampler the additional 12 inches is known as the penetration resistance or N value. The N value is an index of the relative density of cohesionless soils and the consistency of cohesive soils. The relative density terminology is presented in the Log of Test Boring attachment.

1.2.2 Soil Probe Sampling

Soil probes consist of hydraulically advancing a series of one-inch diameter by two-foot long or two-inch diameter by four-foot long, steel tubes into the ground at selected intervals using a truck-mounted rig. Soil samples are collected from dedicated acetate plastic liners placed inside the bottom tube. Soil probe plastic liners are dedicated liners that will be used once and then be discarded.

1.2.3 Decontamination of Drilling Equipment

1.2.3.1 Organic and Inorganic Constituents

Downhole drilling equipment and associated tools are steam cleaned prior to the start of project work. Steam-cleaned drilling equipment is used for each soil boring. The split-barrel sampler also is cleaned between samples to minimize cross-contamination. The cleaning procedure consists of scrubbing the sampler with a brush in a soap-and-water solution followed by one or two tap water rinses. The soap/water solution is changed regularly during sampling. Fluids used in on-site cleaning of the split-barrel sampler and drilling equipment are disposed of at the site.

1.2.3.2 Agriculture Constituents

Downhole drilling equipment and associated tools will be steam cleaned prior to the start of project work. Steam-cleaned drilling equipment is used for each soil boring. The split-barrel sampler also is cleaned between samples to minimize cross-contamination. The cleaning procedure consists of scrubbing the sampler with a brush in a non-phosphate soap-and-water solution followed by an initial rinse in potable water. Washing and rinsing is done in a steel wash basin. The potable water will be obtained from a municipal water supply or offsite water

well, and the soap/water solution is changed regularly during sampling. Sampling equipment is rinsed a second time by wiping with a disposable acetone-saturated towel. A final rinse is done with deionized or distilled water. The sampling equipment is stored on a clean surface until it is used. Water used in on-site cleaning of the split-barrel sampler and drilling equipment is disposed of at the site and acetone wastes are removed from the site.

1.2.4 Soil Classification

As the samples are obtained in the field, they are visually and manually classified by a DPRA representative in general accordance with ASTM: D 2488. Representative portions of the samples are then returned to DPRA's office in the event there is need for further examination and verification of the field classification. The classification of soil boring samples, soil boring depths, identification of the various strata, the N value, water level information, and pertinent information regarding the method of maintaining and advancing the drill holes are recorded on boring logs. Charts describing the soil classification procedure, the descriptive terminology, and symbols used on the boring logs are included with the logs and are presented in Attachment 1.

1.2.5 Soil Organic Vapor Monitoring

Soil samples are screened for organic vapors with a photoionization detector (PID) equipped with either a 10.2, 10.6, or 11.7 eV lamp. When in use, the PID is calibrated daily or more frequently if necessary. The PID is first zeroed in ambient air and allowed to warm up for several minutes before being calibrated. The PID is calibrated for a direct equivalent reading of parts per million (ppm) benzene using a calibration gas consisting of 100 ppm isobutylene. The PID probe is connected to a calibration-gas cylinder by a flexible tube and after allowing the gas to flow through the instrument for several seconds, a reading is observed. The span knob on the instrument is adjusted until a reading is obtained which, according to the manufacturer, corresponds to a direct equivalent reading of benzene. The corresponding reading for a hnu PID with a 10.2 eV lamp is 57 ppm, and that for an 11.7 eV lamp is 62 ppm. The MiniRAE 2000 uses a correction factor of 0.53, The Thermo Determinator 580B uses a correction factor of 0.70, and the Thermo 580SII uses a correction factor of 0.50. Direct readings for other compounds besides benzene are possible by adjusting the span knob to readings listed in the manufacture's instructions.

Organic vapor concentrations are recorded in fresh soil samples using a head space method. Using this method, organic vapors generated from the soil sample are allowed to collect in the head space of a sealed container and then the head-space concentrations are measured with a PID. Fresh soil is placed in a sealable quart-size polyethylene bag and then the bag is immediately sealed. Enough sample is placed in the bag to provide a 1:1 volume ratio of soil to air. Soil clumps are manually broken up within the bag. Organic vapors are allowed to develop in the headspace for at least 10 minutes at room temperature; during cold weather, head space readings are taken in a heated space. The bag is vigorously shaken for 15 seconds both at the beginning and end of the head-space development period. The bag is then unsealed enough to

insert the PID probe to a point about one half of the head-space depth and the reading is recorded.

1.2.6 Soil Sampling for Chemical Analysis

Sample containers shipped to the laboratory are labeled with the work order number, sample number, date sampled, and initials of the individual sampler. A chain-of-custody form is completed and accompanies the samples to the laboratory. Information on the chain-of-custody form includes the project name and number, the sampling company, the sampler name and signature, the sample number, the date and time the sample was collected, the sample location, the analyses required, the preservation method, the number of containers, the sample matrix, the date the samples are shipped or delivered, and signatures/dates/times showing by whom and when the samples are relinquished and received. Upon arrival at the laboratory, the samples are checked in and signed over to the appropriate laboratory personnel. A copy of the chain-of-custody form is retained and returned to the DPRA Project Manager. For samples delivered to a Contract Laboratory Program (CLP), all CLP requirements are followed. A map will be prepared in the field that identifies the location that the soil sample was collected and the depth of the sample.

Generally, for agricultural chemical constituents, the composite soil sample from the 2.0 to 2.5-foot interval is chemically analyzed initially and the shallow composite sample and deep discrete soil samples are frozen. Depending on the results from the 2.0 to 2.5-foot interval analysis, either the shallow composite sample of the deep discrete sample will be analyzed.

1.2.6.1 Organic Constituents

Soil samples submitted for chemical analysis are collected using dedicated or decontaminated sampling tools. Soil samples are collected with the "En Core" sampler which has 5 or 25 gram (g) capacity, or other comparable devices, when the samples are to be analyzed for volatile organic compounds (VOC) using EPA Method 5035. The soil sample collected with the sampler is transferred directly into a laboratory-prepared container, weighed until sufficient sample is collected in the container, and then preserved in accordance with appropriate state agency analytical procedures. After the sample is preserved, the container is immediately sealed and stored in a cooler chilled to approximately 4 degrees Celsius for shipment to the analytical laboratory; where required, trip blanks are transported with the samples.

1.2.6.2 Agricultural Constituents

Composite Soil Samples

Composite soil samples are collected to characterize a large area within the locations where contamination is suspected. Composite soil samples consist of several equal volume sub samples that are thoroughly mixed together to create one sample for analysis. At each composite sampling location, sets of three to six soil probes are advanced to depths between 2.5 and 6 feet within a 15-foot diameter area. A shallow composite soil sample is collected from the 0 to 6-

inch interval, and a mid depth composite sample is collected from the 2.0 to 2.5-foot interval. If a gravel layer is present, the sample intervals will begin below the base of the gravel layer. Composite samples are designated CS-#. Soil samples are collected using dedicated or decontaminated sampling tools. A new pair of disposable gloves is used while collecting each sub sample and while mixing the samples. Composite soil samples are created using all of the soil sub samples from one depth interval at each location. An equal portion of soil is included from each sub sample. Sub samples are thoroughly mixed in a disposable aluminum pan and any liquid, stones or organic debris is removed from the composite sample. After the sample has been thoroughly mixed, the composite sample is transferred into an appropriate sample jar. The treads of the jar are wiped clean prior to installing a cap on the jar.

Discrete Soil Samples

At each of the sampling locations one deep discrete soil sample is collected from the 4.5 to 5-foot interval, generally from a soil probe located near the center of the sample area. Discrete samples are designated DS-#. In addition, one soil probe is advanced to approximately 25 feet below the ground surface to determine the depth to groundwater and the stratigraphy at the site. Discrete soil samples are collected as the soil probe is advanced. Soil samples are collected using dedicated or decontaminated sampling tools. A new pair of disposable gloves is used while collecting each sample. Discrete soil samples are collected from a six-inch vertical sampling interval at a distinct horizontal and vertical location. After any liquid, stones or organic debris have been removed from the sample, the sample is transferred into an appropriate sample jar. The treads of the jar are wiped clean prior to installing a cap on the jar.

Stockpile Soil Samples

Soil samples are collected using dedicated or decontaminated sampling tools. A new pair of disposable gloves is used while collecting each sub sample and while mixing the samples. The number of stockpile composite soil samples collected is calculated, based on the volume of soil stockpiled, as described in MDA Guidance Document 11, Section III. For each stockpile composite sample four to six hand auger borings are advanced into the stockpile and one to three sub samples are collected at different depths from each boring. Borings are advanced at locations described in MDA Guidance Document 11, Figure 1, and sample locations are marked on a drawing showing the stockpile. All of the sub samples are combined into one composite sample. An equal portion of soil is included from each sub sample, which are thoroughly mixed in a disposable aluminum pan. Any liquid, stones or organic debris is removed from the composite sample, and the mixed, composite sample is transferred into an appropriate sample jar. The treads of the jar are wiped clean prior to installing a cap on the jar.

1.2.7 Petroleum Sheen Test

To determine if soil is saturated with petroleum, a petroleum sheen test is used. The test consists of placing approximately 25 grams of soil into a clean glass jar and submerging the soil with water. If droplets or product or rainbow sheen is observed on the water surface, the soil is classified as petroleum saturated.

1.2.8 Bore Hole, Soil Probe, Well Construction, and Abandonment

Soil borings and soil probes not intended for monitoring well construction are abandoned upon completion and in accordance with state regulations. Groundwater monitoring wells are abandoned in accordance with state regulations when they are no longer needed for sampling or monitoring purposes. Abandonment of wells, soil borings, and soil probes in contaminated zones generally involves filling the bore hole or well casing with bentonite chips, granules, or neat cement grout, as outlined in the appropriate state regulations. Soil borings in which no contamination is encountered are abandoned by filling with a mixture of drill cuttings and bentonite chips or granules or a neat cement grout, unless otherwise specified by state regulations.

Well logs are submitted to the appropriate state agency for each well installed. The well logs include descriptions and depths of geologic material encountered, the well construction materials including well casing and size, drilling method, measured water levels, screen type and slot size, nature of sand pack and grout material, surveyed elevation of the top of caping with depths of screen top, bottom, other well materials, and land source referenced to the top of casing elevation, and well location.

1.2.9 Disposal of Drill Cuttings

Contaminated soils removed from the soil borings are disposed on and/or off of the investigation site in a manner that complies with current state agency regulations or guidelines.

1.3 Groundwater Constituent Monitoring

1.3.1 Groundwater Level Measurements

Groundwater level measurements are obtained using a measuring tape equipped with a probe which emits an electronic signal when in contact with water. Measurements are obtained by lowering the probe into a well or sump, and then recording the depth of the probe when an electric signal is emitted. Measurements are referenced to the top of the monitoring well riser pipe, or ground surface at the sump, and recorded to the nearest 0.01 feet. The manufacturer's reported accuracy for the instrument is 0.04 feet.

If free product is expected, an interface probe is used to obtain a groundwater depth. An electric signal is first emitted when the probe encounters free product, a second signal is emitted when the probe encounters water. Measurement is identical to the method described above.

1.3.2 Well Development

Wells are developed after installation and prior to sampling to restore the hydraulic conductivity of the geologic formation around the well, and to reduce well-water turbidity by removing any suspended silt, clay, and/or drilling fluid sediments in the well. Wells are developed by extracting up to 30 well volumes of water from each well with a dedicated disposable bailer or

with a pump. The well volume is determined by measuring the length of the column of water present in the well and calculating the volume of the water column. The development method and the amount of water removed are recorded. During well development, a stabilization test will be done on the well. Specific conductance, temperature, and pH will be measured in the field until three successive readings yield measurements within the following ranges:

- specific conductance +/- 5%
- temperature +/_ 0.1 degrees Celsius
- pH +/-0.04 units

1.3.3 Groundwater Sampling for Chemical Analysis

Just prior to sampling, each monitoring well is stabilized to introduce fresh groundwater from the surrounding geologic formation into the well. The monitoring well is stabilized by removing a minimum of 5 well-water volumes where suitable groundwater recharge occurs. Water is removed from the well by either bailing with a dedicated factory-wrapped disposable polyethylene bailer attached to a new length of nylon 1/8" rope, or by pumping with a decontaminated mechanical pump. Water level measurements are recorded prior to stabilization.

Groundwater samples from monitoring wells are obtained using either a dedicated disposable polyethylene bailer equipped with bottom-closing ball-check valve, or by mechanical pumping. For low flow sampling, a submersible pump is used to purge and collect the groundwater samples. During well purging, the well water is pumped through a flow-thru cell and a YSI Model 556 multi probe meter is connected to the flow-thru cell to record water quality parameters which include temperature, ph, conductivity, dissolved oxygen, and redox. Following well development, the flow-thru cell is disconnected from the low density polyethylene pump tubing and the flow rate is slowed to allow direct filling of the appropriate sample container bottles.

Groundwater samples submitted to a laboratory for chemical analysis are collected in laboratory-cleaned containers. Appropriate preservation techniques are used as specified by the laboratory and/or state agency analytical procedures. Sample bottles shipped to the laboratory are labeled with the work order number, sample number, date sampled, and initials of the individual sampler. A chain-of-custody form is completed and accompanies the samples to the laboratory. Information on the chain-of-custody form includes the project name and number, the sampling company, the sampler name and signature, the sample number, the date and time the sample was collected, the sample location, the analyses required, the preservation method, the number of containers, the sample matrix, the date the samples are shipped or delivered, and signatures/dates/times showing by whom and when the samples are relinquished and received. Upon arrival at the laboratory, the samples are checked in and signed over to the appropriate laboratory personnel. A copy of the chain-of-custody form is retained and returned to the DPRA Project Manager. For samples delivered to a CLP laboratory, all CLP requirements are followed.

1.3.4 Residential Well Sampling for Chemical Analysis

The residential well sample is collected as near the wellhead as possible. If possible, the water sample will be collected prior to the water passing through any pressurized holding tank, water softener, or filtration system. An aerator, if present, will be removed from the tap prior to collecting the water sample. The tap is maintained at a low ("trickle") flow to minimize aeration of the water flow. The well is purged until the pH, temperature, and conductivity stabilizes. If pH, temperature, and conductivity does not stabilize, a minimum of three well volumes (if well dimensions are known) or 10 minutes at full discharge rate is used to purge the well.

1.3.5 Dissolved Oxygen, pH, Redox, Conductivity, Temperature Measurements.

The dissolved oxygen content of the groundwater is measured with a YSI Model 556 Multi Probe Meter. The meters are calibrated according to the manufacture's specifications. After the well is stabilized, either a dedicated bailer is used to retrieve a water sample or the well water is pumped through a flow-thru cell. For the YSI meter, the sample is either poured into a plastic cup and the probe on the meter is inserted into the sample or the probe is inserted into the flow-thru cell. The measurement is recorded following manufacturer instructions for the meter. The meter records the dissolved oxygen content in mg/l.

Redox (reduction-oxidation) and pH measurements are recorded using a YSI Model 556 Multi Probe Meter. A sample is collected in plastic cup or pumped through a flow-thru cell and the probes are inserted in the sample and the redox and pH measurement is recorded. The measurement is recorded following manufacturer instructions for the meter. The pH probes are calibrated daily during use using a 3 point calibration. Three buffers (pH 4, pH 7, and pH 10) are used to calibrate the meters.

Conductivity and temperature measurements are made using the YSI Model 556 Multi Probe Meter. A sample is either collected in a plastic cup or pumped through a flow-thru cell and the probe is inserted in the sample. A conductivity and/or temperature measurement is recorded following manufacturer's instructions for the meter. The meter is calibrated for conductivity during use using a conductivity solution at 1,000 umhos. The probe is inserted in the solution and the meter is calibrated according to the manufacturer's specifications. All probes and sample cups and containers are rinsed several times with distilled water between samples.

1.3.6 Inorganic Biodegradation Parameters

Iron, sulfide, and nitrate concentrations in groundwater that are recorded in the field are measured using a CHEMetrics VVR Water Analysis System. Samples obtained for this measurement method are collected in plastic cups, as described in Section 1.12. Concentrations are measured following the manufacturer's instructions for analysis of each individual inorganic compound. Concentrations are recorded in ppm.

1.3.7 Hydraulic Conductivity Testing

There are a number of test methods used for measuring the hydraulic conductivity of a geologic material and one of the methods commonly employed by DPRA is the slug test. The slug test is an in-situ field method that is used to measure localized hydraulic conductivity characteristics of an aquifer. The test is performed in a monitoring well and measures the near-field hydraulic conductivity property of the surrounding aquifer formation. The slug test involves:

1. Displacing water in the well with a stainless steel rod (the slug);
2. Allowing the displaced water level to equilibrate in the well; and
3. Quickly withdrawing the slug and measuring the subsequent rise of water in the well over a finite period of time as the well is recharged by the surrounding aquifer.

Water levels are measured with a fast response, high precision pressure transducer which measures water levels to 0.01 feet. Water level data is compiled by an automatic data recorder which records water levels as the well is recharging.

Reduction of the slug test data and calculation of a hydraulic conductivity value is performed using the groundwater modeling computer software.

Hydraulic conductivity can also be estimated using the mean grain size. The mean grain size is determined using a dry sieve analysis. A groundwater saturated soil sample is collected and then submitted to a laboratory for the dry sieve analysis. The mean grain size is then compared to published empirical results to determine a hydraulic conductivity for the saturated soils.

1.4 Air Constituent Monitoring

1.4.1 Air Sampling

A sample of the air emissions from a remediation system or field test is obtained using a summa canister. The summa canister is a vacuum filled stainless steel, laboratory cleaned container. The canister vacuum is checked before and after sample collection. The canister is connected to the air sampling port located on an exhaust stack using a new section of tubing. The canister's valve is opened for a period of time which allows the sample air to enter the canister. The canister's valve is then shut and disconnected from the sampling port. The canister is kept from heat and direct sunlight and forwarded with a chain-of-custody to the laboratory for analysis.

Analytical methods performed using the summa canisters are TO-3 (benzene, ethyl-benzene, toluene, xylene, and total petroleum hydrocarbons) and TO-15 (volatile organic compounds). The canister is supplied by the laboratory.

The lower explosive limit and oxygen (LEL/O_2) is measured using a MSA – 260 or a MSA Minigaurd II. Flow rate measurements are made through various sampling ports.

Air flow rate of the emissions from remediation systems and field tests are measured with either a hot-wire anemometer, an ALNOR air-flow meter, or an in-line air flow meter. Flow rate measurements are made through a sampling port on the exhaust stack.

For measurements of vacuum produced at a system manifold or vapor port wellheads a magnehelic vacuum gauge is used.

1.5 Soil Gas Constituent Monitoring

1.5.1 Surficial Soil Gas Sampling

Shallow soil gas samples (i.e., flux sampling) are obtained from the temporary placement of a fixed volume chamber on the ground in selected areas. Flux samples represent soil gas that migrates to the surface and into the ambient air. The chamber is placed on the ground and sealed with native soil or bentonite slurry. On paved surfaces, the chamber is sealed to the surface using bentonite or equivalent sealant (e.g., plumbing putty). A sun shield preventing direct sunlight is placed over the chamber during the deployment period. The chamber is deployed for 8 to 24 hours. The soil gas is withdrawn from the chamber after the deployment period into a gas-tight sampling device (i.e., mini-Summa, Summa, or syringe) for chemical analysis at a laboratory.

1.5.2 Soil Gas Sampling

Soil gas sampling from depths are obtained to evaluate the presence of vapor constituents in isolated soil strata. The soil gas sample is collected using hollow steel rods instrumented with an expendable point holder and expendable point driven to the desired depth. The center rod with an expendable point knockout pin attached is lowered through the rod assembly and is used to disengage the expendable point. A threaded adapter end is connected to the polyethylene tubing and inserted down the probe rod; the threaded adapter is then connected to the terminal end of the rod assembly via threads located in the expendable point holder. The rod assembly is pulled up slightly to ensure complete disengagement of the expendable point. Prior to collection of the soil gas sample, approximately two volumes of the tubing air is extracted using a graduated syringe. The sample is collected by attaching the top end of the tubing to a gas-tight sampling device (i.e., mini-Summa, Summa, or other sealed container) with an in-line vacuum gauge. The sampling device is opened and filled with soil vapor sample. The vacuum gauge is monitored to check progress of canister filling. In clay soils it may be necessary to further pull up the rod assembly to facilitate air movement through the soil/sampling assembly. The sampling device valve is then closed and submitted for laboratory analysis.

The soil gas will be sampled from the source area and near other potential receptors. The soil gas sample from the source area will be collected from a depth of eight to ten feet. The soil gas samples near potential receptors will be collected from a depth of three to five feet for slab on grade construction and eight to ten feet for construction with a basement.

1.6 Other Contaminated Media

1.6.1 X-Ray Fluorescence

An x-ray fluorescence (XRF) is a portable analytical method used in a portable instrument that can be used to detect metal analytes in the field. The instrument uses a radioactive source to bombard the sample with x-rays, and the resultant emissions (fluorescence) are analyzed to yield a concentration of the target analyte in the sample. Metal analytes (e.g., lead, zinc, and chromium) are detected using a Niton XLt 700 series XRF. If the sample is not composed of uniform sized material, the sample will be sieved using a field kit to obtain a uniform sized material prior to analyzing using the XRF. This unit can also be used to screen for lead paint.

1.6.2 PCB Contaminated Surfaces

Polychlorinated biphyenls (PCB) wipe samples are used to sample smooth and impervious surfaces for the presence of PCBs. The wipe comes saturated with a known volume of hexane in a glass jar. Wipe samples are collected from a 100 square centimeter (cm^2) surface area. The wipe is stored in a glass jar at 4 degrees Celsius for transportation to the analytical laboratory.

1.6.3 Mercury Contaminated Surfaces

Mercury vapor screening is conducted using a Lumex RA 915 + Mercury Vapor Analyzer (Lumex). The Lumex records a reading every second and calculates a ten second average. The Lumex records mercury vapors in nanograms per meter cubed (ng/m^3). Room temperature is mesurured using a digital thermometer and background screening is conducted in the general area. The Lumex is then used to screen a specific object or area. More accurate Lumex screening is obtained by collecting damp wipe samples and placing them in a disposable ziplock bag for one hour. The headspace in the bag is then screened with the Lumex.

Areas previously identified or areas exhibiting elevated Lumex results are selected for mercury wipe samples. Mercury wipe samples are collected using a damp gauze pad. Surface temperatures are recorded using a noncontact infrared thermometer. Wipe samples are collected from a 100 square centimeter (cm^2) surface area.

2.0 Risk Surveys

2.1.1 Groundwater Receptor Survey

Groundwater receptor surveys are performed to assess the risk of impact to water supplies within a designated radius of the project site. A minimum of 500 feet from the source will be surveyed. The survey includes door-to-door contacts with occupants of properties in the designated survey area, and a water-well record search. A "Receptor Survey Checklist" is completed for interviews with home owners that occur during door-to-door contacts. If a home owner is not home, a stamped, self-addressed postcard questionnaire is left at the residence. The water-well search is performed to gather information on the availability of municipal water supplies and the location, construction, depth and use of public and private water wells in the designated area.

2.1.2 Surface Water Receptor Survey

A surface waters survey is conducted to identify potential waterbodies at risk. The surface water survey includes drainage pathways such as drainage ditches, drain tiles, and sewers. The survey is conducted in the same designated radius of the groundwater receptor survey.

2.1.3 Vapor Receptor Survey

Investigation results and site conditions are reviewed in order to assess the risk of volatile organic compound (VOC) vapors impacting nearby basements or utilities. If there is a risk of vapor impact, a vapor survey is performed. A vapor survey can entail the following activity:

- LEL and PID readings are recorded in accessible utility manholes up-gradient and down-gradient from the investigation site.
- Water or sewage samples are observed for a petroleum sheen and/or petroleum odors.
- Water or sewage samples are submitted for laboratory analysis if a potential chemical impact is indicated by PID or LEL readings.
- Basements are screened with an LEL and a PID. Basement screening is directed toward sumps, sewer drains, cracks in the foundation, crawl spaces, and any other potential entry ways for VOC vapors. The location of the screening is documented on a map of the building.

2.1.4 Surface Soil Survey

Surface soil surveys are performed to assess the risk of direct dermal contact and contaminated runoff that may reach a surface waterbody. The survey is limited to the top two feet of soils. Corrective action is required at sites where surface soil is visibly contaminated, headspace

screening exceeds 10 ppm, or evidence of free product is present. A site walk through consisting of visual inspection of assessable areas where storage of petroleum or other chemicals has occurred is used to identify surface soils with visible contamination. Surface soils in the uppermost two feet of soils are screened using a PID in the procedure described in Section 1.2.5 Soil Organic Vapor Monitoring. To determine if the saturated soils are present, the procedure described in Section 1.2.7 Petroleum Sheen Test.

ATTACHMENT 1

Log of Test Boring

Classification of Soils for Engineering Purposes

LOG OF TEST BORING

DPRA
Creative People. Smart Solutions.

General Notes

SOIL DESCRIPTION TERMINOLOGY

GRAIN SIZE TERMINOLOGY

Soil Fraction		Particle Size	U.S. Standard Sieve Size
Boulders		Larger than 300 mm	Larger than 12"
Cobbles		7.5 mm to 300 mm	3" to 12"
Gravel:	Coarse	19 mm to 75 mm	3/4" to 3"
	Fine	4.75 mm to 19 mm	#4 to 3/4"
Sand:	Coarse	2.00 mm to 4.75 mm	#10 to #4
	Medium	0.42 mm to 2.00 mm	#40 to #10
	Fine	0.075 mm to 0.42 mm	#200 to #40
Silt		0.005 mm to 0.075 mm	Smaller than #200
Clay		Smaller than 0.005 mm	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

DENSITY TERM	"N" VALUE	CONSISTENCY TERM
Very Loose	0-4	Soft
Loose	5-10	Medium Stiff
Medium Dense	11-29	Stiff
Dense	30-49	Very Stiff
Very Dense	Over 50	Hard

Standard "N" Penetration: Blows Per Foot of a 140 Pound Hammer Falling 30 inches on a 2-inch OD Split Barrel Sampler

RELATIVE GRAVEL PROPORTIONS

Soil Type	Term	Range
Coarse Grained Soils	With trace gravel	5 - 14%
	With gravel	15 - 49%
Fine Grained Soils		
15 - 25% + No. 200	With trace gravel	5 - 14%
15 - 25% + No. 200	With gravel	15 - 29%
30% + No. 200	With trace gravel	5 - 14%
30% + No. 200	With gravel	15 - 24%
30% + No. 200	Gravelly	25 - 49%

SOIL STRUCTURE TERMS

Lamination	Up to ¼" thick stratum
Layer	Over ¼" thick stratum
Lens	¼" to 6" discontinuous stratum, pocket
Varved	Alternating colored laminations of clay, silt and/or fine-grained sand, or colors thereof

SYMBOLS

DRILLING AND SAMPLING

CS - Continuous Sampling
RC - Rock Coring: Size AQ, BQ, NQ, PQ
RB - Rock Bit
DC - Drove Casing
C - Casing: Size 2 ½", NW, 4", HW
CW - Clear Water
DM - Drilling Mud
HSA - Hollow Stem Auger
FA - Flight Auger
HA - Hand Auger
SS - 2" Diameter Split-Barrel Sample
2ST - 2" Diameter Thing-Walled Tube Sample
3ST - 3" Diameter Thin-Walled Tube Sample
AS - Auger Sample
WS - Wash Sample
NR - No Recovery
S - Sounding
NMR - No Measurement Recorded
JW - Jetting Water
ND - No Detected Above Background
NS - Not Sampled
WD - While Drilling
AD - After Drilling

WATER LEVEL MEASUREMENT

▽ - Perched Water Level
▼ - Water Level

Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

SOIL MOISTURE TERMS

Dry	Dr	Powdery, no noticeable water
Damp	Da	Residual moisture on soil grains
Moist	M	Below Saturation
Wet	W	Saturated
Water-	Wb	Pervious soil below water bearing

GEOLOGIC TERMS

Coarse Alluvium	Sand and/or gravel sediments deposited by water action
Fine Alluvium	Silt and/or clay sediment deposited by water action
Mixed Alluvium	Mixture of Coarse and Fine Alluvium
Till	Soil Sediments deposited directly by glacial ice
Colluvium	Talus and slope deposits
Eolian or Loess	Sediments deposited by wind action
Lacustrine	Sediments deposited at the bottom of a lake or pond
Fill	Sediments placed by man
Topsoil	Organic, dark-colored surface soil deposit

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES
ASTM Designation: D 2487
(Based on Unified Soil Classification System)

COARSE-GRAINED SOILS

(More than half of material is larger than No. 200 sieve size.)

GRAVELS More than half of coarse fraction larger than No. 4 sieve size		**Clean Gravels** (Less than 5% fines)
	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravels with Fines (Greater than 12% fines)
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures

SANDS More than half of coarse fraction smaller than No. 4 sieve size		**Clean Sands** (Less than 5% fines)
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
		Sands with Fines (Greater than 12% fines)
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures

FINE-GRAINED SOILS

(More than half of material is smaller than No. 200 sieve size.)

SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays,
	OL	Organic silts and organic silty clays of low plasticity

SILTS AND CLAYS Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts

HIGHLY ORGANIC SOILS		Fabric Peat > 67% fibers
	PT	Peat: Hemic peat 33% - 67% fibers

LABORATORY CLASSIFICATION CRITERIA

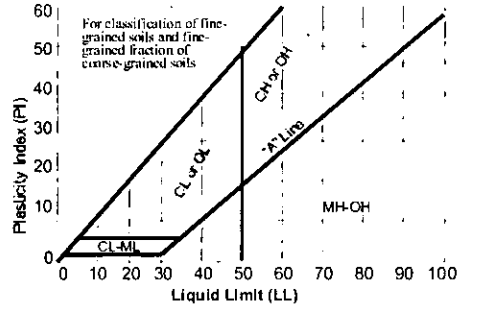
GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limit below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SW	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in hatched zone with P.I. Between 4 and 7 are bor-derline cases requiring use of dual symbols
SC	Atterberg limit above "A" line with P.I. greater than 7	

Gravels with 5 to 12% fines require dual symbols:

GW-GM	well-graded gravel with silt
GW-GC	well-graded gravel with clay
GP-GM	poorly graded gravel with silt
GP-GC	poorly graded gravel with clay

Sands with 5 to 12% fines require dual symbols:

SW-SM	well-graded sand with silt
SW-SC	well-graded sand with clay
SP-SM	poorly graded sand with silt
SP-SC	poorly graded sand with clay



Equation of "A" Line: PI = 0.73 (LL - 20), horizontal at PI = 4 to LL = 25.5

DPRA

APPENDIX B

Pace Analytical
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1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

July 14, 2008

Ms. Mary Sands
DPRA
E-1500 1st National Bank Bldg.
332 Minnesota Street
St. Paul, MN 55101

RE: Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Dear Ms. Sands:
Enclosed are the analytical results for sample(s) received by the laboratory on July 08, 2008. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Carolynne Trout

carolynne.trout@pacelabs.com
Project Manager

Florida (Nelap) Certification #: E87605
Illinois Certification #: 200011
Iowa Certification #: 368
Minnesota Certification #: 027-053-137
Wisconsin Certification #: 999407970

Enclosures

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SAMPLE SUMMARY

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1076549001	D-1 (1')	Solid	07/08/08 12:30	07/08/08 15:19
1076549002	D-2 (1')	Solid	07/08/08 12:35	07/08/08 15:19
1076549003	D-3 (1')	Solid	07/08/08 12:40	07/08/08 15:19
1076549004	B1-1 (10')	Solid	07/08/08 12:45	07/08/08 15:19
1076549005	B2-2 (10')	Solid	07/08/08 13:20	07/08/08 15:19
1076549006	B1-2 (10')	Solid	07/08/08 12:50	07/08/08 15:19
1076549007	B2-1 (10')	Solid	07/08/08 13:15	07/08/08 15:19
1076549008	TRIP BLANK	Solid	07/08/08 00:00	07/08/08 15:19

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SAMPLE ANALYTE COUNT

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Lab ID	Sample ID	Method	Analysts	Analytes Reported
1076549001	D-1 (1')	% Moisture	ANS	1
		TPH WI GRO/PVOC 8021	RTP	7
1076549002	D-2 (1')	% Moisture	ANS	1
		TPH WI GRO/PVOC 8021	RTP	7
1076549003	D-3 (1')	% Moisture	ANS	1
		TPH WI GRO/PVOC 8021	RTP	7
1076549004	B1-1 (10')	% Moisture	ANS	1
		TPH WI GRO/PVOC 8021	RTP	7
1076549005	B2-2 (10')	% Moisture	ANS	1
		TPH WI GRO/PVOC 8021	RTP	7
1076549006	B1-2 (10')	% Moisture	ANS	1
		TPH WI GRO/PVOC 8021	RTP	7
1076549007	B2-1 (10')	% Moisture	ANS	1
		TPH WI GRO/PVOC 8021	RTP	7
1076549008	TRIP BLANK	TPH WI GRO/PVOC 8021	RTP	7

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ANALYTICAL RESULTS

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Sample: D-1 (1') **Lab ID: 1076549001** Collected: 07/08/08 12:30 Received: 07/08/08 15:19 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	0.052	0.026	1	07/10/08 00:00	07/10/08 13:55	71-43-2	
Ethylbenzene	ND	mg/kg	0.052	0.026	1	07/10/08 00:00	07/10/08 13:55	100-41-4	
Gasoline Range Organics	**12.1**	mg/kg	5.2	2.6	1	07/10/08 00:00	07/10/08 13:55		T6
Methyl-tert-butyl ether	ND	mg/kg	0.21	0.10	1	07/10/08 00:00	07/10/08 13:55	1634-04-4	
Toluene	ND	mg/kg	0.052	0.026	1	07/10/08 00:00	07/10/08 13:55	108-88-3	
Xylene (Total)	ND	mg/kg	0.16	0.078	1	07/10/08 00:00	07/10/08 13:55	1330-20-7	
a,a,a-Trifluorotoluene (S)	106	%	80-125		1	07/10/08 00:00	07/10/08 13:55	98-08-8	
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**5.8**	%	0.10	0.10	1		07/09/08 00:00		

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ANALYTICAL RESULTS

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Sample: D-2 (1') **Lab ID: 1076549002** Collected: 07/08/08 12:35 Received: 07/08/08 15:19 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	0.051	0.026	1	07/10/08 00:00	07/10/08 14:17	71-43-2	
Ethylbenzene	ND	mg/kg	0.051	0.026	1	07/10/08 00:00	07/10/08 14:17	100-41-4	
Gasoline Range Organics	ND	mg/kg	5.1	2.6	1	07/10/08 00:00	07/10/08 14:17		
Methyl-tert-butyl ether	ND	mg/kg	0.20	0.10	1	07/10/08 00:00	07/10/08 14:17	1634-04-4	
Toluene	ND	mg/kg	0.051	0.026	1	07/10/08 00:00	07/10/08 14:17	108-88-3	
Xylene (Total)	ND	mg/kg	0.15	0.077	1	07/10/08 00:00	07/10/08 14:17	1330-20-7	
a,a,a-Trifluorotoluene (S)	96	%	80-125		1	07/10/08 00:00	07/10/08 14:17	98-08-8	
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**1.3**	%	0.10	0.10	1		07/09/08 00:00		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Sample: D-3 (1') **Lab ID: 1076549003** Collected: 07/08/08 12:40 Received: 07/08/08 15:19 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	0.051	0.025	1	07/10/08 00:00	07/10/08 14:39	71-43-2	
Ethylbenzene	ND	mg/kg	0.051	0.025	1	07/10/08 00:00	07/10/08 14:39	100-41-4	
Gasoline Range Organics	**6.4**	mg/kg	5.1	2.5	1	07/10/08 00:00	07/10/08 14:39		T6
Methyl-tert-butyl ether	ND	mg/kg	0.20	0.10	1	07/10/08 00:00	07/10/08 14:39	1634-04-4	
Toluene	ND	mg/kg	0.051	0.025	1	07/10/08 00:00	07/10/08 14:39	108-88-3	
Xylene (Total)	ND	mg/kg	0.15	0.076	1	07/10/08 00:00	07/10/08 14:39	1330-20-7	
a,a,a-Trifluorotoluene (S)	98	%	80-125		1	07/10/08 00:00	07/10/08 14:39	98-08-8	
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**2.9**	%	0.10	0.10	1		07/09/08 00:00		

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ANALYTICAL RESULTS

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Sample: B1-1 (10') **Lab ID: 1076549004** Collected: 07/08/08 12:45 Received: 07/08/08 15:19 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	**86.6**	mg/kg	11.3	5.6	200	07/10/08 00:00	07/10/08 12:27	71-43-2	
Ethylbenzene	**312**	mg/kg	11.3	5.6	200	07/10/08 00:00	07/10/08 12:27	100-41-4	
Gasoline Range Organics	**13500**	mg/kg	1130	563	200	07/10/08 00:00	07/10/08 12:27		
Methyl-tert-butyl ether	ND	mg/kg	45.0	22.5	200	07/10/08 00:00	07/10/08 12:27	1634-04-4	
Toluene	**974**	mg/kg	11.3	5.6	200	07/10/08 00:00	07/10/08 12:27	108-88-3	
Xylene (Total)	**1530**	mg/kg	33.8	16.9	200	07/10/08 00:00	07/10/08 12:27	1330-20-7	
a,a,a-Trifluorotoluene (S)	107	%	80-125		200	07/10/08 00:00	07/10/08 12:27	98-08-8	
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**14.6**	%	0.10	0.10	1		07/09/08 00:00		

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ANALYTICAL RESULTS

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Sample: B2-2 (10') **Lab ID: 1076549005** Collected: 07/08/08 13:20 Received: 07/08/08 15:19 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	**11.2**	mg/kg	2.8	1.4	50	07/10/08 00:00	07/10/08 11:43	71-43-2	
Ethylbenzene	**80.4**	mg/kg	2.8	1.4	50	07/10/08 00:00	07/10/08 11:43	100-41-4	
Gasoline Range Organics	**4630**	mg/kg	283	142	50	07/10/08 00:00	07/10/08 11:43		
Methyl-tert-butyl ether	ND	mg/kg	11.3	5.7	50	07/10/08 00:00	07/10/08 11:43	1634-04-4	
Toluene	**115**	mg/kg	2.8	1.4	50	07/10/08 00:00	07/10/08 11:43	108-88-3	
Xylene (Total)	**580**	mg/kg	8.5	4.2	50	07/10/08 00:00	07/10/08 11:43	1330-20-7	
a,a,a-Trifluorotoluene (S)	112	%	80-125		50	07/10/08 00:00	07/10/08 11:43	98-08-8	
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**11.7**	%	0.10	0.10	1		07/09/08 00:00		

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ANALYTICAL RESULTS

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Sample: B1-2 (10') **Lab ID: 1076549006** Collected: 07/08/08 12:50 Received: 07/08/08 15:19 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021					Preparation Method: TPH GRO/PVOC WI ext.			
Benzene	**251**	mg/kg	15.7	7.8	250	07/10/08 00:00	07/14/08 09:10	71-43-2	
Ethylbenzene	**712**	mg/kg	15.7	7.8	250	07/10/08 00:00	07/14/08 09:10	100-41-4	
Gasoline Range Organics	**24200**	mg/kg	1570	784	250	07/10/08 00:00	07/14/08 09:10		
Methyl-tert-butyl ether	ND	mg/kg	62.7	31.3	250	07/10/08 00:00	07/14/08 09:10	1634-04-4	
Toluene	**2110**	mg/kg	15.7	7.8	250	07/10/08 00:00	07/14/08 09:10	108-88-3	
Xylene (Total)	**3290**	mg/kg	47.0	23.5	250	07/10/08 00:00	07/14/08 09:10	1330-20-7	
a,a,a-Trifluorotoluene (S)	112	%	80-125		250	07/10/08 00:00	07/14/08 09:10	98-08-8	
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**17.5**	%	0.10	0.10	1		07/09/08 00:00		

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ANALYTICAL RESULTS

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Sample: B2-1 (10') **Lab ID: 1076549007** Collected: 07/08/08 13:15 Received: 07/08/08 15:19 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	2.3	1.2	40	07/10/08 00:00	07/10/08 12:05	71-43-2	
Ethylbenzene	**28.1**	mg/kg	2.3	1.2	40	07/10/08 00:00	07/10/08 12:05	100-41-4	
Gasoline Range Organics	**4380**	mg/kg	232	116	40	07/10/08 00:00	07/10/08 12:05		T6
Methyl-tert-butyl ether	ND	mg/kg	9.3	4.6	40	07/10/08 00:00	07/10/08 12:05	1634-04-4	
Toluene	**4.8**	mg/kg	2.3	1.2	40	07/10/08 00:00	07/10/08 12:05	108-88-3	
Xylene (Total)	**226**	mg/kg	7.0	3.5	40	07/10/08 00:00	07/10/08 12:05	1330-20-7	
a,a,a-Trifluorotoluene (S)	91	%	80-125		40	07/10/08 00:00	07/10/08 12:05	98-08-8	
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**12.2**	%	0.10	0.10	1		07/09/08 00:00		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

Sample: TRIP BLANK **Lab ID: 1076549008** Collected: 07/08/08 00:00 Received: 07/08/08 15:19 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	0.050	0.025	1	07/10/08 00:00	07/10/08 09:31	71-43-2	
Ethylbenzene	ND	mg/kg	0.050	0.025	1	07/10/08 00:00	07/10/08 09:31	100-41-4	
Gasoline Range Organics	ND	mg/kg	5.0	2.5	1	07/10/08 00:00	07/10/08 09:31		
Methyl-tert-butyl ether	ND	mg/kg	0.20	0.10	1	07/10/08 00:00	07/10/08 09:31	1634-04-4	
Toluene	ND	mg/kg	0.050	0.025	1	07/10/08 00:00	07/10/08 09:31	108-88-3	
Xylene (Total)	ND	mg/kg	0.15	0.075	1	07/10/08 00:00	07/10/08 09:31	1330-20-7	
a,a,a-Trifluorotoluene (S)	96	%	80-125		1	07/10/08 00:00	07/10/08 09:31	98-08-8	

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QUALITY CONTROL DATA

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

QC Batch: MPRP/12606 Analysis Method: % Moisture
QC Batch Method: % Moisture Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 1076549001, 1076549002, 1076549003, 1076549004, 1076549005, 1076549006, 1076549007

SAMPLE DUPLICATE: 498476

Parameter	Units	1076448002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	81.7	81.5	.2	30	

SAMPLE DUPLICATE: 498477

Parameter	Units	1076561002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	6.6	7.5	14	30	

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QUALITY CONTROL DATA

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

QC Batch: GCV/5288 Analysis Method: TPH WI GRO/PVOC 8021
QC Batch Method: TPH GRO/PVOC WI ext. Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 1076549001, 1076549002, 1076549003, 1076549004, 1076549005, 1076549006, 1076549007, 1076549008

METHOD BLANK: 498747
Associated Lab Samples: 1076549001, 1076549002, 1076549003, 1076549004, 1076549005, 1076549006, 1076549007, 1076549008

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Benzene	mg/kg	ND	0.050	
Ethylbenzene	mg/kg	ND	0.050	
Gasoline Range Organics	mg/kg	ND	5.0	
Methyl-tert-butyl ether	mg/kg	ND	0.20	
Toluene	mg/kg	ND	0.050	
Xylene (Total)	mg/kg	ND	0.15	
a,a,a-Trifluorotoluene (S)	%	96	80-125	

LABORATORY CONTROL SAMPLE & LCSD: 498748 498749

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	mg/kg	5	5.6	5.2	112	104	80-120	7	20	
Ethylbenzene	mg/kg	5	5.5	5.1	110	101	80-120	8	20	
Gasoline Range Organics	mg/kg	50	53.5	51.7	107	103	80-120	3	20	
Methyl-tert-butyl ether	mg/kg	5	5.3	4.9	107	98	80-120	8	20	CU
Toluene	mg/kg	5	5.4	4.9	107	99	80-120	8	20	
Xylene (Total)	mg/kg	15	16.0	14.8	107	99	80-120	8	20	
a,a,a-Trifluorotoluene (S)	%				104	102	80-125			

Pace Analytical
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 5381.0044.0002 FRMR JIFFY GAS
Pace Project No.: 1076549

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

BATCH QUALIFIERS

Batch: GCV/5289

[1] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

CU The continuing calibration for this compound is outside of Pace Analytical acceptance limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.

T6 High boiling point hydrocarbons are present in the sample.

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1076549

Page: 1 of 1

119752

Section A Required Client Information:

Company: DPRA
Address: 332 Minnesota St SE1500
St Paul, MN 55101
Email To: Mary.Sands@DPRA.com
Phone: 651-227-6560 Fax: 651-227-5522
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Mary Sands
Copy To:
Purchase Order No.:
Project Name: Former Jiffy Gas Station
Project Number: 5351.0044.0002

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: BETX/MTBE/GRO	Moisture	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	D-1 (1')					7/5/08	1230		2	1						1		X	X		001
2	D-2 (1')					"	1235		2	1						1		X	X		002
3	D-3 (1')					"	1240		2	1						1		X	X		003
4	B1-1 (10')					"	1245		2	1						1		X	X		004
5	B2-2 (10')				1320	"	[illegible]		2	1						1		X	X		005
6	B1-2 (10')				1250	"	[illegible]		2	1						1		X	X		006
7	B2-1 (10')					"	1315		2	1						1		X	X		007
8	Trip Blank																				008
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Curtis Pranger	7/5/08	1500	PACE	7/5/08	1514	2.6	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Curtis Pranger
SIGNATURE of SAMPLER: Curtis Pranger
DATE Signed (MM/DD/YY): 7/5/08

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical

Sample Condition Upon Receipt

Client Name: DQA

Project # 10765349

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

[redacted]

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used 230194010, 72310129 Type of Ice: Wet, Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 2.6°C Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: _____

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	☒Yes	☐No	☐N/A 1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A 2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A 3.
Sampler Name & Signature on COC:	☒Yes	☐No	☐N/A 4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A 5.
Short Hold Time Analysis (<72hr):	☐Yes	☐No	☒N/A 6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A 7.
Sufficient Volume:	☒Yes	☐No	☐N/A 8.
Correct Containers Used:	☒Yes	☐No	☐N/A 9.
-Pace Containers Used:	☒Yes	☐No	☐N/A
Containers Intact:	☒Yes	☐No	☐N/A 10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A 11.
Sample Labels match COC:	☒Yes	☐No	☐N/A 12.
-Includes date/time/ID/Analysis Matrix: SL			
All containers needing preservation have been checked.	☐Yes	☐No	☒N/A 13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes	☒No	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☒N/A 14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A 15.
Trip Blank Present:	☒Yes	☐No	☐N/A 16.
Trip Blank Custody Seals Present	☐Yes	☒No	☐N/A
Pace Trip Blank Lot # (if purchased): _____			

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: DRD **Date:** 7-9-08

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Petroleum Remediation Program
Minnesota Pollution Control Agency
http://www.pca.state.mn.us/programs/lust_p.html

Spatial Data Reporting Form

Guidance Document 1-03a
(For complete instructions, see Guidance Document 1-03.)

Part 1. Background

Has a site location data point been submitted for this site (circle/highlight)? YES or NO
If yes, you do not need to complete Part 2 of this form but should complete Part 3 if there are additional site features to report. This form can be submitted electronically if desired (e.g., as an e-mail attachment to the project manager).

MPCA Site ID: LEAK00017354
Site Name: Former Jiffy Gas Station
Data Collection Date: 1-12-2009
Name of Person Who Collected Data: William Miley
Organization Name: DPRA Incorporated
Organization Type: Consultant

Part 2. Site Location (use one of the three spatial data reporting formats provided)

Point Description: Center of Site
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83

1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14611 Latitude (dd.dddddd): 45.0062
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Part 3. Other Site Features

Point Description: MW-1B
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14598 Latitude (dd.dddddd): 45.00622
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: SP-1
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14594 Latitude (dd.dddddd): 45.00615
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: SP-2
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14611 Latitude (dd.dddddd): 45.00625
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: SG-1
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14626 Latitude (dd.dddddd): 45.00629
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: SG-2
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss): Latitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14604 Latitude (dd.dddddd): 45.00632
3) UTM - X (Easting): UTM - Y (Northing):
UTM Zone:

Point Description: SG-3
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83

1) Longitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14594
3) UTM - X (Easting):
UTM Zone:

Latitude (dd mm ss.ss):
Latitude (dd.dddddd): 45.00607
UTM - Y (Northing):

Point Description: SG-4
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14595
3) UTM - X (Easting):
UTM Zone:

Latitude (dd mm ss.ss):
Latitude (dd.dddddd): 45.00622
UTM - Y (Northing):

Point Description: Former MW-1
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14628
3) UTM - X (Easting):
UTM Zone:

Latitude (dd mm ss.ss):
Latitude (dd.dddddd): 45.00631
UTM - Y (Northing):

Point Description: SB-2
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14611
3) UTM - X (Easting):
UTM Zone:

Latitude (dd mm ss.ss):
Latitude (dd.dddddd): 45.00626
UTM - Y (Northing):

Point Description: MW-3
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14596
3) UTM - X (Easting):
UTM Zone:

Latitude (dd mm ss.ss):
Latitude (dd.dddddd): 45.00631
UTM - Y (Northing):

Point Description: Former MW-4
Collection Method: Internet GIS mapping
Datum (circle/highlight): WGS84 NAD83
1) Longitude (dd mm ss.ss):
2) Longitude (dd.dddddd): 93.14594
3) UTM - X (Easting):
UTM Zone:

Latitude (dd mm ss.ss):
Latitude (dd.dddddd): 45.00614
UTM - Y (Northing):

Minnesota Pollution Control Agency

Release Information Worksheet

Guidance Document 2-05
Petroleum Remediation Program

The Release Information Worksheet is necessary in order to meet the Public Record Provision of the Energy Policy Act of 2005. Complete the worksheet below to document tank and release information. This form may be included as an appendix in Guidance Document 4-06 or 4-08, or it may be submitted independently. Please type or print clearly. Do not revise or delete text or questions from this form.

A. General information

Site name/city: Former Jiffy Gas Station MPCA Site ID#: LEAK000 17354

B. Tank material (check all that apply):

☒ Steel ☐ Fiberglass

C. Piping material (check all that apply):

☒ Steel ☐ Fiberglass ☒ Flexible plastic ☐ Copper ☐ Other (specify): _____

D. Identify the known or suspected source(s) of the release or contamination encountered (check all that apply):

☐ Piping ☒ Tank ☒ Dispenser ☐ Submersible turbine pump ☐ Delivery problem

☐ Other (specify): _____

E. Identify the cause of the release (tank and/or piping) (check all that apply):

☐ Overfill ☐ Mechanical or physical damage ☐ Install problem ☐ Corrosion ☐ Spill ☒ Unknown

☐ Other (specify): _____

F. Identify how the release was detected (check all that apply):

☒ Removal ☐ Line leak detection ☐ Tank leak detection ☐ Visual/Olfactory ☐ Site assessment

☐ Other (specify): _____

G. Has the site ever stored E85 in any former or current tank? ☐ Yes ☒ No

H. Has the site ever stored leaded gasoline in any former or current tank? ☐ Yes ☐ No

Web pages and phone numbers:

MPCA staff:	http://www.pca.state.mn.us/pca/staff/index.cfm
MPCA phone:	**651-296-6300 or 1-800-657-3864**
Petroleum Remediation Program Web page:	http://www.pca.state.mn.us/programs/lust_p.html
MPCA Info. Request:	http://www.pca.state.mn.us/about/inforequest.html
MPCA VIC Program:	http://www.pca.state.mn.us/cleanup/vic.html
MPCA Petroleum Brownfields Program:	http://www.pca.state.mn.us/programs/vpic_p.html
PetroFund Web page:	http://www.state.mn.us/cgi-bin/portal/mn/jsp/content.do?id=-536881377&agency=Commerce
PetroFund phone:	**651-215-1775 or 1-800-638-0418**
State Duty Officer:	**651-649-5451 or 1-800-422-0798**

Minnesota Pollution Control Agency • 520 Lafayette Rd. N., St. Paul, MN 55155-4194 • www.pca.state.mn.us
651-296-6300 • 800-657-3864 • TTY 651-282-5332 or 800-657-3864 • Available in alternative formats

DPRA Incorporated
332 Minnesota Street
St. Paul, MN 55101
Telephone: 651-227-6500

Creative People. Smart Solutions.

WELL NUMBER MW-1B

PROJECT NAME Former Jiffy Gas Station **PROJECT NUMBER** 005381.0044.0003

PROJECT LOCATION Roseville, MN

DATE STARTED 11/17/08 **COMPLETED** 11/17/08 **GROUND ELEVATION** 100.34

DRILLING CONTRACTOR Bergerson Caswell **GROUNDWATER LEVEL:** 61.9 ft / Elev 38.4 ft

DRILLING METHOD Hollow-Stem Auger **UTM EASTING:** 511504.21

LOGGED BY Curtis Pranger **UTM NORTHING:** 4983651.73

NOTES

DEPTH (ft)	LAB SAMPLE	SAMPLE TYPE NUMBER	RECOVERY LENGTH (in)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
0		SS 1	18	Strong Odor	SP		Brown Medium Grain Sand with Gravel	62	Cement Seal
		SS 2	0				1.5 Dark Brown Sandy Clay 98.8		
5		SS 3	16		CL			132	
		SS 4	8					172	
		SS 5	16				9.0 Light Gray Sandy Clay 91.3	110	
10		SS 6	13		CL			66	
		SS 7	17					194	2 inch Steel Pipe
15		SS 8	8				15.0 Light Gray Medium Grain Sand with Gravel 85.3	172	
		SS 9	12		SP			178	
20		SS 10	9					230	
		SS 11	0						
		SS 12	5					220	
25		SS 16	16					205	
		SS 14	14					210	
		SS 15	14					220	
30		SS 16	13				30.0 Light Gray Medium to Fine Grain Sand 70.3	205	
		SS			SP				

(Continued Next Page)

DPRA Incorporated
332 Minnesota Street
St. Paul, MN 55101
Telephone: 651-227-6500

Creative People. Smart Solutions.

WELL NUMBER MW-1B

PROJECT NAME Former Jiffy Gas Station **PROJECT NUMBER** 005381.0044.0003

PROJECT LOCATION Roseville, MN

DEPTH (ft)	LAB SAMPLE	SAMPLE TYPE NUMBER	RECOVERY LENGTH (in)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
		17	15				Light Gray Medium to Fine Grain Sand *(continued)*	195	
35		SS 18	14		SP			200	
		SS 19	5					205	
		SS 20	13				39.0 61.3 Gray Fine Grain Sand	210	Bentonite Seal
40		SS 21	18					182	
		SS 22	17					58	
45		SS 26	14	Gray Silty Sand Lense				44	
50		SS 24	16					198	
		SS 25	15					190	
		SS 26	20		SP			58	
55		SS 27	22					132	#40 Sand
		SS 28	23					190	
		SS 29	17					132	
60		SS 30	14					62	2 inch x 10 feet PVC Screen
		SS 31	13					50	
65		SS 32	9				66.0 34.3 Bottom of hole at 66.0 feet.	71	

TEMP WELLS FORMER JIFFY GAS STATION.GPJ GINT US.GDT 1/12/09

DPRA Incorporated
332 Minnesota Street
St. Paul, MN 55101
Telephone: 651-227-6500

Creative People. Smart Solutions.

BORING NUMBER SP-1

PROJECT NAME Former Jiffy Gas Station **PROJECT NUMBER** 005381.0044.0003

PROJECT LOCATION Roseville, MN

DATE STARTED 11/17/08 **COMPLETED** 11/17/08 **GROUND ELEVATION** 100.92

DRILLING CONTRACTOR Bergerson Caswell **GROUNDWATER LEVEL:** ---

DRILLING METHOD Geo Probe **UTM EASTING:** 511501.86

LOGGED BY Curtis Pranger **UTM NORTHING:** 4983643.95

NOTES

DEPTH (ft)	LAB SAMPLE	SAMPLE TYPE NUMBER	RECOVERY LENGTH (in)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0		SS 1	18		SP		Light Brown Gravely Sand	0
		SS 2	16				3.0 Tan Sandy Clay 97.9	0
5		SS 3	16					3.1
		SS 4	16	Greenish Gray Sandy Clay (odors)				8.4
		SS 5	18		CL			3.2
10		SS 6	18	Some Gravel				4.0
		SS 7	18					5.2
15		SS 8	18					3.8
		SS 9	16				16.0 84.9 Redish Brown Medium Grain Sand with Gravel	2.2
		SS 10	14		SP			2.6
20							20.0 80.9 Bottom of hole at 20.0 feet.	

TEMP WELLS FORMER JIFFY GAS STATION.GPJ GINT US.GDT 1/12/09

DPRA Incorporated
332 Minnesota Street
St. Paul, MN 55101
Telephone: 651-227-6500

Creative People. Smart Solutions.

BORING NUMBER SP-2

PROJECT NAME Former Jiffy Gas Station **PROJECT NUMBER** 005381.0044.0003

PROJECT LOCATION Roseville, MN

DATE STARTED 11/17/08 **COMPLETED** 11/17/08 **GROUND ELEVATION** 99.7

DRILLING CONTRACTOR Bergerson Caswell **GROUNDWATER LEVEL:** ---

DRILLING METHOD Geo Probe **UTM EASTING:** 511514.08

LOGGED BY Curtis Pranger **UTM NORTHING:** 4983655.08

NOTES

DEPTH (ft)	LAB SAMPLE	SAMPLE TYPE NUMBER	RECOVERY LENGTH (in)	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0							0.5 Concrete 99.2	
		SS 1	18		SP		Light Brown Gravely Sand	5.2
		SS 2	18				3.0 96.7 Greenish Gray Sandy Clay with Gravel	111
5		SS 3	14					58
		SS 4	14	Black soil				162/38
		SS 5	20		CL			152
10		SS 6	20					36
		SS 7	20					149
15		SS 8	20					54
		SS 9	18		SP		15.5 84.2 Dark Brown Gravely Sand	5.4
		SS 10	18					52
20							20.0 79.7 Bottom of hole at 20.0 feet.	

TEMP WELLS FORMER JIFFY GAS STATION.GPJ GINT US.GDT 1/12/09

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes, Chapter 103I

MINNESOTA UNIQUE WELL AND BORING NO. 764235

WELL OR BORING LOCATION

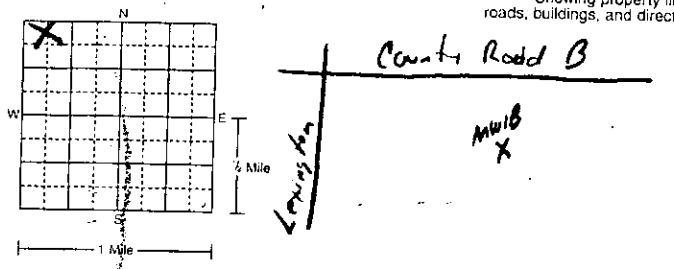
County Name: Ramsey

Township Name	Township No.	Range No.	Section No.	Fraction
Roseville	29	23	14	NWNWNW

GPS LOCATION: Latitude ____ degrees ____ minutes ____ seconds ____ Longitude ____ degrees ____ minutes ____ seconds ____

House Number, Street Name, City, and Zip Code of Well Location: 2154 Lexington Ave. N, Roseville — or Fire Number

Show exact location of well/boring in section grid with "X." Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



PROPERTY OWNER'S NAME/COMPANY NAME: Wellington Management, Inc.

Property owner's mailing address if different than well location address indicated above.
1625 Energy Park Dr.
Suite 100
St. Paul, MN 55108

WELL OWNER'S NAME/COMPANY NAME: Same as above

Well/boring owner's mailing address if different than property owner's address indicated above.
Same as above

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Silty Sand	Gray/Brown	M	0	14
Sand	BRN	M	14	67

Use a second sheet, if needed.

REMARKS, ELEVATION, SOURCE OF DATA, etc.
MW1B

08E-26121

IMPORTANT - FILE WITH PROPERTY PAPERS WELL OWNER COPY — 764235

IC 140-0020

WELL/BORING DEPTH (completed): 67 ft. DATE WORK COMPLETED: 11-17-08

DRILLING METHOD: ☐ Cable Tool ☑ Auger ☐ Driven ☐ Rotary ☐ Dug ☐ Jetted

DRILLING FLUID: None WELL HYDROFRACTURED? ☐ Yes ☑ No From ____ ft. To ____ ft.

USE: ☐ Domestic ☑ Monitoring ☐ Heating/Cooling ☐ Noncommunity PWS ☐ Environ. Bore Hole ☐ Industry/Commercial ☐ Community PWS ☐ Irrigation ☐ Remedial ☑ Elevator ☐ Dewatering ☐ ____

CASING MATERIAL: ☑ Steel ☐ Plastic — Drive Shoe? ☐ Yes ☑ No ☐ Threaded ☐ Welded ☐ ____

CASING: 2 in. to 57 ft. ____ lbs./ft. ____ — HOLE DIAM.: 8¼ in. to 67 ft.

SCREEN: PVC — OPEN HOLE: From ____ ft. To ____ ft.
Make: John Jan
Type: Slotted Diam.: 2"
Slot/Gauze: .010 Length: 10'
Set between: 57 ft. and 67 ft. FITTINGS: ____

STATIC WATER LEVEL: 60 ft. ☑ Below ☐ Above land surface — Measured from: Surface — Date measured: 11-17-08

PUMPING LEVEL (below land surface): ____ ft. after ____ hrs. pumping ____ g.p.m.

WELLHEAD COMPLETION
☐ Pitless/adapter manufacturer ____ Model ____
☐ Casing Protection ____ ☐ 12 in. above grade
☐ At-grade (Environmental Well and Boring ONLY)

GROUTING INFORMATION
Well grouted ☑ Yes ☐ No
Grout materials ☐ Neat cement ☑ Bentonite ☑ Concrete ☐ Other ____
Conc. From 0 To 4 ft. 2 ☐ Yds. ☑ Bags
Bent From 4 To 55 ft. 7 ☐ Yds. ☑ Bags
From ____ To ____ ft. ____ ☐ Yds. ☐ Bags

NEAREST KNOWN SOURCE OF CONTAMINATION: ____ feet ____ direction ____ type

Well disinfected upon completion? ☐ Yes ☑ No

PUMP
☑ Not installed Date installed ____
Manufacturer's name ____
Model Number ____ HP ____ Volts ____
Length of drop pipe ____ ft. Capacity ____ g.p.m.
Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ ____

ABANDONED WELLS
Does property have any not in use and not sealed well(s)? ☐ Yes ☑ No

VARIANCE
Was a variance granted from the MDH for this well? ☐ Yes ☑ No TN# ____

WELL CONTRACTOR CERTIFICATION
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

Bergerson-Caswell, Inc. 1767
Licensed Business Name — Lic. or Reg. No.

Certified Representative Signature — 1205 — 12-2-08
Certified Rep. No. — Date

Colena Halvorsen
Name of Driller

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Minneapolis, MN 55414
(612)607-1700

December 05, 2008

Mr. Donovan Hannu
DPRA
332 Minnesota St. Suite E-1500
1st. National Bank Bldg.
St. Paul, MN 55101

RE: Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Dear Mr. Hannu:
Enclosed are the analytical results for sample(s) received by the laboratory on November 19, 2008. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Carolynne Trout

carolynne.trout@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Minnesota Certification IDs

Tennessee Certification #: 02818
Wisconsin Certification #: 999407970
Washington Certification #: C754
Pennsylvania Certification #: 68-00563
Oregon Certification #: MN200001
North Dakota Certification #: R-036
North Carolina Certification #: 530
New York Certification #: 11647
New Jersey Certification #: MN-002
Minnesota Certification #: 027-053-137
Maine Certification #: 2007029
Louisiana Certification #: LA080009
Louisiana Certification #: 03086
Kansas Certification #: E-10167
Iowa Certification #: 368
Illinois Certification #: 200011
Florida (Nelap) Certification #: E87605
California Certification #: 01155CA
Arizona Certification #: AZ-0014
Alaska Certification #: UST-078

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SAMPLE SUMMARY

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1084716001	SG-1	Air	11/17/08 09:00	11/19/08 11:12
1084716002	SG-2	Air	11/17/08 09:45	11/19/08 11:12
1084716003	SG-3	Air	11/17/08 10:10	11/19/08 11:12
1084716004	SG-4	Air	11/17/08 10:30	11/19/08 11:12
1084716005	SP-1 (6-8')	Solid	11/17/08 11:00	11/19/08 11:12
1084716006	SP-2 (5-7')	Solid	11/17/08 11:45	11/19/08 11:12
1084716007	MW-1B (28-30')	Solid	11/17/08 10:45	11/19/08 11:12
1084716008	MW-1B (58-60')	Solid	11/17/08 11:30	11/19/08 11:12
1084716009	MW-1B	Water	11/18/08 13:10	11/19/08 11:12
1084716010	MW-1B (62-64')	Solid	11/17/08 12:00	11/19/08 11:12

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SAMPLE ANALYTE COUNT

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Lab ID	Sample ID	Method	Analysts	Analytes Reported
1084716001	SG-1	TO-15	LCW	60
1084716002	SG-2	TO-15	LCW	60
1084716003	SG-3	TO-15	LCW	60
1084716004	SG-4	TO-15	LCW	60
1084716005	SP-1 (6-8')	% Moisture	MWD	1
		TPH DRO Wisconsin	JLR	2
		TPH WI GRO/PVOC 8021	DRE	7
1084716006	SP-2 (5-7')	% Moisture	MWD	1
		TPH DRO Wisconsin	JLR	2
		TPH WI GRO/PVOC 8021	DRE	7
1084716007	MW-1B (28-30')	% Moisture	MWD	1
		TPH DRO Wisconsin	JLR	2
		TPH WI GRO/PVOC 8021	DRE	7
1084716008	MW-1B (58-60')	% Moisture	MWD	1
		TPH DRO Wisconsin	JLR	2
		TPH WI GRO/PVOC 8021	DRE	7
1084716009	MW-1B	EPA 8260	CNC	73
		TPH DRO Wisconsin	JLR	2
		TPH WI GRO/PVOC 8021	MJH	2
1084716010	MW-1B (62-64')	% Moisture	MWD	1

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: SG-1 **Lab ID: 1084716001** Collected: 11/17/08 09:00 Received: 11/19/08 11:12 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Acetone	**191**	ug/m3	0.60	0.30	1.25		11/21/08 21:34	67-64-1	E
Benzene	ND	ug/m3	0.81	0.41	1.25		11/21/08 21:34	71-43-2	
Bromodichloromethane	ND	ug/m3	1.8	0.88	1.25		11/21/08 21:34	75-27-4	
Bromoform	ND	ug/m3	2.6	1.3	1.25		11/21/08 21:34	75-25-2	
Bromomethane	ND	ug/m3	0.99	0.49	1.25		11/21/08 21:34	74-83-9	
1,3-Butadiene	ND	ug/m3	0.56	0.28	1.25		11/21/08 21:34	106-99-0	
2-Butanone (MEK)	**42.3**	ug/m3	0.75	0.38	1.25		11/21/08 21:34	78-93-3	
Carbon disulfide	**12.4**	ug/m3	0.79	0.39	1.25		11/21/08 21:34	75-15-0	
Carbon tetrachloride	ND	ug/m3	1.6	0.81	1.25		11/21/08 21:34	56-23-5	
Chlorobenzene	ND	ug/m3	1.2	0.59	1.25		11/21/08 21:34	108-90-7	
Chloroethane	ND	ug/m3	0.68	0.34	1.25		11/21/08 21:34	75-00-3	
Chloroform	ND	ug/m3	1.2	0.62	1.25		11/21/08 21:34	67-66-3	
Chloromethane	ND	ug/m3	0.52	0.26	1.25		11/21/08 21:34	74-87-3	
Cyclohexane	**34200**	ug/m3	544	272	800		11/25/08 02:58	110-82-7	A3
Dibromochloromethane	ND	ug/m3	2.1	1.1	1.25		11/21/08 21:34	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	2.0	1.0	1.25		11/21/08 21:34	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	1.5	0.75	1.25		11/21/08 21:34	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	1.5	0.75	1.25		11/21/08 21:34	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	1.5	0.75	1.25		11/21/08 21:34	106-46-7	
Dichlorodifluoromethane	**13.2**	ug/m3	1.2	0.62	1.25		11/21/08 21:34	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.0	0.51	1.25		11/21/08 21:34	75-34-3	
1,2-Dichloroethane	ND	ug/m3	1.0	0.51	1.25		11/21/08 21:34	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.0	0.51	1.25		11/21/08 21:34	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.0	0.51	1.25		11/21/08 21:34	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.0	0.51	1.25		11/21/08 21:34	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1.2	0.59	1.25		11/21/08 21:34	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	1.2	0.58	1.25		11/21/08 21:34	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	1.2	0.58	1.25		11/21/08 21:34	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	1.8	0.88	1.25		11/21/08 21:34	76-14-2	
Ethanol	**33.0**	ug/m3	2.4	1.1	1.25		11/21/08 21:34	64-17-5	SS
Ethyl acetate	ND	ug/m3	0.91	0.46	1.25		11/21/08 21:34	141-78-6	
Ethylbenzene	ND	ug/m3	1.1	0.55	1.25		11/21/08 21:34	100-41-4	
4-Ethyltoluene	**6.1**	ug/m3	3.1	1.6	1.25		11/21/08 21:34	622-96-8	
n-Heptane	**9180**	ug/m3	664	332	800		11/25/08 02:58	142-82-5	A3
Hexachloro-1,3-butadiene	ND	ug/m3	2.8	1.4	1.25		11/21/08 21:34	87-68-3	
n-Hexane	**33300**	ug/m3	576	288	800		11/25/08 02:58	110-54-3	A3
2-Hexanone	ND	ug/m3	1.0	0.52	1.25		11/21/08 21:34	591-78-6	
Methylene Chloride	ND	ug/m3	0.89	0.44	1.25		11/21/08 21:34	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	1.0	0.52	1.25		11/21/08 21:34	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	0.91	0.46	1.25		11/21/08 21:34	1634-04-4	
Naphthalene	ND	ug/m3	3.4	1.7	1.25		11/21/08 21:34	91-20-3	
2-Propanol	ND	ug/m3	3.1	1.6	1.25		11/21/08 21:34	67-63-0	
Propylene	ND	ug/m3	0.44	0.22	1.25		11/21/08 21:34	115-07-1	
Styrene	ND	ug/m3	1.1	0.54	1.25		11/21/08 21:34	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	1.8	0.88	1.25		11/21/08 21:34	79-34-5	
Tetrachloroethene	ND	ug/m3	1.8	0.88	1.25		11/21/08 21:34	127-18-4	

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: SG-1 **Lab ID: 1084716001** Collected: 11/17/08 09:00 Received: 11/19/08 11:12 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Tetrahydrofuran	ND	ug/m3	0.75	0.38	1.25		11/21/08 21:34	109-99-9	
Toluene	ND	ug/m3	0.96	0.48	1.25		11/21/08 21:34	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	1.2	0.62	1.25		11/21/08 21:34	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	1.4	0.69	1.25		11/21/08 21:34	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	1.4	0.69	1.25		11/21/08 21:34	79-00-5	
Trichloroethene	ND	ug/m3	1.4	0.69	1.25		11/21/08 21:34	79-01-6	
Trichlorofluoromethane	ND	ug/m3	1.4	0.69	1.25		11/21/08 21:34	75-69-4	
1,1,2-Trichlorotrifluoroethane	**44.5**	ug/m3	2.0	1.0	1.25		11/21/08 21:34	76-13-1	
1,2,4-Trimethylbenzene	**12.7**	ug/m3	3.1	1.6	1.25		11/21/08 21:34	95-63-6	L2
1,3,5-Trimethylbenzene	**3.2**	ug/m3	3.1	1.6	1.25		11/21/08 21:34	108-67-8	L2
Vinyl acetate	ND	ug/m3	0.89	0.44	1.25		11/21/08 21:34	108-05-4	
Vinyl chloride	ND	ug/m3	0.65	0.32	1.25		11/21/08 21:34	75-01-4	
m&p-Xylene	**28.5**	ug/m3	2.2	1.1	1.25		11/21/08 21:34	1330-20-7	
o-Xylene	**7.1**	ug/m3	1.1	0.55	1.25		11/21/08 21:34	95-47-6	

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: SG-2 **Lab ID: 1084716002** Collected: 11/17/08 09:45 Received: 11/19/08 11:12 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Acetone	**35.0**	ug/m3	0.60	0.30	1.25		11/21/08 22:06	67-64-1	
Benzene	ND	ug/m3	0.81	0.41	1.25		11/21/08 22:06	71-43-2	
Bromodichloromethane	ND	ug/m3	1.8	0.88	1.25		11/21/08 22:06	75-27-4	
Bromoform	ND	ug/m3	2.6	1.3	1.25		11/21/08 22:06	75-25-2	
Bromomethane	ND	ug/m3	0.99	0.49	1.25		11/21/08 22:06	74-83-9	
1,3-Butadiene	ND	ug/m3	0.56	0.28	1.25		11/21/08 22:06	106-99-0	
2-Butanone (MEK)	**8.6**	ug/m3	0.75	0.38	1.25		11/21/08 22:06	78-93-3	
Carbon disulfide	**2.7**	ug/m3	0.79	0.39	1.25		11/21/08 22:06	75-15-0	
Carbon tetrachloride	ND	ug/m3	1.6	0.81	1.25		11/21/08 22:06	56-23-5	
Chlorobenzene	ND	ug/m3	1.2	0.59	1.25		11/21/08 22:06	108-90-7	
Chloroethane	ND	ug/m3	0.68	0.34	1.25		11/21/08 22:06	75-00-3	
Chloroform	ND	ug/m3	1.2	0.62	1.25		11/21/08 22:06	67-66-3	
Chloromethane	ND	ug/m3	0.52	0.26	1.25		11/21/08 22:06	74-87-3	
Cyclohexane	**130**	ug/m3	0.85	0.42	1.25		11/21/08 22:06	110-82-7	
Dibromochloromethane	ND	ug/m3	2.1	1.1	1.25		11/21/08 22:06	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	2.0	1.0	1.25		11/21/08 22:06	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	1.5	0.75	1.25		11/21/08 22:06	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	1.5	0.75	1.25		11/21/08 22:06	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	1.5	0.75	1.25		11/21/08 22:06	106-46-7	
Dichlorodifluoromethane	ND	ug/m3	1.2	0.62	1.25		11/21/08 22:06	75-71-8	
1,1-Dichloroethane	**1.8**	ug/m3	1.0	0.51	1.25		11/21/08 22:06	75-34-3	
1,2-Dichloroethane	ND	ug/m3	1.0	0.51	1.25		11/21/08 22:06	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.0	0.51	1.25		11/21/08 22:06	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.0	0.51	1.25		11/21/08 22:06	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.0	0.51	1.25		11/21/08 22:06	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1.2	0.59	1.25		11/21/08 22:06	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	1.2	0.58	1.25		11/21/08 22:06	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	1.2	0.58	1.25		11/21/08 22:06	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	1.8	0.88	1.25		11/21/08 22:06	76-14-2	
Ethanol	**4.8**	ug/m3	2.4	1.1	1.25		11/21/08 22:06	64-17-5	SS
Ethyl acetate	ND	ug/m3	0.91	0.46	1.25		11/21/08 22:06	141-78-6	
Ethylbenzene	**1.2**	ug/m3	1.1	0.55	1.25		11/21/08 22:06	100-41-4	
4-Ethyltoluene	ND	ug/m3	3.1	1.6	1.25		11/21/08 22:06	622-96-8	
n-Heptane	ND	ug/m3	1.0	0.52	1.25		11/21/08 22:06	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	2.8	1.4	1.25		11/21/08 22:06	87-68-3	
n-Hexane	**7.3**	ug/m3	0.90	0.45	1.25		11/21/08 22:06	110-54-3	
2-Hexanone	ND	ug/m3	1.0	0.52	1.25		11/21/08 22:06	591-78-6	
Methylene Chloride	ND	ug/m3	0.89	0.44	1.25		11/21/08 22:06	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	1.0	0.52	1.25		11/21/08 22:06	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	0.91	0.46	1.25		11/21/08 22:06	1634-04-4	
Naphthalene	ND	ug/m3	3.4	1.7	1.25		11/21/08 22:06	91-20-3	
2-Propanol	ND	ug/m3	3.1	1.6	1.25		11/21/08 22:06	67-63-0	
Propylene	ND	ug/m3	0.44	0.22	1.25		11/21/08 22:06	115-07-1	
Styrene	ND	ug/m3	1.1	0.54	1.25		11/21/08 22:06	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	1.8	0.88	1.25		11/21/08 22:06	79-34-5	
Tetrachloroethene	ND	ug/m3	1.8	0.88	1.25		11/21/08 22:06	127-18-4	

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: SG-2 **Lab ID: 1084716002** Collected: 11/17/08 09:45 Received: 11/19/08 11:12 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Tetrahydrofuran	ND	ug/m3	0.75	0.38	1.25		11/21/08 22:06	109-99-9	
Toluene	**6.6**	ug/m3	0.96	0.48	1.25		11/21/08 22:06	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	1.2	0.62	1.25		11/21/08 22:06	120-82-1	
1,1,1-Trichloroethane	**8.4**	ug/m3	1.4	0.69	1.25		11/21/08 22:06	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	1.4	0.69	1.25		11/21/08 22:06	79-00-5	
Trichloroethene	ND	ug/m3	1.4	0.69	1.25		11/21/08 22:06	79-01-6	
Trichlorofluoromethane	ND	ug/m3	1.4	0.69	1.25		11/21/08 22:06	75-69-4	
1,1,2-Trichlorotrifluoroethane	**6.6**	ug/m3	2.0	1.0	1.25		11/21/08 22:06	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/m3	3.1	1.6	1.25		11/21/08 22:06	95-63-6	L2
1,3,5-Trimethylbenzene	ND	ug/m3	3.1	1.6	1.25		11/21/08 22:06	108-67-8	L2
Vinyl acetate	ND	ug/m3	0.89	0.44	1.25		11/21/08 22:06	108-05-4	
Vinyl chloride	ND	ug/m3	0.65	0.32	1.25		11/21/08 22:06	75-01-4	
m&p-Xylene	**4.7**	ug/m3	2.2	1.1	1.25		11/21/08 22:06	1330-20-7	
o-Xylene	**1.5**	ug/m3	1.1	0.55	1.25		11/21/08 22:06	95-47-6	

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: SG-3 **Lab ID: 1084716003** Collected: 11/17/08 10:10 Received: 11/19/08 11:12 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Acetone	**17.9**	ug/m3	0.60	0.30	1.25		11/24/08 20:53	67-64-1	
Benzene	**3.4**	ug/m3	0.81	0.41	1.25		11/24/08 20:53	71-43-2	
Bromodichloromethane	ND	ug/m3	1.8	0.88	1.25		11/24/08 20:53	75-27-4	
Bromoform	ND	ug/m3	2.6	1.3	1.25		11/24/08 20:53	75-25-2	
Bromomethane	ND	ug/m3	0.99	0.49	1.25		11/24/08 20:53	74-83-9	
1,3-Butadiene	ND	ug/m3	0.56	0.28	1.25		11/24/08 20:53	106-99-0	
2-Butanone (MEK)	**5.3**	ug/m3	0.75	0.38	1.25		11/24/08 20:53	78-93-3	
Carbon disulfide	**1.1**	ug/m3	0.79	0.39	1.25		11/24/08 20:53	75-15-0	
Carbon tetrachloride	ND	ug/m3	1.6	0.81	1.25		11/24/08 20:53	56-23-5	
Chlorobenzene	ND	ug/m3	1.2	0.59	1.25		11/24/08 20:53	108-90-7	
Chloroethane	ND	ug/m3	0.68	0.34	1.25		11/24/08 20:53	75-00-3	
Chloroform	ND	ug/m3	1.2	0.62	1.25		11/24/08 20:53	67-66-3	
Chloromethane	ND	ug/m3	0.52	0.26	1.25		11/24/08 20:53	74-87-3	
Cyclohexane	**3.9**	ug/m3	0.85	0.42	1.25		11/24/08 20:53	110-82-7	
Dibromochloromethane	ND	ug/m3	2.1	1.1	1.25		11/24/08 20:53	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	2.0	1.0	1.25		11/24/08 20:53	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	1.5	0.75	1.25		11/24/08 20:53	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	1.5	0.75	1.25		11/24/08 20:53	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	1.5	0.75	1.25		11/24/08 20:53	106-46-7	
Dichlorodifluoromethane	**3.3**	ug/m3	1.2	0.62	1.25		11/24/08 20:53	75-71-8	
1,1-Dichloroethane	ND	ug/m3	1.0	0.51	1.25		11/24/08 20:53	75-34-3	
1,2-Dichloroethane	ND	ug/m3	1.0	0.51	1.25		11/24/08 20:53	107-06-2	
1,1-Dichloroethene	ND	ug/m3	1.0	0.51	1.25		11/24/08 20:53	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	1.0	0.51	1.25		11/24/08 20:53	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	1.0	0.51	1.25		11/24/08 20:53	156-60-5	
1,2-Dichloropropane	ND	ug/m3	1.2	0.59	1.25		11/24/08 20:53	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	1.2	0.58	1.25		11/24/08 20:53	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	1.2	0.58	1.25		11/24/08 20:53	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	1.8	0.88	1.25		11/24/08 20:53	76-14-2	
Ethanol	**2.5**	ug/m3	2.4	1.1	1.25		11/24/08 20:53	64-17-5	SS
Ethyl acetate	ND	ug/m3	0.91	0.46	1.25		11/24/08 20:53	141-78-6	
Ethylbenzene	**2.6**	ug/m3	1.1	0.55	1.25		11/24/08 20:53	100-41-4	
4-Ethyltoluene	ND	ug/m3	3.1	1.6	1.25		11/24/08 20:53	622-96-8	
n-Heptane	**3.9**	ug/m3	1.0	0.52	1.25		11/24/08 20:53	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	2.8	1.4	1.25		11/24/08 20:53	87-68-3	
n-Hexane	**6.3**	ug/m3	0.90	0.45	1.25		11/24/08 20:53	110-54-3	
2-Hexanone	ND	ug/m3	1.0	0.52	1.25		11/24/08 20:53	591-78-6	
Methylene Chloride	**1.6**	ug/m3	0.89	0.44	1.25		11/24/08 20:53	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	1.0	0.52	1.25		11/24/08 20:53	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	0.91	0.46	1.25		11/24/08 20:53	1634-04-4	
Naphthalene	ND	ug/m3	3.4	1.7	1.25		11/24/08 20:53	91-20-3	
2-Propanol	ND	ug/m3	3.1	1.6	1.25		11/24/08 20:53	67-63-0	
Propylene	**23.9**	ug/m3	0.44	0.22	1.25		11/24/08 20:53	115-07-1	
Styrene	ND	ug/m3	1.1	0.54	1.25		11/24/08 20:53	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	1.8	0.88	1.25		11/24/08 20:53	79-34-5	
Tetrachloroethene	**54.8**	ug/m3	1.8	0.88	1.25		11/24/08 20:53	127-18-4	

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: SG-3 **Lab ID: 1084716003** Collected: 11/17/08 10:10 Received: 11/19/08 11:12 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Tetrahydrofuran	ND	ug/m3	0.75	0.38	1.25		11/24/08 20:53	109-99-9	
Toluene	**14.6**	ug/m3	0.96	0.48	1.25		11/24/08 20:53	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	1.2	0.62	1.25		11/24/08 20:53	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	1.4	0.69	1.25		11/24/08 20:53	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	1.4	0.69	1.25		11/24/08 20:53	79-00-5	
Trichloroethene	ND	ug/m3	1.4	0.69	1.25		11/24/08 20:53	79-01-6	
Trichlorofluoromethane	ND	ug/m3	1.4	0.69	1.25		11/24/08 20:53	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	2.0	1.0	1.25		11/24/08 20:53	76-13-1	
1,2,4-Trimethylbenzene	**4.9**	ug/m3	3.1	1.6	1.25		11/24/08 20:53	95-63-6	L2
1,3,5-Trimethylbenzene	ND	ug/m3	3.1	1.6	1.25		11/24/08 20:53	108-67-8	L2
Vinyl acetate	ND	ug/m3	0.89	0.44	1.25		11/24/08 20:53	108-05-4	
Vinyl chloride	ND	ug/m3	0.65	0.32	1.25		11/24/08 20:53	75-01-4	
m&p-Xylene	**8.0**	ug/m3	2.2	1.1	1.25		11/24/08 20:53	1330-20-7	
o-Xylene	**3.0**	ug/m3	1.1	0.55	1.25		11/24/08 20:53	95-47-6	

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: SG-4 **Lab ID: 1084716004** Collected: 11/17/08 10:30 Received: 11/19/08 11:12 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Acetone	ND	ug/m3	1650	823	3430.4		11/22/08 05:15	67-64-1	
Benzene	**18500000**	ug/m3	571000	285000	878182		11/25/08 04:59	71-43-2	
Bromodichloromethane	ND	ug/m3	4800	2400	3430.4		11/22/08 05:15	75-27-4	
Bromoform	ND	ug/m3	7200	3600	3430.4		11/22/08 05:15	75-25-2	
Bromomethane	ND	ug/m3	2710	1360	3430.4		11/22/08 05:15	74-83-9	
1,3-Butadiene	ND	ug/m3	1540	772	3430.4		11/22/08 05:15	106-99-0	
2-Butanone (MEK)	ND	ug/m3	2060	1030	3430.4		11/22/08 05:15	78-93-3	
Carbon disulfide	ND	ug/m3	2160	1080	3430.4		11/22/08 05:15	75-15-0	
Carbon tetrachloride	ND	ug/m3	4460	2230	3430.4		11/22/08 05:15	56-23-5	
Chlorobenzene	ND	ug/m3	3220	1610	3430.4		11/22/08 05:15	108-90-7	
Chloroethane	ND	ug/m3	1850	926	3430.4		11/22/08 05:15	75-00-3	
Chloroform	ND	ug/m3	3400	1700	3430.4		11/22/08 05:15	67-66-3	
Chloromethane	ND	ug/m3	1440	720	3430.4		11/22/08 05:15	74-87-3	
Cyclohexane	**110000000**	ug/m3	597000	299000	878182		11/25/08 04:59	110-82-7	E
Dibromochloromethane	ND	ug/m3	5830	2920	3430.4		11/22/08 05:15	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/m3	5490	2740	3430.4		11/22/08 05:15	106-93-4	
1,2-Dichlorobenzene	ND	ug/m3	4120	2060	3430.4		11/22/08 05:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/m3	4120	2060	3430.4		11/22/08 05:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/m3	4120	2060	3430.4		11/22/08 05:15	106-46-7	
Dichlorodifluoromethane	ND	ug/m3	3430	1720	3430.4		11/22/08 05:15	75-71-8	
1,1-Dichloroethane	ND	ug/m3	2810	1410	3430.4		11/22/08 05:15	75-34-3	
1,2-Dichloroethane	ND	ug/m3	2810	1410	3430.4		11/22/08 05:15	107-06-2	
1,1-Dichloroethene	ND	ug/m3	2780	1390	3430.4		11/22/08 05:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/m3	2780	1390	3430.4		11/22/08 05:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/m3	2780	1390	3430.4		11/22/08 05:15	156-60-5	
1,2-Dichloropropane	ND	ug/m3	3220	1610	3430.4		11/22/08 05:15	78-87-5	
cis-1,3-Dichloropropene	ND	ug/m3	3160	1580	3430.4		11/22/08 05:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/m3	3160	1580	3430.4		11/22/08 05:15	10061-02-6	
Dichlorotetrafluoroethane	ND	ug/m3	4800	2400	3430.4		11/22/08 05:15	76-14-2	
Ethanol	ND	ug/m3	6520	2920	3430.4		11/22/08 05:15	64-17-5	
Ethyl acetate	ND	ug/m3	2500	1250	3430.4		11/22/08 05:15	141-78-6	
Ethylbenzene	**7970000**	ug/m3	773000	386000	878182		11/25/08 04:59	100-41-4	
4-Ethyltoluene	**98700**	ug/m3	8580	4290	3430.4		11/22/08 05:15	622-96-8	
n-Heptane	**60000000**	ug/m3	729000	364000	878182		11/25/08 04:59	142-82-5	
Hexachloro-1,3-butadiene	ND	ug/m3	7550	3770	3430.4		11/22/08 05:15	87-68-3	
n-Hexane	**140000000**	ug/m3	632000	316000	878182		11/25/08 04:59	110-54-3	E
2-Hexanone	ND	ug/m3	2850	1420	3430.4		11/22/08 05:15	591-78-6	
Methylene Chloride	ND	ug/m3	2440	1220	3430.4		11/22/08 05:15	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/m3	2850	1420	3430.4		11/22/08 05:15	108-10-1	
Methyl-tert-butyl ether	ND	ug/m3	2500	1250	3430.4		11/22/08 05:15	1634-04-4	
Naphthalene	ND	ug/m3	9260	4630	3430.4		11/22/08 05:15	91-20-3	
2-Propanol	ND	ug/m3	8580	4290	3430.4		11/22/08 05:15	67-63-0	
Propylene	ND	ug/m3	1200	600	3430.4		11/22/08 05:15	115-07-1	
Styrene	ND	ug/m3	2980	1490	3430.4		11/22/08 05:15	100-42-5	
1,1,2,2-Tetrachloroethane	ND	ug/m3	4800	2400	3430.4		11/22/08 05:15	79-34-5	
Tetrachloroethene	ND	ug/m3	4800	2400	3430.4		11/22/08 05:15	127-18-4	

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: SG-4 **Lab ID: 1084716004** Collected: 11/17/08 10:30 Received: 11/19/08 11:12 Matrix: Air

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Tetrahydrofuran	ND	ug/m3	2060	1030	3430.4		11/22/08 05:15	109-99-9	
Toluene	**40900000**	ug/m3	676000	338000	878182		11/25/08 04:59	108-88-3	
1,2,4-Trichlorobenzene	ND	ug/m3	3400	1700	3430.4		11/22/08 05:15	120-82-1	
1,1,1-Trichloroethane	ND	ug/m3	3770	1890	3430.4		11/22/08 05:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/m3	3770	1890	3430.4		11/22/08 05:15	79-00-5	
Trichloroethene	ND	ug/m3	3770	1890	3430.4		11/22/08 05:15	79-01-6	
Trichlorofluoromethane	ND	ug/m3	3770	1890	3430.4		11/22/08 05:15	75-69-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/m3	5490	2740	3430.4		11/22/08 05:15	76-13-1	
1,2,4-Trimethylbenzene	**135000**	ug/m3	8580	4290	3430.4		11/22/08 05:15	95-63-6	L2
1,3,5-Trimethylbenzene	**61500**	ug/m3	8580	4290	3430.4		11/22/08 05:15	108-67-8	L2
Vinyl acetate	ND	ug/m3	2440	1220	3430.4		11/22/08 05:15	108-05-4	
Vinyl chloride	ND	ug/m3	1780	892	3430.4		11/22/08 05:15	75-01-4	
m&p-Xylene	**35800000**	ug/m3	1550000	773000	878182		11/25/08 04:59	1330-20-7	
o-Xylene	**11600000**	ug/m3	773000	386000	878182		11/25/08 04:59	95-47-6	

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: SP-1 (6-8') **Lab ID: 1084716005** Collected: 11/17/08 11:00 Received: 11/19/08 11:12 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: TPH DRO Wisconsin Preparation Method: TPH DRO Wisconsin								
Diesel Range Organics	ND	mg/kg	10.3	5.2	1	11/19/08 20:34	11/20/08 21:24		
n-Triacontane (S)	68	%	50-150		1	11/19/08 20:34	11/20/08 21:24		
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	0.061	0.031	1	11/20/08 00:00	11/20/08 22:27	71-43-2	
Ethylbenzene	ND	mg/kg	0.061	0.031	1	11/20/08 00:00	11/20/08 22:27	100-41-4	
Gasoline Range Organics	**7.4**	mg/kg	6.1	3.1	1	11/20/08 00:00	11/20/08 22:27		
Methyl-tert-butyl ether	ND	mg/kg	0.24	0.12	1	11/20/08 00:00	11/20/08 22:27	1634-04-4	L1
Toluene	ND	mg/kg	0.061	0.031	1	11/20/08 00:00	11/20/08 22:27	108-88-3	
Xylene (Total)	ND	mg/kg	0.18	0.092	1	11/20/08 00:00	11/20/08 22:27	1330-20-7	
a,a,a-Trifluorotoluene (S)	96	%	80-125		1	11/20/08 00:00	11/20/08 22:27	98-08-8	T6
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**18.1**	%	0.10	0.10	1		11/19/08 00:00		

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: SP-2 (5-7') **Lab ID: 1084716006** Collected: 11/17/08 11:45 Received: 11/19/08 11:12 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: TPH DRO Wisconsin Preparation Method: TPH DRO Wisconsin								
Diesel Range Organics	**19.0**	mg/kg	10.3	5.1	1	11/19/08 20:34	11/20/08 22:00		T7
n-Triacontane (S)	72	%	50-150		1	11/19/08 20:34	11/20/08 22:00		
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	0.58	0.29	10	11/20/08 00:00	11/24/08 13:59	71-43-2	
Ethylbenzene	**4.7**	mg/kg	0.58	0.29	10	11/20/08 00:00	11/24/08 13:59	100-41-4	
Gasoline Range Organics	**207**	mg/kg	57.8	28.9	10	11/20/08 00:00	11/24/08 13:59		
Methyl-tert-butyl ether	ND	mg/kg	2.3	1.2	10	11/20/08 00:00	11/24/08 13:59	1634-04-4	L1
Toluene	ND	mg/kg	0.58	0.29	10	11/20/08 00:00	11/24/08 13:59	108-88-3	
Xylene (Total)	**17.3**	mg/kg	1.7	0.87	10	11/20/08 00:00	11/24/08 13:59	1330-20-7	
a,a,a-Trifluorotoluene (S)	100	%	80-125		10	11/20/08 00:00	11/24/08 13:59	98-08-8	D3
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**16.5**	%	0.10	0.10	1		11/19/08 00:00		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: MW-1B (28-30') **Lab ID: 1084716007** Collected: 11/17/08 10:45 Received: 11/19/08 11:12 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: TPH DRO Wisconsin Preparation Method: TPH DRO Wisconsin								
Diesel Range Organics	**20.0**	mg/kg	9.3	4.7	1	11/19/08 20:34	11/20/08 22:37		
n-Triacontane (S)	57	%	50-150		1	11/19/08 20:34	11/20/08 22:37		
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	0.052	0.026	1	11/20/08 00:00	11/20/08 23:11	71-43-2	
Ethylbenzene	**1.2**	mg/kg	0.052	0.026	1	11/20/08 00:00	11/20/08 23:11	100-41-4	
Gasoline Range Organics	**107**	mg/kg	5.2	2.6	1	11/20/08 00:00	11/20/08 23:11		
Methyl-tert-butyl ether	ND	mg/kg	0.21	0.10	1	11/20/08 00:00	11/20/08 23:11	1634-04-4	L1
Toluene	**0.13**	mg/kg	0.052	0.026	1	11/20/08 00:00	11/20/08 23:11	108-88-3	
Xylene (Total)	**7.4**	mg/kg	0.16	0.078	1	11/20/08 00:00	11/20/08 23:11	1330-20-7	
a,a,a-Trifluorotoluene (S)	112	%	80-125		1	11/20/08 00:00	11/20/08 23:11	98-08-8	T6
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**4.0**	%	0.10	0.10	1		11/19/08 00:00		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: MW-1B (58-60') **Lab ID: 1084716008** Collected: 11/17/08 11:30 Received: 11/19/08 11:12 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: TPH DRO Wisconsin Preparation Method: TPH DRO Wisconsin								
Diesel Range Organics	**10.8**	mg/kg	10.0	5.0	1	11/19/08 20:34	11/20/08 23:14		
n-Triacontane (S)	63	%	50-150		1	11/19/08 20:34	11/20/08 23:14		
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021 Preparation Method: TPH GRO/PVOC WI ext.								
Benzene	ND	mg/kg	0.055	0.028	1	11/20/08 00:00	11/20/08 23:33	71-43-2	
Ethylbenzene	**0.25**	mg/kg	0.055	0.028	1	11/20/08 00:00	11/20/08 23:33	100-41-4	
Gasoline Range Organics	**59.0**	mg/kg	5.5	2.8	1	11/20/08 00:00	11/20/08 23:33		
Methyl-tert-butyl ether	ND	mg/kg	0.22	0.11	1	11/20/08 00:00	11/20/08 23:33	1634-04-4	L1
Toluene	ND	mg/kg	0.055	0.028	1	11/20/08 00:00	11/20/08 23:33	108-88-3	
Xylene (Total)	**0.76**	mg/kg	0.17	0.083	1	11/20/08 00:00	11/20/08 23:33	1330-20-7	
a,a,a-Trifluorotoluene (S)	101	%	80-125		1	11/20/08 00:00	11/20/08 23:33	98-08-8	T6
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**12.0**	%	0.10	0.10	1		11/19/08 00:00		

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: MW-1B **Lab ID: 1084716009** Collected: 11/18/08 13:10 Received: 11/19/08 11:12 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIDRO GCS	Analytical Method: TPH DRO Wisconsin Preparation Method: TPH DRO Wisconsin								
Diesel Range Organics	**4.4**	mg/L	0.10	0.051	1	11/19/08 20:32	11/20/08 12:10		T7
n-Triacontane (S)	98	%	50-150		1	11/19/08 20:32	11/20/08 12:10		
WIGRO GCV	Analytical Method: TPH WI GRO/PVOC 8021								
Gasoline Range Organics	**11800**	ug/L	1000	500	10		11/21/08 21:46		
a,a,a-Trifluorotoluene (S)	124	%	80-125		10		11/21/08 21:46	98-08-8	
8260 VOC	Analytical Method: EPA 8260								
Acetone	ND	ug/L	50.0	25.0	5		11/21/08 21:18	67-64-1	
Allyl chloride	ND	ug/L	20.0	10.0	5		11/21/08 21:18	107-05-1	
Benzene	**484**	ug/L	5.0	2.5	5		11/21/08 21:18	71-43-2	
Bromobenzene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	108-86-1	
Bromochloromethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	74-97-5	
Bromodichloromethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	75-27-4	
Bromoform	ND	ug/L	40.0	20.0	5		11/21/08 21:18	75-25-2	
Bromomethane	ND	ug/L	20.0	10.0	5		11/21/08 21:18	74-83-9	IC
2-Butanone (MEK)	ND	ug/L	20.0	10.0	5		11/21/08 21:18	78-93-3	
n-Butylbenzene	**57.4**	ug/L	5.0	2.5	5		11/21/08 21:18	104-51-8	
sec-Butylbenzene	**28.5**	ug/L	5.0	2.5	5		11/21/08 21:18	135-98-8	
tert-Butylbenzene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	98-06-6	
Carbon tetrachloride	ND	ug/L	5.0	2.5	5		11/21/08 21:18	56-23-5	
Chlorobenzene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	108-90-7	
Chloroethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	75-00-3	
Chloroform	ND	ug/L	5.0	2.5	5		11/21/08 21:18	67-66-3	
Chloromethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	74-87-3	
2-Chlorotoluene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	95-49-8	
4-Chlorotoluene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	20.0	10.0	5		11/21/08 21:18	96-12-8	
Dibromochloromethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	5.0	2.5	5		11/21/08 21:18	106-93-4	
Dibromomethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	106-46-7	
Dichlorodifluoromethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	75-71-8	
1,1-Dichloroethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	107-06-2	
1,1-Dichloroethene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	156-60-5	
Dichlorofluoromethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	75-43-4	
1,2-Dichloropropane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	78-87-5	
1,3-Dichloropropane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	142-28-9	
2,2-Dichloropropane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	594-20-7	
1,1-Dichloropropene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	20.0	10.0	5		11/21/08 21:18	10061-01-5	

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: MW-1B **Lab ID: 1084716009** Collected: 11/18/08 13:10 Received: 11/19/08 11:12 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 VOC	Analytical Method: EPA 8260								
trans-1,3-Dichloropropene	ND	ug/L	20.0	10.0	5		11/21/08 21:18	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	20.0	10.0	5		11/21/08 21:18	60-29-7	
Ethylbenzene	**810**	ug/L	5.0	2.5	5		11/21/08 21:18	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	20.0	10.0	5		11/21/08 21:18	87-68-3	
Isopropylbenzene (Cumene)	**134**	ug/L	5.0	2.5	5		11/21/08 21:18	98-82-8	
p-Isopropyltoluene	**31.3**	ug/L	5.0	2.5	5		11/21/08 21:18	99-87-6	
Methylene Chloride	ND	ug/L	20.0	10.0	5		11/21/08 21:18	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20.0	10.0	5		11/21/08 21:18	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.5	5		11/21/08 21:18	1634-04-4	
Naphthalene	**428**	ug/L	20.0	10.0	5		11/21/08 21:18	91-20-3	
n-Propylbenzene	**154**	ug/L	5.0	2.5	5		11/21/08 21:18	103-65-1	
Styrene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	79-34-5	
Tetrachloroethene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	127-18-4	
Tetrahydrofuran	ND	ug/L	50.0	25.0	5		11/21/08 21:18	109-99-9	
Toluene	**345**	ug/L	5.0	2.5	5		11/21/08 21:18	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	79-00-5	
Trichloroethene	ND	ug/L	5.0	2.5	5		11/21/08 21:18	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	5.0	2.5	5		11/21/08 21:18	76-13-1	
1,2,4-Trimethylbenzene	**757**	ug/L	5.0	2.5	5		11/21/08 21:18	95-63-6	
1,3,5-Trimethylbenzene	**202**	ug/L	5.0	2.5	5		11/21/08 21:18	108-67-8	
Vinyl chloride	ND	ug/L	2.0	1.0	5		11/21/08 21:18	75-01-4	
Xylene (Total)	**2210**	ug/L	15.0	7.5	5		11/21/08 21:18	1330-20-7	
m&p-Xylene	**1730**	ug/L	10.0	5.0	5		11/21/08 21:18	1330-20-7	
o-Xylene	**485**	ug/L	5.0	2.5	5		11/21/08 21:18	95-47-6	
Dibromofluoromethane (S)	89	%	75-125		5		11/21/08 21:18	1868-53-7	
1,2-Dichloroethane-d4 (S)	88	%	75-125		5		11/21/08 21:18	17060-07-0	
Toluene-d8 (S)	102	%	75-125		5		11/21/08 21:18	2037-26-5	
4-Bromofluorobenzene (S)	96	%	75-125		5		11/21/08 21:18	460-00-4	

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ANALYTICAL RESULTS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

Sample: MW-1B (62-64') **Lab ID: 1084716010** Collected: 11/17/08 12:00 Received: 11/19/08 11:12 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight	Analytical Method: % Moisture								
Percent Moisture	**17.9**	%	0.10	0.10	1		11/19/08 00:00		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

QC Batch: OEXT/9892 Analysis Method: TPH DRO Wisconsin
QC Batch Method: TPH DRO Wisconsin Analysis Description: WIDRO GCS
Associated Lab Samples: 1084716005, 1084716006, 1084716007, 1084716008

METHOD BLANK: 553458 Matrix: Solid
Associated Lab Samples: 1084716005, 1084716006, 1084716007, 1084716008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range Organics	mg/kg	ND	5.0	11/20/08 09:05	
n-Triacontane (S)	%	81	50-150	11/20/08 09:05	

LABORATORY CONTROL SAMPLE & LCSD: 553459 553460

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Range Organics	mg/kg	80	67.4	68.3	84	85	70-120	1	20	
n-Triacontane (S)	%				83	84	50-150			

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

QC Batch: MPRP/13948 Analysis Method: % Moisture
QC Batch Method: % Moisture Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 1084716005, 1084716006, 1084716007, 1084716008, 1084716010

SAMPLE DUPLICATE: 553838

Parameter	Units	1084409001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	77.1	77.6	.6	30	

SAMPLE DUPLICATE: 553839

Parameter	Units	1084716005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.1	16.9	7	30	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

QC Batch: OEXT/9898
QC Batch Method: TPH DRO Wisconsin
Analysis Method: TPH DRO Wisconsin
Analysis Description: WIDRO GCS
Associated Lab Samples: 1084716009

METHOD BLANK: 553854
Matrix: Water
Associated Lab Samples: 1084716009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range Organics	mg/L	ND	0.10	11/20/08 10:19	
n-Triacontane (S)	%	99	50-150	11/20/08 10:19	

LABORATORY CONTROL SAMPLE & LCSD: 553855 553856

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Diesel Range Organics	mg/L	2	2.0	2.0	98	102	75-115	4	20	
n-Triacontane (S)	%				99	100	50-150			

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

QC Batch: GCV/5723 Analysis Method: TPH WI GRO/PVOC 8021
QC Batch Method: TPH GRO/PVOC WI ext. Analysis Description: WIGRO Solid GCV
Associated Lab Samples: 1084716005, 1084716006, 1084716007, 1084716008

METHOD BLANK: 554121 Matrix: Solid
Associated Lab Samples: 1084716005, 1084716006, 1084716007, 1084716008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	mg/kg	ND	0.050	11/20/08 17:19	
Ethylbenzene	mg/kg	ND	0.050	11/20/08 17:19	
Gasoline Range Organics	mg/kg	ND	5.0	11/20/08 17:19	
Methyl-tert-butyl ether	mg/kg	ND	0.20	11/20/08 17:19	
Toluene	mg/kg	ND	0.050	11/20/08 17:19	
Xylene (Total)	mg/kg	ND	0.15	11/20/08 17:19	
a,a,a-Trifluorotoluene (S)	%	101	80-125	11/20/08 17:19	

LABORATORY CONTROL SAMPLE & LCSD: 554122 554123

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	mg/kg	5	5.9	5.5	117	109	80-120	7	20	
Ethylbenzene	mg/kg	5	5.8	5.4	116	108	80-120	7	20	
Gasoline Range Organics	mg/kg	50	59.0	53.6	118	107	80-120	10	20	
Methyl-tert-butyl ether	mg/kg	5	6.2	6.1	124	122	80-120	2	20	L3
Toluene	mg/kg	5	5.8	5.4	116	108	80-120	8	20	
Xylene (Total)	mg/kg	15	17.3	16.3	116	108	80-120	6	20	
a,a,a-Trifluorotoluene (S)	%				102	108	80-125			

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

QC Batch: GCV/5726
QC Batch Method: TPH WI GRO/PVOC 8021
Analysis Method: TPH WI GRO/PVOC 8021
Analysis Description: WIGRO GCV Water
Associated Lab Samples: 1084716009

METHOD BLANK: 554584 Matrix: Water
Associated Lab Samples: 1084716009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	ug/L	ND	100	11/21/08 12:25	
a,a,a-Trifluorotoluene (S)	%	95	80-125	11/21/08 12:25	

LABORATORY CONTROL SAMPLE & LCSD: 554585 554586

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	ug/L	1000	985	1060	98	106	80-120	8	20	
a,a,a-Trifluorotoluene (S)	%				98	98	80-125			

MATRIX SPIKE SAMPLE: 555553

Parameter	Units	1084350011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	ug/L	ND	1000	1010	101	73-132	
a,a,a-Trifluorotoluene (S)	%				97	80-125	

SAMPLE DUPLICATE: 555554

Parameter	Units	1084350013 Result	Dup Result	RPD	Max RPD	Qualifiers
Gasoline Range Organics	ug/L	ND	ND		30	
a,a,a-Trifluorotoluene (S)	%	98	96	2		

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

QC Batch: MSV/11378
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV 465 W
Associated Lab Samples: 1084716009

METHOD BLANK: 554690
Matrix: Water
Associated Lab Samples: 1084716009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	11/21/08 13:29	
1,1,1-Trichloroethane	ug/L	ND	1.0	11/21/08 13:29	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	11/21/08 13:29	
1,1,2-Trichloroethane	ug/L	ND	1.0	11/21/08 13:29	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	11/21/08 13:29	
1,1-Dichloroethane	ug/L	ND	1.0	11/21/08 13:29	
1,1-Dichloroethene	ug/L	ND	1.0	11/21/08 13:29	
1,1-Dichloropropene	ug/L	ND	1.0	11/21/08 13:29	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	11/21/08 13:29	
1,2,3-Trichloropropane	ug/L	ND	1.0	11/21/08 13:29	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	11/21/08 13:29	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	11/21/08 13:29	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	11/21/08 13:29	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	11/21/08 13:29	
1,2-Dichlorobenzene	ug/L	ND	1.0	11/21/08 13:29	
1,2-Dichloroethane	ug/L	ND	1.0	11/21/08 13:29	
1,2-Dichloropropane	ug/L	ND	1.0	11/21/08 13:29	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	11/21/08 13:29	
1,3-Dichlorobenzene	ug/L	ND	1.0	11/21/08 13:29	
1,3-Dichloropropane	ug/L	ND	1.0	11/21/08 13:29	
1,4-Dichlorobenzene	ug/L	ND	1.0	11/21/08 13:29	
2,2-Dichloropropane	ug/L	ND	1.0	11/21/08 13:29	
2-Butanone (MEK)	ug/L	ND	4.0	11/21/08 13:29	
2-Chlorotoluene	ug/L	ND	1.0	11/21/08 13:29	
4-Chlorotoluene	ug/L	ND	1.0	11/21/08 13:29	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	4.0	11/21/08 13:29	
Acetone	ug/L	ND	10.0	11/21/08 13:29	
Allyl chloride	ug/L	ND	4.0	11/21/08 13:29	
Benzene	ug/L	ND	1.0	11/21/08 13:29	
Bromobenzene	ug/L	ND	1.0	11/21/08 13:29	
Bromochloromethane	ug/L	ND	1.0	11/21/08 13:29	
Bromodichloromethane	ug/L	ND	1.0	11/21/08 13:29	
Bromoform	ug/L	ND	8.0	11/21/08 13:29	
Bromomethane	ug/L	ND	4.0	11/21/08 13:29	IC
Carbon tetrachloride	ug/L	ND	1.0	11/21/08 13:29	
Chlorobenzene	ug/L	ND	1.0	11/21/08 13:29	
Chloroethane	ug/L	ND	1.0	11/21/08 13:29	
Chloroform	ug/L	ND	1.0	11/21/08 13:29	
Chloromethane	ug/L	ND	1.0	11/21/08 13:29	
cis-1,2-Dichloroethene	ug/L	ND	1.0	11/21/08 13:29	
cis-1,3-Dichloropropene	ug/L	ND	4.0	11/21/08 13:29	
Dibromochloromethane	ug/L	ND	1.0	11/21/08 13:29	
Dibromomethane	ug/L	ND	1.0	11/21/08 13:29	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

METHOD BLANK: 554690 Matrix: Water

Associated Lab Samples: 1084716009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dichlorodifluoromethane	ug/L	ND	1.0	11/21/08 13:29	
Dichlorofluoromethane	ug/L	ND	1.0	11/21/08 13:29	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	11/21/08 13:29	
Ethylbenzene	ug/L	ND	1.0	11/21/08 13:29	
Hexachloro-1,3-butadiene	ug/L	ND	4.0	11/21/08 13:29	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	11/21/08 13:29	
m&p-Xylene	ug/L	ND	2.0	11/21/08 13:29	
Methyl-tert-butyl ether	ug/L	ND	1.0	11/21/08 13:29	
Methylene Chloride	ug/L	ND	4.0	11/21/08 13:29	
n-Butylbenzene	ug/L	ND	1.0	11/21/08 13:29	
n-Propylbenzene	ug/L	ND	1.0	11/21/08 13:29	
Naphthalene	ug/L	ND	4.0	11/21/08 13:29	
o-Xylene	ug/L	ND	1.0	11/21/08 13:29	
p-Isopropyltoluene	ug/L	ND	1.0	11/21/08 13:29	
sec-Butylbenzene	ug/L	ND	1.0	11/21/08 13:29	
Styrene	ug/L	ND	1.0	11/21/08 13:29	
tert-Butylbenzene	ug/L	ND	1.0	11/21/08 13:29	
Tetrachloroethene	ug/L	ND	1.0	11/21/08 13:29	
Tetrahydrofuran	ug/L	ND	10.0	11/21/08 13:29	
Toluene	ug/L	ND	1.0	11/21/08 13:29	
trans-1,2-Dichloroethene	ug/L	ND	1.0	11/21/08 13:29	
trans-1,3-Dichloropropene	ug/L	ND	4.0	11/21/08 13:29	
Trichloroethene	ug/L	ND	1.0	11/21/08 13:29	
Trichlorofluoromethane	ug/L	ND	1.0	11/21/08 13:29	
Vinyl chloride	ug/L	ND	0.40	11/21/08 13:29	
Xylene (Total)	ug/L	ND	3.0	11/21/08 13:29	
1,2-Dichloroethane-d4 (S)	%	110	75-125	11/21/08 13:29	
4-Bromofluorobenzene (S)	%	100	75-125	11/21/08 13:29	
Dibromofluoromethane (S)	%	107	75-125	11/21/08 13:29	
Toluene-d8 (S)	%	97	75-125	11/21/08 13:29	

LABORATORY CONTROL SAMPLE: 554691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	18.7	93	75-135	
1,1,1-Trichloroethane	ug/L	20	19.4	97	75-132	
1,1,2,2-Tetrachloroethane	ug/L	20	20.3	102	75-125	
1,1,2-Trichloroethane	ug/L	20	20.4	102	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	22.1	110	73-141	
1,1-Dichloroethane	ug/L	20	19.1	95	75-125	
1,1-Dichloroethene	ug/L	20	19.9	99	75-127	
1,1-Dichloropropene	ug/L	20	19.7	99	75-126	
1,2,3-Trichlorobenzene	ug/L	20	19.4	97	75-125	
1,2,3-Trichloropropane	ug/L	20	19.2	96	75-125	
1,2,4-Trichlorobenzene	ug/L	20	19.0	95	75-125	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

LABORATORY CONTROL SAMPLE: 554691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.2	96	75-125	
1,2-Dibromo-3-chloropropane	ug/L	20	19.2	96	67-125	
1,2-Dibromoethane (EDB)	ug/L	20	19.2	96	75-125	
1,2-Dichlorobenzene	ug/L	20	19.2	96	75-125	
1,2-Dichloroethane	ug/L	20	18.9	95	75-125	
1,2-Dichloropropane	ug/L	20	19.2	96	75-125	
1,3,5-Trimethylbenzene	ug/L	20	19.7	98	75-125	
1,3-Dichlorobenzene	ug/L	20	18.7	93	75-125	
1,3-Dichloropropane	ug/L	20	19.9	99	75-125	
1,4-Dichlorobenzene	ug/L	20	20.2	101	75-125	
2,2-Dichloropropane	ug/L	20	19.9	99	50-150	
2-Butanone (MEK)	ug/L	20	15.2	76	68-127	
2-Chlorotoluene	ug/L	20	19.5	98	75-125	
4-Chlorotoluene	ug/L	20	19.6	98	75-125	
4-Methyl-2-pentanone (MIBK)	ug/L	20	19.8	99	68-133	
Acetone	ug/L	50	38.9	78	65-139	
Allyl chloride	ug/L	20	17.6	88	55-145	
Benzene	ug/L	20	19.0	95	75-125	
Bromobenzene	ug/L	20	18.0	90	75-125	
Bromochloromethane	ug/L	20	20.6	103	75-127	
Bromodichloromethane	ug/L	20	19.1	96	75-125	
Bromoform	ug/L	40	34.7	87	67-125	
Bromomethane	ug/L	20	25.0	125	65-150	IC
Carbon tetrachloride	ug/L	20	18.9	95	67-133	
Chlorobenzene	ug/L	20	18.4	92	75-125	
Chloroethane	ug/L	20	18.1	91	75-129	
Chloroform	ug/L	20	19.4	97	75-125	
Chloromethane	ug/L	20	19.5	98	67-135	
cis-1,2-Dichloroethene	ug/L	20	19.1	96	75-125	
cis-1,3-Dichloropropene	ug/L	20	20.0	100	75-125	
Dibromochloromethane	ug/L	20	18.6	93	73-125	
Dibromomethane	ug/L	20	19.7	98	75-125	
Dichlorodifluoromethane	ug/L	20	19.8	99	55-150	
Dichlorofluoromethane	ug/L	20	19.6	98	75-129	
Diethyl ether (Ethyl ether)	ug/L	20	21.1	105	75-125	
Ethylbenzene	ug/L	20	19.1	96	75-125	
Hexachloro-1,3-butadiene	ug/L	20	19.4	97	75-132	
Isopropylbenzene (Cumene)	ug/L	20	19.2	96	75-125	
m&p-Xylene	ug/L	40	39.6	99	75-125	
Methyl-tert-butyl ether	ug/L	20	20.1	101	65-140	
Methylene Chloride	ug/L	20	20.0	100	63-125	
n-Butylbenzene	ug/L	20	19.0	95	75-125	
n-Propylbenzene	ug/L	20	18.8	94	75-125	
Naphthalene	ug/L	20	18.3	91	72-128	
o-Xylene	ug/L	20	19.6	98	75-125	
p-Isopropyltoluene	ug/L	20	19.7	99	75-125	
sec-Butylbenzene	ug/L	20	19.2	96	75-125	
Styrene	ug/L	20	19.9	100	75-125	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

LABORATORY CONTROL SAMPLE: 554691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
tert-Butylbenzene	ug/L	20	19.5	97	75-125	
Tetrachloroethene	ug/L	20	17.4	87	75-125	
Tetrahydrofuran	ug/L	200	154	77	60-147	
Toluene	ug/L	20	18.4	92	75-125	
trans-1,2-Dichloroethene	ug/L	20	19.3	96	75-125	
trans-1,3-Dichloropropene	ug/L	20	18.7	93	69-125	
Trichloroethene	ug/L	20	18.3	92	75-125	
Trichlorofluoromethane	ug/L	20	21.0	105	75-135	
Vinyl chloride	ug/L	20	19.4	97	71-133	
Xylene (Total)	ug/L	60	59.2	99	75-125	
1,2-Dichloroethane-d4 (S)	%			106	75-125	
4-Bromofluorobenzene (S)	%			97	75-125	
Dibromofluoromethane (S)	%			105	75-125	
Toluene-d8 (S)	%			101	75-125	

MATRIX SPIKE SAMPLE: 556004

Parameter	Units	1084798004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	19.7	99	75-135	
1,1,1-Trichloroethane	ug/L	ND	20	20.9	104	75-140	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	19.6	98	75-130	
1,1,2-Trichloroethane	ug/L	ND	20	19.8	99	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	22.1	110	69-150	
1,1-Dichloroethane	ug/L	ND	20	19.7	99	70-140	
1,1-Dichloroethene	ug/L	ND	20	20.4	102	75-141	
1,1-Dichloropropene	ug/L	ND	20	22.0	110	75-144	
1,2,3-Trichlorobenzene	ug/L	ND	20	21.6	108	68-125	
1,2,3-Trichloropropane	ug/L	ND	20	18.9	94	74-126	
1,2,4-Trichlorobenzene	ug/L	ND	20	21.6	108	70-125	
1,2,4-Trimethylbenzene	ug/L	ND	20	21.2	106	61-136	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	19.1	95	67-125	
1,2-Dibromoethane (EDB)	ug/L	ND	20	19.1	95	75-125	
1,2-Dichlorobenzene	ug/L	ND	20	20.2	101	75-125	
1,2-Dichloroethane	ug/L	ND	20	17.9	90	75-130	
1,2-Dichloropropane	ug/L	ND	20	19.2	96	75-126	
1,3,5-Trimethylbenzene	ug/L	ND	20	21.9	110	66-135	
1,3-Dichlorobenzene	ug/L	ND	20	20.6	103	75-125	
1,3-Dichloropropane	ug/L	ND	20	19.5	97	75-125	
1,4-Dichlorobenzene	ug/L	ND	20	21.2	106	75-125	
2,2-Dichloropropane	ug/L	ND	20	22.2	111	50-150	
2-Butanone (MEK)	ug/L	ND	20	10.2	51	68-127	M0
2-Chlorotoluene	ug/L	ND	20	21.1	106	66-148	
4-Chlorotoluene	ug/L	ND	20	21.2	106	68-136	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	20	18.7	93	68-133	
Acetone	ug/L	ND	50	34.2	58	50-150	
Allyl chloride	ug/L	ND	20	21.1	105	50-147	
Benzene	ug/L	ND	20	19.6	98	75-126	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

MATRIX SPIKE SAMPLE: 556004

Parameter	Units	1084798004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/L	ND	20	19.0	95	75-125	
Bromochloromethane	ug/L	ND	20	20.2	101	75-127	
Bromodichloromethane	ug/L	ND	20	19.7	99	72-130	
Bromoform	ug/L	ND	40	34.4	86	56-125	
Bromomethane	ug/L	ND	20	23.1	116	50-150	IC
Carbon tetrachloride	ug/L	ND	20	22.2	111	68-144	
Chlorobenzene	ug/L	ND	20	19.6	98	75-125	
Chloroethane	ug/L	ND	20	16.1	81	75-142	
Chloroform	ug/L	ND	20	20.0	100	75-134	
Chloromethane	ug/L	ND	20	17.0	85	61-148	
cis-1,2-Dichloroethene	ug/L	ND	20	19.9	100	65-148	
cis-1,3-Dichloropropene	ug/L	ND	20	20.0	100	59-132	
Dibromochloromethane	ug/L	ND	20	19.2	96	63-125	
Dibromomethane	ug/L	ND	20	19.9	100	75-125	
Dichlorodifluoromethane	ug/L	ND	20	23.1	115	50-150	
Dichlorofluoromethane	ug/L	ND	20	20.0	100	75-138	
Diethyl ether (Ethyl ether)	ug/L	ND	20	18.6	93	74-128	
Ethylbenzene	ug/L	ND	20	21.0	105	75-126	
Hexachloro-1,3-butadiene	ug/L	ND	20	23.0	115	63-146	
Isopropylbenzene (Cumene)	ug/L	ND	20	21.4	107	75-131	
m&p-Xylene	ug/L	ND	40	42.9	107	67-137	
Methyl-tert-butyl ether	ug/L	ND	20	18.8	94	59-140	
Methylene Chloride	ug/L	ND	20	20.2	101	62-133	
n-Butylbenzene	ug/L	ND	20	23.0	115	62-141	
n-Propylbenzene	ug/L	ND	20	22.0	110	73-139	
Naphthalene	ug/L	ND	20	19.5	98	69-129	
o-Xylene	ug/L	ND	20	20.4	102	75-126	
p-Isopropyltoluene	ug/L	ND	20	23.1	116	70-137	
sec-Butylbenzene	ug/L	ND	20	22.9	114	73-140	
Styrene	ug/L	ND	20	21.0	105	50-144	
tert-Butylbenzene	ug/L	ND	20	22.4	112	73-136	
Tetrachloroethene	ug/L	ND	20	20.4	102	75-133	
Tetrahydrofuran	ug/L	ND	200	139	70	67-135	
Toluene	ug/L	ND	20	20.8	104	75-125	
trans-1,2-Dichloroethene	ug/L	ND	20	21.3	107	75-138	
trans-1,3-Dichloropropene	ug/L	ND	20	18.6	93	59-125	
Trichloroethene	ug/L	ND	20	19.9	100	75-130	
Trichlorofluoromethane	ug/L	ND	20	21.8	109	71-150	
Vinyl chloride	ug/L	ND	20	19.3	96	64-150	
Xylene (Total)	ug/L	ND	60	63.3	106	75-125	
1,2-Dichloroethane-d4 (S)	%				97	75-125	
4-Bromofluorobenzene (S)	%				100	75-125	
Dibromofluoromethane (S)	%				100	75-125	
Toluene-d8 (S)	%				100	75-125	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

SAMPLE DUPLICATE: 556005

Parameter	Units	1084886001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	.58J		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	IC
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	.69J		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

SAMPLE DUPLICATE: 556005

Parameter	Units	1084886001 Result	Dup Result	RPD	Max RPD	Qualifiers
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	1.3	1.5	13	30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	.81J		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	3.1	3.3	7	30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	117	116	1		
4-Bromofluorobenzene (S)	%	105	99	5		
Dibromofluoromethane (S)	%	107	106	1		pH
Toluene-d8 (S)	%	98	98	6		

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

QC Batch: AIR/7755 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 1084716001, 1084716002, 1084716004

METHOD BLANK: 555076 Matrix: Air
Associated Lab Samples: 1084716001, 1084716002, 1084716004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	1.1	11/21/08 17:46	
1,1,2,2-Tetrachloroethane	ug/m3	ND	1.4	11/21/08 17:46	
1,1,2-Trichloroethane	ug/m3	ND	1.1	11/21/08 17:46	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	1.6	11/21/08 17:46	
1,1-Dichloroethane	ug/m3	ND	0.82	11/21/08 17:46	
1,1-Dichloroethene	ug/m3	ND	0.81	11/21/08 17:46	
1,2,4-Trichlorobenzene	ug/m3	ND	0.99	11/21/08 17:46	
1,2,4-Trimethylbenzene	ug/m3	ND	2.5	11/21/08 17:46	L2
1,2-Dibromoethane (EDB)	ug/m3	ND	1.6	11/21/08 17:46	
1,2-Dichlorobenzene	ug/m3	ND	1.2	11/21/08 17:46	
1,2-Dichloroethane	ug/m3	ND	0.82	11/21/08 17:46	
1,2-Dichloropropane	ug/m3	ND	0.94	11/21/08 17:46	
1,3,5-Trimethylbenzene	ug/m3	ND	2.5	11/21/08 17:46	L2
1,3-Butadiene	ug/m3	ND	0.45	11/21/08 17:46	
1,3-Dichlorobenzene	ug/m3	ND	1.2	11/21/08 17:46	
1,4-Dichlorobenzene	ug/m3	ND	1.2	11/21/08 17:46	
2-Butanone (MEK)	ug/m3	ND	0.60	11/21/08 17:46	
2-Hexanone	ug/m3	ND	0.83	11/21/08 17:46	
2-Propanol	ug/m3	ND	2.5	11/21/08 17:46	
4-Ethyltoluene	ug/m3	ND	2.5	11/21/08 17:46	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	0.83	11/21/08 17:46	
Acetone	ug/m3	ND	0.48	11/21/08 17:46	
Benzene	ug/m3	ND	0.65	11/21/08 17:46	
Bromodichloromethane	ug/m3	ND	1.4	11/21/08 17:46	
Bromoform	ug/m3	ND	2.1	11/21/08 17:46	
Bromomethane	ug/m3	ND	0.79	11/21/08 17:46	
Carbon disulfide	ug/m3	ND	0.63	11/21/08 17:46	
Carbon tetrachloride	ug/m3	ND	1.3	11/21/08 17:46	
Chlorobenzene	ug/m3	ND	0.94	11/21/08 17:46	
Chloroethane	ug/m3	ND	0.54	11/21/08 17:46	
Chloroform	ug/m3	ND	0.99	11/21/08 17:46	
Chloromethane	ug/m3	ND	0.42	11/21/08 17:46	
cis-1,2-Dichloroethene	ug/m3	ND	0.81	11/21/08 17:46	
cis-1,3-Dichloropropene	ug/m3	ND	0.92	11/21/08 17:46	
Cyclohexane	ug/m3	ND	0.68	11/21/08 17:46	
Dibromochloromethane	ug/m3	ND	1.7	11/21/08 17:46	
Dichlorodifluoromethane	ug/m3	ND	1.0	11/21/08 17:46	
Dichlorotetrafluoroethane	ug/m3	ND	1.4	11/21/08 17:46	
Ethanol	ug/m3	ND	1.9	11/21/08 17:46	
Ethyl acetate	ug/m3	ND	0.73	11/21/08 17:46	
Ethylbenzene	ug/m3	ND	0.88	11/21/08 17:46	
Hexachloro-1,3-butadiene	ug/m3	ND	2.2	11/21/08 17:46	
m&p-Xylene	ug/m3	ND	1.8	11/21/08 17:46	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

METHOD BLANK: 555076 Matrix: Air

Associated Lab Samples: 1084716001, 1084716002, 1084716004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl-tert-butyl ether	ug/m3	ND	0.73	11/21/08 17:46	
Methylene Chloride	ug/m3	ND	0.71	11/21/08 17:46	
n-Heptane	ug/m3	ND	0.83	11/21/08 17:46	
n-Hexane	ug/m3	ND	0.72	11/21/08 17:46	
Naphthalene	ug/m3	ND	2.7	11/21/08 17:46	
o-Xylene	ug/m3	ND	0.88	11/21/08 17:46	
Propylene	ug/m3	ND	0.35	11/21/08 17:46	
Styrene	ug/m3	ND	0.87	11/21/08 17:46	
Tetrachloroethene	ug/m3	ND	1.4	11/21/08 17:46	
Tetrahydrofuran	ug/m3	ND	0.60	11/21/08 17:46	
Toluene	ug/m3	ND	0.77	11/21/08 17:46	
trans-1,2-Dichloroethene	ug/m3	ND	0.81	11/21/08 17:46	
trans-1,3-Dichloropropene	ug/m3	ND	0.92	11/21/08 17:46	
Trichloroethene	ug/m3	ND	1.1	11/21/08 17:46	
Trichlorofluoromethane	ug/m3	ND	1.1	11/21/08 17:46	
Vinyl acetate	ug/m3	ND	0.71	11/21/08 17:46	
Vinyl chloride	ug/m3	ND	0.52	11/21/08 17:46	

LABORATORY CONTROL SAMPLE: 555077

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	61	58.1	95	60-134	
1,1,2,2-Tetrachloroethane	ug/m3	71.2	63.7	90	55-141	
1,1,2-Trichloroethane	ug/m3	53.8	52.4	97	64-129	
1,1,2-Trichlorotrifluoroethane	ug/m3	60.8	62.5	103	55-137	
1,1-Dichloroethane	ug/m3	37	37.3	101	59-136	
1,1-Dichloroethene	ug/m3	41.5	41.4	100	60-137	
1,2,4-Trichlorobenzene	ug/m3	65.7	57.5	88	50-150	
1,2,4-Trimethylbenzene	ug/m3	49	27.6	56	63-137	L2
1,2-Dibromoethane (EDB)	ug/m3	80.5	76.2	95	61-136	
1,2-Dichlorobenzene	ug/m3	63	58.1	92	60-139	
1,2-Dichloroethane	ug/m3	44.9	41.9	93	56-141	
1,2-Dichloropropane	ug/m3	55	50.5	92	57-131	
1,3,5-Trimethylbenzene	ug/m3	52.5	31.6	60	61-134	L2
1,3-Butadiene	ug/m3	23.2	22.6	97	53-140	
1,3-Dichlorobenzene	ug/m3	61.1	59.0	96	59-136	
1,4-Dichlorobenzene	ug/m3	62.4	60.7	97	59-130	
2-Butanone (MEK)	ug/m3	31.5	29.5	94	54-133	
2-Hexanone	ug/m3	42.9	37.7	88	54-139	
2-Propanol	ug/m3	19.8	20.8	105	50-150	
4-Ethyltoluene	ug/m3	49	43.5	89	61-138	
4-Methyl-2-pentanone (MIBK)	ug/m3	42.1	37.5	89	53-139	
Acetone	ug/m3	17.4	18.8	108	50-139	
Benzene	ug/m3	32.5	30.4	94	64-125	
Bromodichloromethane	ug/m3	68.8	67.2	98	61-131	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

LABORATORY CONTROL SAMPLE: 555077

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromoform	ug/m3	109	92.9	85	66-138	
Bromomethane	ug/m3	38.7	40.1	104	55-135	
Carbon disulfide	ug/m3	32.9	37.5	114	50-150	
Carbon tetrachloride	ug/m3	67.2	62.4	93	58-135	
Chlorobenzene	ug/m3	48.7	46.0	95	62-139	
Chloroethane	ug/m3	26.3	26.7	102	56-140	
Chloroform	ug/m3	53.1	50.6	95	50-150	
Chloromethane	ug/m3	20.8	20.7	100	56-144	
cis-1,2-Dichloroethene	ug/m3	41.1	40.0	97	62-135	
cis-1,3-Dichloropropene	ug/m3	58.2	55.3	95	64-133	
Cyclohexane	ug/m3	40.3	40.2	100	54-139	
Dibromochloromethane	ug/m3	89.2	80.0	90	50-150	
Dichlorodifluoromethane	ug/m3	48.8	49.7	102	60-130	
Dichlorotetrafluoroethane	ug/m3	69	63.0	91	59-130	
Ethanol	ug/m3	19.2	60.5	316	50-150	SS
Ethyl acetate	ug/m3	39.2	42.4	108	60-132	
Ethylbenzene	ug/m3	50.3	35.4	70	65-140	
Hexachloro-1,3-butadiene	ug/m3	86.8	78.8	91	50-150	
m&p-Xylene	ug/m3	91.8	66.5	72	60-132	
Methyl-tert-butyl ether	ug/m3	38.9	37.1	95	50-150	
Methylene Chloride	ug/m3	30.4	30.3	100	56-138	
n-Heptane	ug/m3	39.6	40.0	101	62-135	
n-Hexane	ug/m3	40.5	35.4	87	62-134	
Naphthalene	ug/m3	46.9	36.3	77	70-130	
o-Xylene	ug/m3	45	30.6	68	64-132	
Propylene	ug/m3	18.7	19.5	104	56-125	
Styrene	ug/m3	42.5	41.0	96	69-134	
Tetrachloroethene	ug/m3	73.1	68.7	94	60-137	
Tetrahydrofuran	ug/m3	15.9	16.5	104	52-139	
Toluene	ug/m3	39.5	32.9	83	69-130	
trans-1,2-Dichloroethene	ug/m3	43.1	42.2	98	50-150	
trans-1,3-Dichloropropene	ug/m3	50.3	46.2	92	70-142	
Trichloroethene	ug/m3	55.2	63.4	115	60-134	
Trichlorofluoromethane	ug/m3	51.4	56.6	110	56-141	
Vinyl acetate	ug/m3	38.3	36.0	94	61-142	
Vinyl chloride	ug/m3	25.2	27.2	108	66-132	

SAMPLE DUPLICATE: 555651

Parameter	Units	1083968001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	ND	ND		25	
1,1,2-Trichloroethane	ug/m3	ND	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	0.83	.85J		25	
1,1-Dichloroethane	ug/m3	ND	ND		25	
1,1-Dichloroethene	ug/m3	ND	ND		25	
1,2,4-Trichlorobenzene	ug/m3	ND	ND		25	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

SAMPLE DUPLICATE: 555651

Parameter	Units	1083968001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/m3	ND	ND		25	L2
1,2-Dibromoethane (EDB)	ug/m3	ND	ND		25	
1,2-Dichlorobenzene	ug/m3	ND	ND		25	
1,2-Dichloroethane	ug/m3	ND	ND		25	
1,2-Dichloropropane	ug/m3	ND	ND		25	
1,3,5-Trimethylbenzene	ug/m3	ND	ND		25	L2
1,3-Butadiene	ug/m3	ND	ND		25	
1,3-Dichlorobenzene	ug/m3	ND	ND		25	
1,4-Dichlorobenzene	ug/m3	ND	ND		25	
2-Butanone (MEK)	ug/m3	2.7	2.6	3	25	
2-Hexanone	ug/m3	ND	ND		25	
2-Propanol	ug/m3	ND	ND		25	
4-Ethyltoluene	ug/m3	ND	ND		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	ND		25	
Acetone	ug/m3	12.4	12.2	2	25	
Benzene	ug/m3	1.8	1.7	2	25	
Bromodichloromethane	ug/m3	ND	ND		25	
Bromoform	ug/m3	ND	ND		25	
Bromomethane	ug/m3	ND	ND		25	
Carbon disulfide	ug/m3	0.34	.34J		25	
Carbon tetrachloride	ug/m3	ND	ND		25	
Chlorobenzene	ug/m3	ND	ND		25	
Chloroethane	ug/m3	ND	ND		25	
Chloroform	ug/m3	ND	ND		25	
Chloromethane	ug/m3	1.2	1.2	2	25	
cis-1,2-Dichloroethene	ug/m3	ND	ND		25	
cis-1,3-Dichloropropene	ug/m3	ND	ND		25	
Cyclohexane	ug/m3	ND	ND		25	
Dibromochloromethane	ug/m3	ND	ND		25	
Dichlorodifluoromethane	ug/m3	3.4	3.2	5	25	
Dichlorotetrafluoroethane	ug/m3	ND	ND		25	
Ethanol	ug/m3	38.5	37.6	2	25	SS
Ethyl acetate	ug/m3	ND	ND		25	
Ethylbenzene	ug/m3	0.76	.85J		25	
Hexachloro-1,3-butadiene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	2.9	2.9	.2	25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
Methylene Chloride	ug/m3	0.62	ND		25	
n-Heptane	ug/m3	ND	ND		25	
n-Hexane	ug/m3	1.1	1.1	1	25	
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	0.77	.8J		25	
Propylene	ug/m3	ND	ND		25	
Styrene	ug/m3	2.8	2.7	4	25	
Tetrachloroethene	ug/m3	ND	ND		25	
Tetrahydrofuran	ug/m3	ND	ND		25	
Toluene	ug/m3	3.3	3.3	1	25	
trans-1,2-Dichloroethene	ug/m3	ND	ND		25	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

SAMPLE DUPLICATE: 555651

Parameter	Units	1083968001 Result	Dup Result	RPD	Max RPD	Qualifiers
trans-1,3-Dichloropropene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Trichlorofluoromethane	ug/m3	1.9	1.9	.9	25	
Vinyl acetate	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

QC Batch: AIR/7769
QC Batch Method: TO-15
Analysis Method: TO-15
Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 1084716003

METHOD BLANK: 555963
Matrix: Air
Associated Lab Samples: 1084716003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	1.1	11/24/08 18:43	
1,1,2,2-Tetrachloroethane	ug/m3	ND	1.4	11/24/08 18:43	
1,1,2-Trichloroethane	ug/m3	ND	1.1	11/24/08 18:43	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	1.6	11/24/08 18:43	
1,1-Dichloroethane	ug/m3	ND	0.82	11/24/08 18:43	
1,1-Dichloroethene	ug/m3	ND	0.81	11/24/08 18:43	
1,2,4-Trichlorobenzene	ug/m3	ND	0.99	11/24/08 18:43	
1,2,4-Trimethylbenzene	ug/m3	ND	2.5	11/24/08 18:43	L2
1,2-Dibromoethane (EDB)	ug/m3	ND	1.6	11/24/08 18:43	
1,2-Dichlorobenzene	ug/m3	ND	1.2	11/24/08 18:43	
1,2-Dichloroethane	ug/m3	ND	0.82	11/24/08 18:43	
1,2-Dichloropropane	ug/m3	ND	0.94	11/24/08 18:43	
1,3,5-Trimethylbenzene	ug/m3	ND	2.5	11/24/08 18:43	L2
1,3-Butadiene	ug/m3	ND	0.45	11/24/08 18:43	
1,3-Dichlorobenzene	ug/m3	ND	1.2	11/24/08 18:43	
1,4-Dichlorobenzene	ug/m3	ND	1.2	11/24/08 18:43	
2-Butanone (MEK)	ug/m3	ND	0.60	11/24/08 18:43	
2-Hexanone	ug/m3	ND	0.83	11/24/08 18:43	
2-Propanol	ug/m3	ND	2.5	11/24/08 18:43	
4-Ethyltoluene	ug/m3	ND	2.5	11/24/08 18:43	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	0.83	11/24/08 18:43	
Acetone	ug/m3	ND	0.48	11/24/08 18:43	
Benzene	ug/m3	ND	0.65	11/24/08 18:43	
Bromodichloromethane	ug/m3	ND	1.4	11/24/08 18:43	
Bromoform	ug/m3	ND	2.1	11/24/08 18:43	
Bromomethane	ug/m3	ND	0.79	11/24/08 18:43	
Carbon disulfide	ug/m3	ND	0.63	11/24/08 18:43	
Carbon tetrachloride	ug/m3	ND	1.3	11/24/08 18:43	
Chlorobenzene	ug/m3	ND	0.94	11/24/08 18:43	
Chloroethane	ug/m3	ND	0.54	11/24/08 18:43	
Chloroform	ug/m3	ND	0.99	11/24/08 18:43	
Chloromethane	ug/m3	ND	0.42	11/24/08 18:43	
cis-1,2-Dichloroethene	ug/m3	ND	0.81	11/24/08 18:43	
cis-1,3-Dichloropropene	ug/m3	ND	0.92	11/24/08 18:43	
Cyclohexane	ug/m3	ND	0.68	11/24/08 18:43	
Dibromochloromethane	ug/m3	ND	1.7	11/24/08 18:43	
Dichlorodifluoromethane	ug/m3	ND	1.0	11/24/08 18:43	
Dichlorotetrafluoroethane	ug/m3	ND	1.4	11/24/08 18:43	
Ethanol	ug/m3	ND	1.9	11/24/08 18:43	
Ethyl acetate	ug/m3	ND	0.73	11/24/08 18:43	
Ethylbenzene	ug/m3	ND	0.88	11/24/08 18:43	
Hexachloro-1,3-butadiene	ug/m3	ND	2.2	11/24/08 18:43	
m&p-Xylene	ug/m3	ND	1.8	11/24/08 18:43	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

METHOD BLANK: 555963 Matrix: Air

Associated Lab Samples: 1084716003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methyl-tert-butyl ether	ug/m3	ND	0.73	11/24/08 18:43	
Methylene Chloride	ug/m3	ND	0.71	11/24/08 18:43	
n-Heptane	ug/m3	ND	0.83	11/24/08 18:43	
n-Hexane	ug/m3	ND	0.72	11/24/08 18:43	
Naphthalene	ug/m3	ND	2.7	11/24/08 18:43	
o-Xylene	ug/m3	ND	0.88	11/24/08 18:43	
Propylene	ug/m3	ND	0.35	11/24/08 18:43	
Styrene	ug/m3	ND	0.87	11/24/08 18:43	
Tetrachloroethene	ug/m3	ND	1.4	11/24/08 18:43	
Tetrahydrofuran	ug/m3	ND	0.60	11/24/08 18:43	
Toluene	ug/m3	ND	0.77	11/24/08 18:43	
trans-1,2-Dichloroethene	ug/m3	ND	0.81	11/24/08 18:43	
trans-1,3-Dichloropropene	ug/m3	ND	0.92	11/24/08 18:43	
Trichloroethene	ug/m3	ND	1.1	11/24/08 18:43	
Trichlorofluoromethane	ug/m3	ND	1.1	11/24/08 18:43	
Vinyl acetate	ug/m3	ND	0.71	11/24/08 18:43	
Vinyl chloride	ug/m3	ND	0.52	11/24/08 18:43	

LABORATORY CONTROL SAMPLE: 555964

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/m3	61	55.8	91	60-134	
1,1,2,2-Tetrachloroethane	ug/m3	71.2	60.8	85	55-141	
1,1,2-Trichloroethane	ug/m3	53.8	50.3	93	64-129	
1,1,2-Trichlorotrifluoroethane	ug/m3	60.8	55.8	92	55-137	
1,1-Dichloroethane	ug/m3	37	31.5	85	59-136	
1,1-Dichloroethene	ug/m3	41.5	36.5	88	60-137	
1,2,4-Trichlorobenzene	ug/m3	65.7	46.3	70	50-150	
1,2,4-Trimethylbenzene	ug/m3	49	27.7	56	63-137	L2
1,2-Dibromoethane (EDB)	ug/m3	80.5	67.9	84	61-136	
1,2-Dichlorobenzene	ug/m3	63	54.4	86	60-139	
1,2-Dichloroethane	ug/m3	44.9	40.5	90	56-141	
1,2-Dichloropropane	ug/m3	55	51.1	93	57-131	
1,3,5-Trimethylbenzene	ug/m3	52.5	29.1	56	61-134	L2
1,3-Butadiene	ug/m3	23.2	21.2	91	53-140	
1,3-Dichlorobenzene	ug/m3	61.1	54.1	88	59-136	
1,4-Dichlorobenzene	ug/m3	62.4	56.1	90	59-130	
2-Butanone (MEK)	ug/m3	31.5	27.8	88	54-133	
2-Hexanone	ug/m3	42.9	35.3	82	54-139	
2-Propanol	ug/m3	19.8	18.5	93	50-150	
4-Ethyltoluene	ug/m3	49	39.1	80	61-138	
4-Methyl-2-pentanone (MIBK)	ug/m3	42.1	35.7	85	53-139	
Acetone	ug/m3	17.4	16.8	97	50-139	
Benzene	ug/m3	32.5	29.0	89	64-125	
Bromodichloromethane	ug/m3	68.8	65.2	95	61-131	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

LABORATORY CONTROL SAMPLE: 555964

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromoform	ug/m3	109	88.9	81	66-138	
Bromomethane	ug/m3	38.7	36.5	94	55-135	
Carbon disulfide	ug/m3	32.9	33.8	103	50-150	
Carbon tetrachloride	ug/m3	67.2	59.9	89	58-135	
Chlorobenzene	ug/m3	48.7	43.9	90	62-139	
Chloroethane	ug/m3	26.3	24.9	95	56-140	
Chloroform	ug/m3	53.1	47.3	89	50-150	
Chloromethane	ug/m3	20.8	19.2	93	56-144	
cis-1,2-Dichloroethene	ug/m3	41.1	38.3	93	62-135	
cis-1,3-Dichloropropene	ug/m3	58.2	50.3	86	64-133	
Cyclohexane	ug/m3	40.3	39.1	97	54-139	
Dibromochloromethane	ug/m3	89.2	74.7	84	50-150	
Dichlorodifluoromethane	ug/m3	48.8	47.9	98	60-130	
Dichlorotetrafluoroethane	ug/m3	69	59.0	86	59-130	
Ethanol	ug/m3	19.2	56.3	294	50-150	SS
Ethyl acetate	ug/m3	39.2	41.8	107	60-132	
Ethylbenzene	ug/m3	50.3	34.2	68	65-140	
Hexachloro-1,3-butadiene	ug/m3	86.8	201	232	50-150	L3
m&p-Xylene	ug/m3	91.8	62.9	69	60-132	
Methyl-tert-butyl ether	ug/m3	38.9	30.8	79	50-150	
Methylene Chloride	ug/m3	30.4	26.6	88	56-138	
n-Heptane	ug/m3	39.6	38.1	96	62-135	
n-Hexane	ug/m3	40.5	38.1	94	62-134	
Naphthalene	ug/m3	46.9	33.9	72	70-130	
o-Xylene	ug/m3	45	29.4	65	64-132	
Propylene	ug/m3	18.7	19.3	103	56-125	
Styrene	ug/m3	42.5	40.4	95	69-134	
Tetrachloroethene	ug/m3	73.1	63.2	86	60-137	
Tetrahydrofuran	ug/m3	15.9	15.9	100	52-139	
Toluene	ug/m3	39.5	31.3	79	69-130	
trans-1,2-Dichloroethene	ug/m3	43.1	37.6	87	50-150	
trans-1,3-Dichloropropene	ug/m3	50.3	40.6	81	70-142	
Trichloroethene	ug/m3	55.2	57.1	103	60-134	
Trichlorofluoromethane	ug/m3	51.4	49.3	96	56-141	
Vinyl acetate	ug/m3	38.3	31.2	81	61-142	
Vinyl chloride	ug/m3	25.2	24.8	98	66-132	

SAMPLE DUPLICATE: 556278

Parameter	Units	1084450008 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1-Trichloroethane	ug/m3	ND	ND		25	
1,1,2,2-Tetrachloroethane	ug/m3	ND	ND		25	
1,1,2-Trichloroethane	ug/m3	ND	ND		25	
1,1,2-Trichlorotrifluoroethane	ug/m3	ND	ND		25	
1,1-Dichloroethane	ug/m3	ND	ND		25	
1,1-Dichloroethene	ug/m3	ND	ND		25	
1,2,4-Trichlorobenzene	ug/m3	ND	ND		25	

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(612)607-1700

QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

SAMPLE DUPLICATE: 556278

Parameter	Units	1084450008 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/m3	ND	ND		25	L2
1,2-Dibromoethane (EDB)	ug/m3	ND	ND		25	
1,2-Dichlorobenzene	ug/m3	ND	ND		25	
1,2-Dichloroethane	ug/m3	ND	ND		25	
1,2-Dichloropropane	ug/m3	ND	ND		25	
1,3,5-Trimethylbenzene	ug/m3	ND	ND		25	L2
1,3-Butadiene	ug/m3	ND	ND		25	
1,3-Dichlorobenzene	ug/m3	ND	ND		25	
1,4-Dichlorobenzene	ug/m3	ND	ND		25	
2-Butanone (MEK)	ug/m3	1.7	1.6	.8	25	
2-Hexanone	ug/m3	ND	ND		25	
2-Propanol	ug/m3	ND	ND		25	
4-Ethyltoluene	ug/m3	ND	ND		25	
4-Methyl-2-pentanone (MIBK)	ug/m3	ND	ND		25	
Acetone	ug/m3	8.9	9.2	3	25	
Benzene	ug/m3	2.1	2.3	8	25	
Bromodichloromethane	ug/m3	ND	ND		25	
Bromoform	ug/m3	ND	ND		25	
Bromomethane	ug/m3	ND	ND		25	
Carbon disulfide	ug/m3	ND	ND		25	
Carbon tetrachloride	ug/m3	ND	ND		25	
Chlorobenzene	ug/m3	ND	ND		25	
Chloroethane	ug/m3	ND	ND		25	
Chloroform	ug/m3	ND	ND		25	
Chloromethane	ug/m3	0.78	0.81	4	25	
cis-1,2-Dichloroethene	ug/m3	ND	ND		25	
cis-1,3-Dichloropropene	ug/m3	ND	ND		25	
Cyclohexane	ug/m3	ND	ND		25	
Dibromochloromethane	ug/m3	ND	ND		25	
Dichlorodifluoromethane	ug/m3	2.4	2.8	14	25	
Dichlorotetrafluoroethane	ug/m3	ND	ND		25	
Ethanol	ug/m3	17.6	19.0	8	25	SS
Ethyl acetate	ug/m3	ND	ND		25	
Ethylbenzene	ug/m3	ND	.63J		25	
Hexachloro-1,3-butadiene	ug/m3	ND	ND		25	
m&p-Xylene	ug/m3	ND	2J		25	
Methyl-tert-butyl ether	ug/m3	ND	ND		25	
Methylene Chloride	ug/m3	1.6	1.6	1	25	
n-Heptane	ug/m3	ND	ND		25	
n-Hexane	ug/m3	2.2	2.7	19	25	
Naphthalene	ug/m3	ND	ND		25	
o-Xylene	ug/m3	ND	.62J		25	
Propylene	ug/m3	1.8	2.3	25	25	
Styrene	ug/m3	ND	ND		25	
Tetrachloroethene	ug/m3	13.8	15.9	14	25	
Tetrahydrofuran	ug/m3	ND	ND		25	
Toluene	ug/m3	5.0	5.8	16	25	
trans-1,2-Dichloroethene	ug/m3	ND	ND		25	

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QUALITY CONTROL DATA

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

SAMPLE DUPLICATE: 556278

Parameter	Units	1084450008 Result	Dup Result	RPD	Max RPD	Qualifiers
trans-1,3-Dichloropropene	ug/m3	ND	ND		25	
Trichloroethene	ug/m3	ND	ND		25	
Trichlorofluoromethane	ug/m3	ND	1.4		25	
Vinyl acetate	ug/m3	ND	ND		25	
Vinyl chloride	ug/m3	ND	ND		25	

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QUALIFIERS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

SAMPLE QUALIFIERS

Sample: 1084716001

[1] The Total Hydrocarbon (THC) pattern occured in the first half of the chromatogram (before toluene).

[2] The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

[3] Results confirmed by second analysis.

Sample: 1084716002

[1] The Total Hydrocarbon (THC) pattern occured in the first half of the chromatogram (before toluene).

Sample: 1084716003

[1] The Total Hydrocarbon (THC) pattern is evenly distributed throughout the chromatogram (before and after toluene).

Sample: 1084716004

[1] The Total Hydrocarbon (THC) pattern occured in the first half of the chromatogram (before toluene).

[2] This result is reported from a serial dilution

[3] The internal standard recoveries associated with this sample exceed the lower control limit. The reported results should be considered estimated values.

[4] Results confirmed by second analysis.

BATCH QUALIFIERS

Batch: GCV/5724

[1] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

[2] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

A3 The sample was analyzed by serial dilution.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

E Analyte concentration exceeded the calibration range. The reported result is estimated.

IC The initial calibration for this compound was outside of method control limits. The result is estimated.

L1 Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results may be biased high.

L2 Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.

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QUALIFIERS

Project: 005381.0044.0003 Jiffy Gas St
Pace Project No.: 1084716

ANALYTE QUALIFIERS

L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
M0	Matrix spike recovery was outside laboratory control limits.
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.
T6	High boiling point hydrocarbons are present in the sample.
T7	Low boiling point hydrocarbons are present in the sample.
pH	Post-analysis pH measurement indicates insufficient VOA sample preservation.

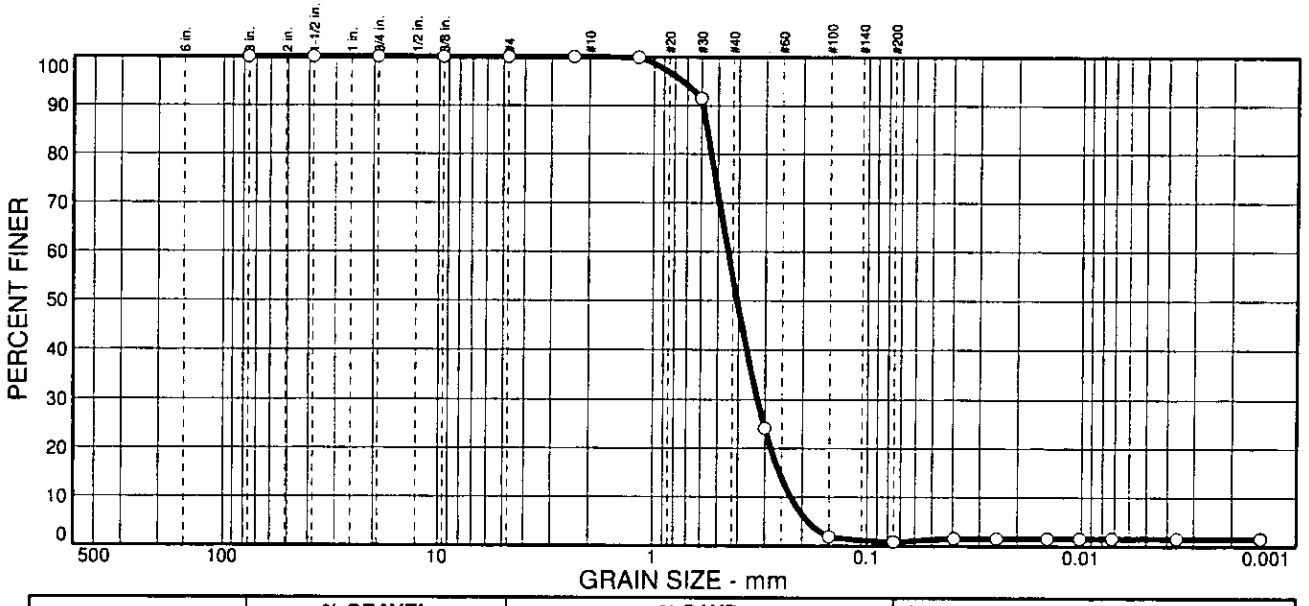
Particle Size Distribution Report

Project: WO# 1084716 WO NAME 005381.0044.0003 JIFFY GAS ST **Report No.:** 08-336-2016

Client: PACE ANALYTICAL SERVICES

Sample No: 1509157 **Source of Sample:** **Date:** 11/17/2008

Location: MW-1B 62-64' **Elev./Depth:**



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	45.6	53.5		1.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3 in.	100.0		
1.5 in.	100.0		
.75 in.	100.0		
.375 in.	100.0		
#4	100.0		
#8	100.0		
#16	99.9		
#30	91.5		
#50	24.1		
#100	1.9		
#200	0.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.565 D_{60}= 0.449 D_{50}= 0.407

D_{30}= 0.325 D_{15}= 0.256 D_{10}= 0.227

C_u= 1.98 C_c= 1.04

Classification

USCS= AASHTO=

Remarks

Figure

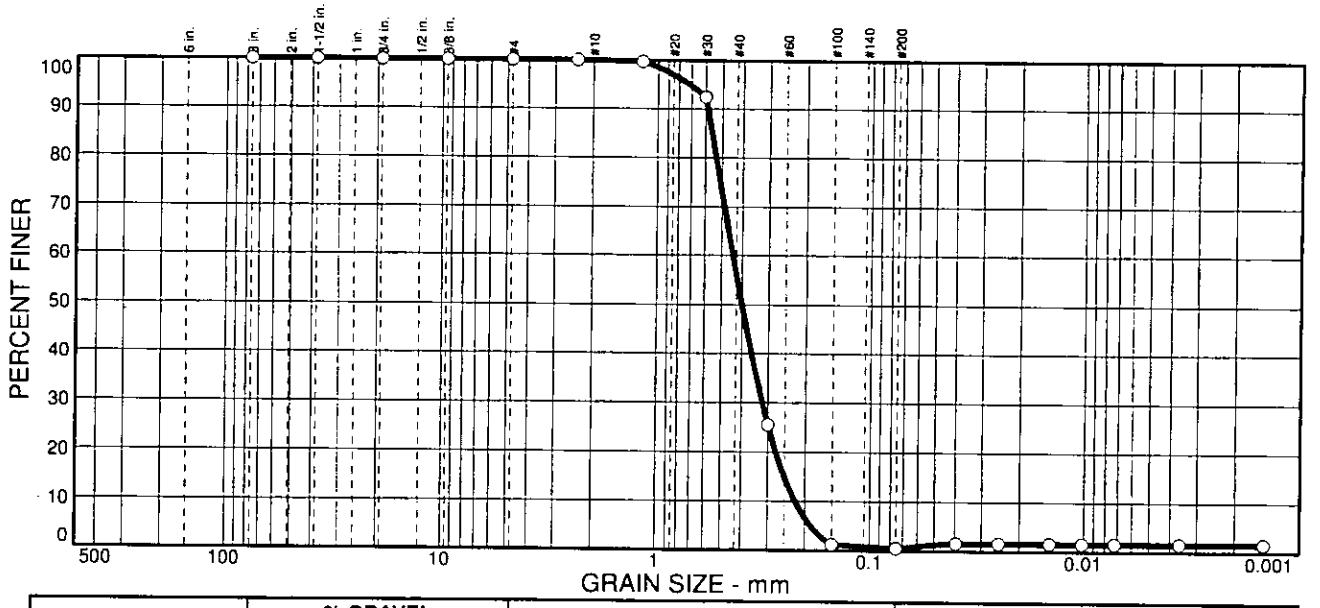
Particle Size Distribution Report

Project: WO# 1084716 WO NAME 005381.0044.0003 JIFFY GAS ST **Report No.:** 08-336-2016

Client: PACE ANALYTICAL SERVICES

Sample No: 1509157 DUP **Source of Sample:** **Date:** 11/17/2008

Location: MW-1B 62-64' DUP **Elev./Depth:**



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	44.2	55.3		1.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3 in.	100.0		
1.5 in.	100.0		
.75 in.	100.0		
.375 in.	100.0		
#4	100.0		
#8	100.0		
#16	99.7		
#30	92.4		
#50	25.5		
#100	1.2		
#200	0.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.560 D_{60}= 0.443 D_{50}= 0.401

D_{30}= 0.319 D_{15}= 0.251 D_{10}= 0.223

C_u= 1.99 C_c= 1.03

Classification

USCS= AASHTO=

Remarks

Figure

Data File: \\192.168.10.12\chem\10air7.i\112108.b\32618.D
Report Date: 24-Nov-2008 08:05

Pace Analytical Services

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name: Sample 9
Lab Smp Id: 08471600 1
Operator : LCW
Sample Location:
Sample Matrix: AIR
Analysis Type: VOA
Inj Date: 21-NOV-2008 21:34

Client SDG: 112108.b

Sample Date:
Sample Point:
Date Received:
Level: LOW

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/KG) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	6.523	13.6	J
2.	592-76-7	1-Heptene	7.681	27.6	NJ
3.		Unknown	8.412	22.5	J
4.	111-66-0	1-Octene	8.923	12.1	NJ
5.	2207-01-4	Cyclohexane, 1,2-dimethyl-,	9.648	16.8	NJ
6.	4126-78-7	Cycloheptane, methyl-	9.878	18.4	NJ
7.	6876-23-9	Cyclohexane, 1,2-dimethyl-,	10.143	18.9	NJ
8.		Unknown	10.868	11.8	J
9.		Unknown	11.029	14.3	J
10.	7667-60-9	Cyclohexane, 1,2,4-trimethy	11.367	12.8	NJ

Data File: \\192.168.10.12\chem\10air7.i\112108.b\32618.D
Report Date: 24-Nov-2008 08:05

Pace Analytical Services

TO15 Analysis (UNIX)

Data file : \\192.168.10.12\chem\10air7.i\112108.b\32618.D
Lab Smp Id: 10847160O1
Inj Date : 21-NOV-2008 21:34
Operator : LCW Inst ID: 10air7.i
Smp Info : Sample 9
Misc Info :
Comment : Volatile Organic COMPOUNDS in Air
Method : \\192.168.10.12\chem\10air7.i\112108.b\LOWTO15_326.m
Meth Date : 24-Nov-2008 07:58 lweinkauf Quant Type: ISTD
Cal Date : 21-NOV-2008 14:36 Cal File: 32606.D
Als bottle: 17
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10AIRGROUP

Concentration Formula: Amt * DF * Uf * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

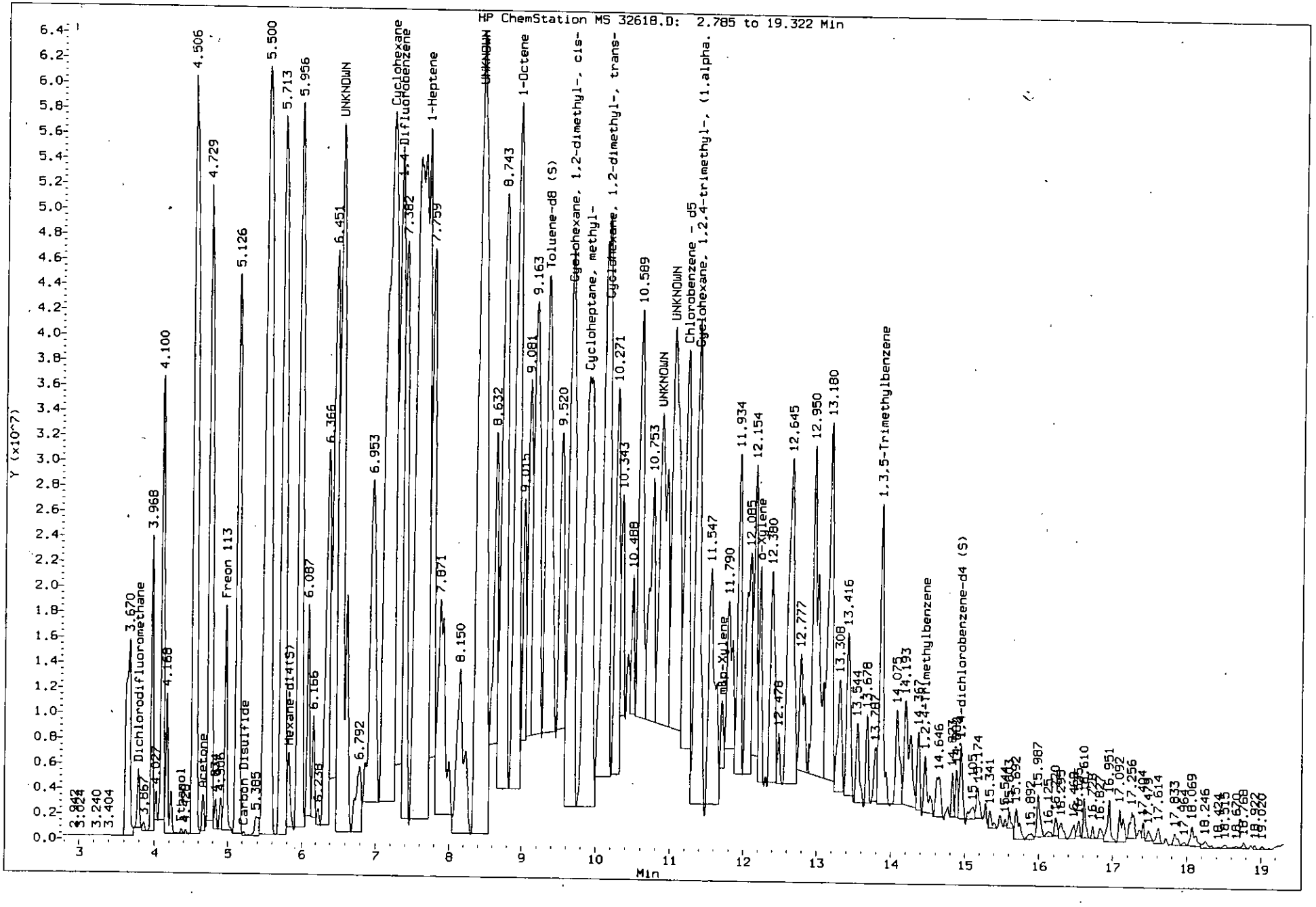
ISTD	RT	AREA	AMOUNT
* 35 1,4-Difluorobenzene	7.346	231289927	10.000
* 50 Chlorobenzene - d5	11.166	153647055	10.000

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
6.523	3.142e+008	13.5851955	13.6	0		0	35
1-Heptene				CAS #: 592-76-7			
7.681	6.396e+008	27.6545999	27.6	83	NBS75K.1	63242	35
Unknown				CAS #:			
8.412	5.205e+008	22.5024988	22.5	0		0	35
1-Octene				CAS #: 111-66-0			
8.923	2.802e+008	12.1153351	12.1	80	NBS75K.1	63996	35
Cyclohexane, 1,2-dimethyl-, cis-				CAS #: 2207-01-4			
9.648	2.578e+008	16.7760397	16.8	91	NBS75K.1	63988	50

Data File: \\192.168.10.12\chem\10air7.i\112108.b\32618.D
Report Date: 24-Nov-2008 08:05

RT	AREA	CONCENTRATIONS ON-COL(ppbv)	FINAL(ppbv)	QUAL	QUANT LIBRARY	LIB ENTRY	CPND #
Cycloheptane, methyl-					CAS #: 4126-78-7		
9.878	2.835e+008	18.4504610	18.4	83	NBS75K.l	64002	50
Cyclohexane, 1,2-dimethyl-, trans-					CAS #: 6876-23-9		
10.143	2.906e+008	18.9128395	18.9	97	NBS75K.l	2673	50
Unknown					CAS #:		
10.868	1.816e+008	11.8193859	11.8	0		0	50
Unknown					CAS #:		
11.029	2.203e+008	14.3354036	14.3	0		0	50
Cyclohexane, 1,2,4-trimethyl-, (1.alpha.					CAS #: 7667-60-9		
11.367	1.966e+008	12.7929187	12.8	97	NBS75K.l	4656	50

Data File: \\192.168.10.12\chem\10air7.i\112108.b\32618.D
Injection Date: 21-NOV-2008 21:34
Instrument: 10air7.i
Client Sample ID: 1084716001



Data File: \\192.168.10.12\chem\10air7.i\112108.b\32619.D
Report Date: 24-Nov-2008 08:12

Pace Analytical Services

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name: Sample 0
Lab Smp Id: 1084716002
Operator : LCW
Sample Location:
Sample Matrix: AIR
Analysis Type: VOA
Inj Date: 21-NOV-2008 22:06

Client SDG: 112108.b

Sample Date:
Sample Point:
Date Received:
Level: LOW

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/KG) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	79-29-8	Butane, 2,3-dimethyl-	5.510	44.9	NJ
2.	108-08-7	Pentane, 2,4-dimethyl-	6.434	32.2	NJ
3.		Unknown	6.592	7.88	J
4.	540-84-1	Pentane, 2,2,4-trimethyl-	7.553	86.6	NJ
5.	565-75-3	Pentane, 2,3,4-trimethyl-	8.868	15.8	NJ
6.	560-21-4	Pentane, 2,3,3-trimethyl-	9.025	22.4	NJ
7.	5989-54-8	Cyclohexene, 1-methyl-4-(1-	15.203	9.92	NJ
8.		Unknown	16.600	10.7	J
9.	2958-76-1	Naphthalene, decahydro-2-me	16.941	12.9	NJ
10.	2958-76-1	Naphthalene, decahydro-2-me	17.243	13.9	NJ

Data File: \\192.168.10.12\chem\10air7.i\112108.b\32619.D
Report Date: 24-Nov-2008 08:12

Pace Analytical Services

TO15 Analysis (UNIX)

Data file : \\192.168.10.12\chem\10air7.i\112108.b\32619.D
Lab Smp Id: 10847160QL
Inj Date : 21-NOV-2008 22:06
Operator : LCW Inst ID: 10air7.i
Smp Info : Sample 0
Misc Info :
Comment : Volatile Organic COMPOUNDS in Air
Method : \\192.168.10.12\chem\10air7.i\112108.b\LOWTO15_326.m
Meth Date : 24-Nov-2008 07:58 lweinkauf Quant Type: ISTD
Cal Date : 21-NOV-2008 14:36 Cal File: 32606.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10AIRGROUP

Concentration Formula: Amt * DF * Uf * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

ISTD	RT	AREA	AMOUNT
* 35 1,4-Difluorobenzene	7.349	7664936	10.000
* 50 Chlorobenzene - d5	11.137	8107281	10.000

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Butane, 2,3-dimethyl-				CAS #: 79-29-8			
5.510	34421755	44.9080745	44.9	86	NBS75K.1	62870	35
Pentane, 2,4-dimethyl-				CAS #: 108-08-7			
6.434	24708302	32.2354941	32.2	91	NBS75K.1	1594	35
Unknown				CAS #:			
6.592	6043527	7.88464087	7.88	0		0	35
Pentane, 2,2,4-trimethyl-				CAS #: 540-84-1			
7.553	66350878	86.5641568	86.6	78	NBS75K.1	64220	35(L)
Pentane, 2,3,4-trimethyl-				CAS #: 565-75-3			
8.868	12098876	15.7847042	15.8	83	NBS75K.1	64228	35

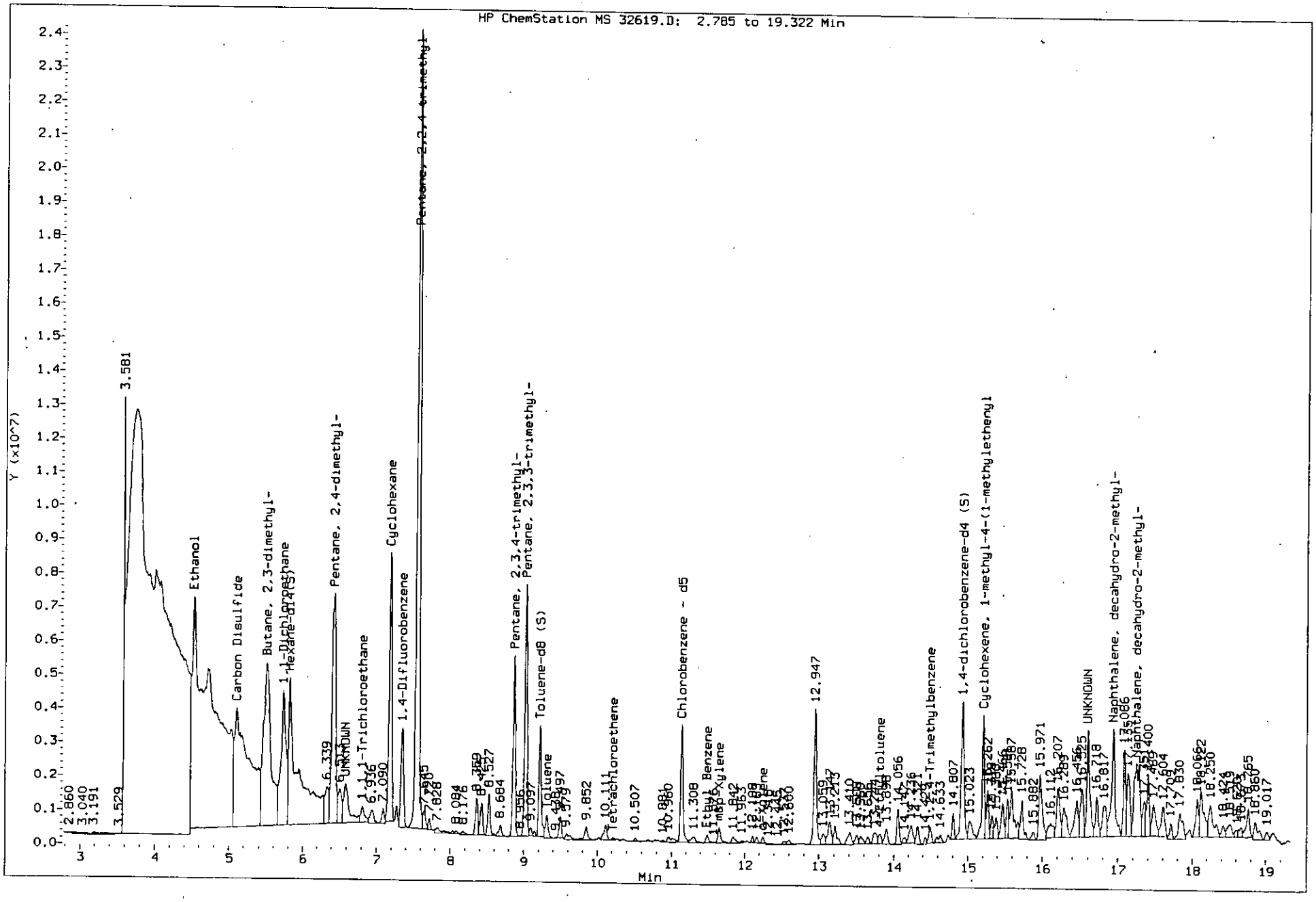
Data File: \\192.168.10.12\chem\10air7.i\112108.b\32619.D
Report Date: 24-Nov-2008 08:12

RT	AREA	CONCENTRATIONS ON-COL(ppbv)	CONCENTRATIONS FINAL(ppbv)	QUAL	QUANT LIBRARY	QUANT LIB ENTRY	QUANT CPND #
Pentane, 2,3,3-trimethyl-					CAS #: 560-21-4		
9.025	17204924	22.4462701	22.4	90	NBS75K.1	3088	35
Cyclohexene, 1-methyl-4-(1-methylethenyl					CAS #: 5989-54-8		
15.203	8045170	9.92338750	9.92	97	NBS75K.1	65806	50
Unknown					CAS #:		
16.600	8701728	10.7332248	10.7	0		0	50
Naphthalene, decahydro-2-methyl-					CAS #: 2958-76-1		
16.941	10454310	12.8949636	12.9	91	NBS75K.1	67009	50
Naphthalene, decahydro-2-methyl-					CAS #: 2958-76-1		
17.243	11299167	13.9370600	13.9	87	NBS75K.1	67009	50

QC Flag Legend

L - Operator selected an alternate library search match.

Data File: \\192.168.10.12\chem\10air7.i\112108.b\32619.D
Injection Date: 21-NOV-2008 22:06
Instrument: 10air7.i
Client Sample ID: 1084716002



Data File: \\192.168.10.12\chem\10air7.i\112408.b\32916.D
Report Date: 25-Nov-2008 08:49

Pace Analytical Services

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name: Sample 8
Lab Smp Id: 1084716003
Operator : LCW
Sample Location:
Sample Matrix: AIR
Analysis Type: VOA
Inj Date: 24-NOV-2008 20:53

Client SDG: 112408.b

Sample Date:
Sample Point:
Date Received:
Level: LOW

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/KG) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	3.857	26.1	J
2.	75-07-0	Acetaldehyde	4.037	29.0	NJ
3.	107-31-3	Methyl formate	4.247	16.2	NJ
4.	105-05-5	Benzene, 1,4-diethyl-	15.699	3.32	NJ
5.	493-02-7	Naphthalene, decahydro-, tr	15.971	5.98	NJ
6.	1758-88-9	Benzene, 2-ethyl-1,4-dimeth	16.263	5.43	NJ
7.	493-01-6	Naphthalene, decahydro-, ci	16.814	3.26	NJ
8.	2958-76-1	Naphthalene, decahydro-2-me	16.945	5.11	NJ
9.	4292-92-6	Cyclohexane, pentyl-	17.089	3.25	NJ
10.	2958-76-1	Naphthalene, decahydro-2-me	17.250	3.26	NJ

Data File: \\192.168.10.12\chem\10air7.i\112408.b\32916.D
Report Date: 25-Nov-2008 08:49

Pace Analytical Services

TO15 Analysis (UNIX)

Data file : \\192.168.10.12\chem\10air7.i\112408.b\32916.D
Lab Smp Id: 1084716003
Inj Date : 24-NOV-2008 20:53
Operator : LCW Inst ID: 10air7.i
Smp Info : Sample 8
Misc Info : 7758
Comment : Volatile Organic COMPOUNDS in Air
Method : \\192.168.10.12\chem\10air7.i\112408.b\LOWTO15_329.m
Meth Date : 25-Nov-2008 08:22 lweinkauf Quant Type: ISTD
Cal Date : 24-NOV-2008 16:31 Cal File: 32908.D
Als bottle: 16
Dil Factor: 1.25000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: AIRGROUP

Concentration Formula: Amt * DF * Uf * CpndVariable

Name	Value	Description
DF	1.250	Dilution Factor
Uf	1.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

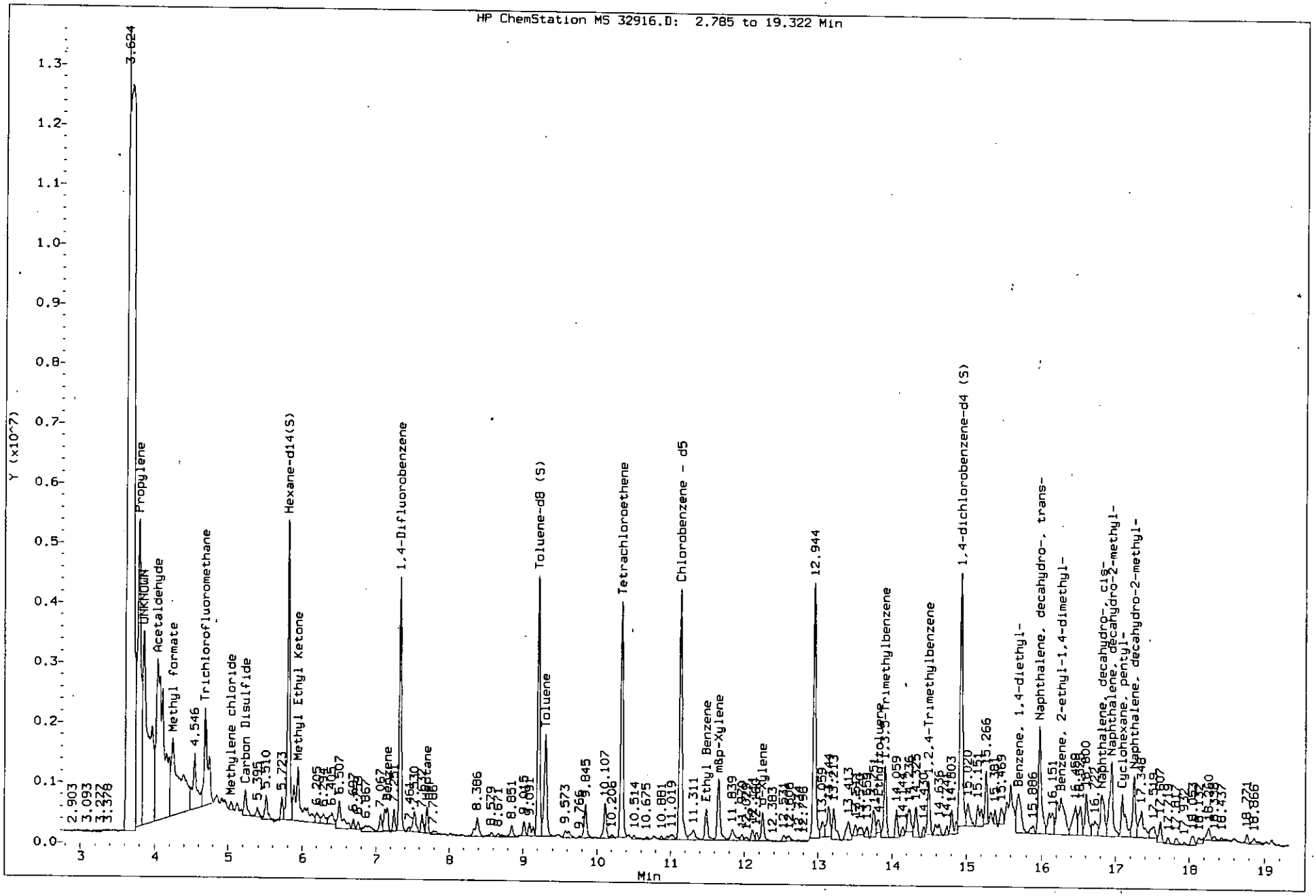
ISTD	RT	AREA	AMOUNT
* 35 1,4-Difluorobenzene	7.333	8532070	10.000
* 50 Chlorobenzene - d5	11.131	10190576	10.000

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
3.857	17794659	20.8562016	26.1	0		0	35
Acetaldehyde				CAS #: 75-07-0			
4.037	19762925	23.1631044	29.0	72	NBS75K.1	62265	35
Methyl formate				CAS #: 107-31-3			
4.247	11049712	12.9507979	16.2	72	NBS75K.1	62350	35
Benzene, 1,4-diethyl-				CAS #: 105-05-5			
15.699	2704446	2.65386908	3.32	94	NBS75K.1	65557	50
Naphthalene, decahydro-, trans-				CAS #: 493-02-7			
15.971	4872470	4.78134857	5.98	98	NBS75K.1	65956	50

Data File: \\192.168.10.12\chem\10air7.i\112408.b\32916.D
Report Date: 25-Nov-2008 08:49

RT	AREA	CONCENTRATIONS ON-COL(ppbv)	CONCENTRATIONS FINAL(ppbv)	QUAL	QUANT LIBRARY	QUANT LIB ENTRY	QUANT CPND #
Benzene, 2-ethyl-1,4-dimethyl-					CAS #: 1758-88-9		
16.263	4426217	4.34344079	5.43	81	NBS75K.l	6219	50
Naphthalene, decahydro-, cis-					CAS #: 493-01-6		
16.814	2654379	2.60473872	3.26	96	NBS75K.l	65952	50
Naphthalene, decahydro-2-methyl-					CAS #: 2958-76-1		
16.945	4167552	4.08961389	5.11	91	NBS75K.l	67009	50
Cyclohexane, pentyl-					CAS #: 4292-92-6		
17.089	2648610	2.59907806	3.25	94	NBS75K.l	67185	50
Naphthalene, decahydro-2-methyl-					CAS #: 2958-76-1		
17.250	2654745	2.60509751	3.26	97	NBS75K.l	67008	50

Data File: \\192.168.10.12\chem\10air7.i\112408.b\32916.D
Injection Date: 24-NOV-2008 20:53
Instrument: 10air7.i
Client Sample ID: 1084716003



Data File: \\192.168.10.12\chem\10air7.i\112108.b\32633.D
Report Date: 24-Nov-2008 08:53

Pace Analytical Services

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name: Sample 4
Lab Smp Id: 10847160 04
Operator : LCW
Sample Location:
Sample Matrix: AIR
Analysis Type: VOA
Inj Date: 22-NOV-2008 05:15

Client SDG: 112108.b

Sample Date:
Sample Point:
Date Received:
Level: LOW

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/KG) ppbv

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	4.506	48.0	J
2.		Unknown	4.723	38.5	J
3.	96-14-0	Pentane, 3-methyl-	5.729	47.7	NJ
4.	1708-27-6	Furan, 2,3-dihydro-3-methyl	6.077	30.7	NJ
5.		Unknown	6.526	42.0	J
6.	589-34-4	Hexane, 3-methyl-	7.307	40.1	NJ
7.	108-87-2	Cyclohexane, methyl-	8.432	66.5	NJ
8.	565-75-3	Pentane, 2,3,4-trimethyl-	8.920	34.6	NJ
9.		Unknown	9.081	38.3	J
10.	111-65-9	Octane	9.891	107	NJ

Data File: \\192.168.10.12\chem\10air7.i\112108.b\32633.D
Report Date: 24-Nov-2008 08:53

Pace Analytical Services

TO15 Analysis (UNIX)

Data file : \\192.168.10.12\chem\10air7.i\112108.b\32633.D
Lab Smp Id: 10847116004
Inj Date : 22-NOV-2008 05:15
Operator : LCW Inst ID: 10air7.i
Smp Info : Sample 4
Misc Info :
Comment : Volatile Organic COMPOUNDS in Air
Method : \\192.168.10.12\chem\10air7.i\112108.b\LOWTO15_326.m
Meth Date : 24-Nov-2008 07:58 lweinkauf Quant Type: ISTD
Cal Date : 21-NOV-2008 14:36 Cal File: 32606.D
Als bottle: 32
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14
Processing Host: 10AIRGROUP

Concentration Formula: Amt * DF * Uf * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

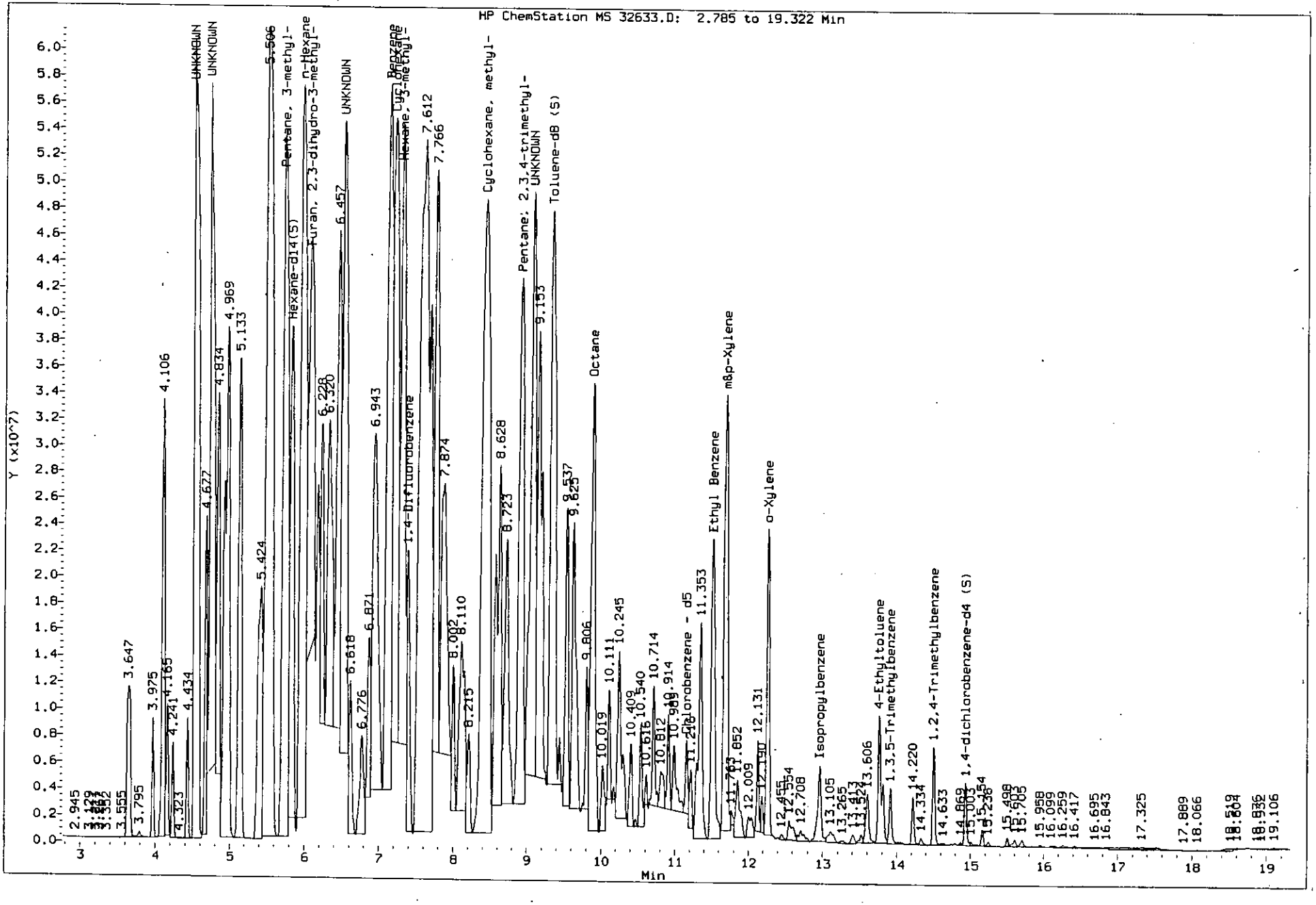
ISTD	RT	AREA	AMOUNT
* 35 1,4-Difluorobenzene	7.353	53132131	10.000
* 50 Chlorobenzene - d5	11.160	12563011	10.000

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
4.506	2.551e+008	48.0042288	48.0	0		0	35
Unknown				CAS #:			
4.723	2.044e+008	38.4790274	38.5	0		0	35
Pentane, 3-methyl-				CAS #: 96-14-0			
5.729	2.537e+008	47.7465295	47.7	72	NBS75K.1	734	35
Furan, 2,3-dihydro-3-methyl-				CAS #: 1708-27-6			
6.077	1.633e+008	30.7269734	30.7	90	NBS75K.1	577	35
Unknown				CAS #:			
6.526	2.232e+008	42.0176011	42.0	0		0	35

Data File: \\192.168.10.12\chem\10air7.i\112108.b\32633.D
Report Date: 24-Nov-2008 08:53

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ppbv)	FINAL(ppbv)	QUAL	LIBRARY	LIB ENTRY	CPND #
Hexane, 3-methyl-				CAS #: 589-34-4			
7.307	2.129e+008	40.0672997	40.1	87	NBS75K.1	63423	35
Cyclohexane, methyl-				CAS #: 108-87-2			
8.432	3.535e+008	66.5238003	66.5	95	NBS75K.1	63235	35
Pentane, 2,3,4-trimethyl-				CAS #: 565-75-3			
8.920	1.836e+008	34.5644713	34.6	78	NBS75K.1	64228	35
Unknown				CAS #:			
9.081	2.037e+008	38.3425885	38.3	0		0	35
Octane				CAS #: 111-65-9			
9.891	1.350e+008	107.422446	107	87	NBS75K.1	64207	50

Data File: \\192.168.10.12\chem\10air7.i\112108.b\32633.D
Injection Date: 22-NOV-2008 05:15
Instrument: 10air7.i
Client Sample ID: 1084716004



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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1084716

Page: 1 of 1

1223076

Section A
Required Client Information:

Company: DPRA
Address: 332 Minnesota St SE 1300
St Paul, MN 55101
Email To: donovan.hannu@dpra.com
Phone: 651-227-6500 Fax: 651-227-5512
Requested Due Date/TAT:

Section B
Required Project Information:

Report To: Donovan Hannu
Copy To:
Purchase Order No.:
Project Name: Former Tiffy Gas Station
Project Number: 005351.0044.0003

Section C
Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER ______

Site Location STATE: MN

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	TO-15 + MN Soil Gas List	BETX/MTBE/GRO	DRO	VOCs	GRO	DRO	Grain Size Analysis	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SG-1	AR	G			11/17/08	900		1	1									X								1084716001
2	SG-2	AR	G			"	945		1	1									X								002
3	SG-3	AR	G			"	1010		1	1									X								003
4	SG-4	AR	G			"	1030		1	1									X								004
5	SP-1 (6-8')	SL	G			"	1100		5	3						2				X	X						005
6	SP-2 (5-7')	SL	G			"	1145		5	3						2				X	X						006
7	MW-1B (28-30')	SL	G			"	1045		5	3						2				X	X						007
8	MW-1B (58-60')	SL	G			"	1130		5	3						2				X	X						008
9	MW-1B	WT	G			11/18/08	1310		8				X									X	X	X			009
10	MW-1B (62-64')	SL	G			11/17/08	1200		1	1															X		010
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Curtis Pranger	11/18/08	1330	Shannon Janis	11-19	1045				
	Shannon Janis	11-19	1112	Mandie Emmy Pace	11-19	1112	3.8	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Curtis Pranger
SIGNATURE of SAMPLER: Curtis Pranger DATE Signed (MM/DD/YY): 11/18/08

[redacted] Note: B[redacted] this for[redacted] accept[redacted] NET 30[redacted] ment te[redacted] greeing [redacted] arges o[redacted] month for any invoices not paid within 30 days [redacted]

F-ALL-Q-020rev.07, 15-May-2007

Field Methods and Procedures

May 2005 Edition

DPRA INCORPORATED
332 MINNESOTA STREET
SUITE E-1500
ST. PAUL, MN 55101

TABLE OF CONTENTS

1.0 CONSTITUENT MONITORING 1

1.1 General Monitoring Procedures 1
1.1.1 Duplicate Sampling 1
1.1.2 Calibration Procedures 1
1.1.3 Surveying 1
1.2 Soil Constituent Monitoring 2
1.2.1 Standard Penetration Soil Sampling 2
1.2.2 Soil Probe Sampling 2
1.2.3 Decontamination of Drilling Equipment 2
1.2.3.1 Organic and Inorganic Constituents 2
1.2.3.2 Agriculture Constituents 2
1.2.4 Soil Classification 3
1.2.5 Soil Organic Vapor Monitoring 3
1.2.6 Soil Sampling for Chemical Analysis 4
1.2.6.1 Organic Constituents 4
1.2.6.2 Agricultural Constituents 4
1.2.7 Petroleum Sheen Test 5
1.2.8 Bore Hole, Soil Probe, Well Construction, and Abandonment 6
1.2.9 Disposal of Drill Cuttings 6
1.3 Groundwater Constituent Monitoring 6
1.3.1 Groundwater Level Measurements 6
1.3.2 Well Development 6
1.3.3 Groundwater Sampling for Chemical Analysis 7
1.3.4 Residential Well Sampling for Chemical Analysis 8
1.3.5 Dissolved Oxygen, pH, Redox, Conductivity, Temperature Measurements. 8
1.3.6 Inorganic Biodegradation Parameters 8
1.3.7 Hydraulic Conductivity Testing 9
1.4 Air Constituent Monitoring 9
1.4.1 Air Sampling 9
1.5 Soil Gas Constituent Monitoring 10
1.5.1 Surficial Soil Gas Sampling 10
1.5.2 Soil Gas Sampling 10
1.6 Other Contaminated Media 11
1.6.1 X-Ray Fluorescence 11
1.6.2 PCB Contaminated Surfaces 11
1.6.3 Mercury Contaminated Surfaces 11

2.0 RISK SURVEYS 12

2.1.1 Groundwater Receptor Survey 12
2.1.2 Surface Water Receptor Survey 12
2.1.3 Vapor Receptor Survey 12
2.1.4 Surface Soil Survey 12

1.0 Constituent Monitoring

Petroleum chemical soil sampling is done in accordance with the Minnesota Pollution Control Agency (MPCA) *Soil and Ground Water Investigations Performed During Remedial Investigations* (Guidance Document #4.01), *Potential Receptor Surveys and Risk Evaluation Procedures at Petroleum Release Sites* (Guidance Document #4.02), *Assessment of Natural Attenuation at Petroleum Release Sites* (Guidance Document #4.03), *Soil Sample Collection and Analysis Procedures* (Guidance Document #4.04), and *Ground Water Sample Collection and Analysis Procedures* (Guidance Document #4.05).

Non-petroleum soil sampling is performed using the Working Draft Minnesota Pollution Control Agency *Draft Guidelines: Risk Based Site Characterization and Sampling Guidance.*

Agriculture chemical soil sampling is done in accordance with the Minnesota Department of Agriculture (MDA) *Soil Sampling Guidance* (Guidance Document 11) and ground water sampling is done in accordance with MDA *Ground Water Sampling Guidance* (Guidance Document 12.) The following is a summary of DPRA's field methods and procedures.

1.1 General Monitoring Procedures

1.1.1 Duplicate Sampling

One duplicate sample is collected for every ten samples or less and submitted to a laboratory for chemical analysis. If requested by the MDA, DPRA will also submit verification duplicate soil samples to a different laboratory for confirmation analysis. Field duplicate samples for agriculture chemical soil samples are created by splitting composite samples that have been thoroughly mixed.

1.1.2 Calibration Procedures

Instruments used to measure field data are calibrated with sufficient frequency and in such a manner that measurement results produced by the instrument are consistent with the manufacturer's specifications. Each field measurement instrument is calibrated daily prior to use, as applicable, and calibration procedures are documented on a *Daily Calibration Record* form or in a field logbook.

1.1.3 Surveying

Elevations are measured using a transit-mounted automatic level. Elevations are recorded to the nearest 0.1 feet for soil boring surface elevations and 0.01 feet for elevations from a monitoring well top-of-riser pipe.

Global positioning system (GPS) locations are collected using Garmin GPS17 antenna or Garmin eTrex Legend unit. GPS locations are recorded in UTM coordinate system. The units have an accuracy of less than 3 meters.

1.2 Soil Constituent Monitoring

1.2.1 Standard Penetration Soil Sampling

Soil samples are obtained from soil borings advanced with a hollow-stem auger (HSA). Soil sampling is conducted in general accordance with ASTM: D 1586. Using this procedure, a two-inch O.D. split-barrel sampler is lowered down the HSA and driven into the soil by a 140-pound weight falling 30 inches. After an initial set of six inches, the sampler is driven an additional 12 to 18 inches to obtain a representative soil sample and is then retrieved. The number of blows required to drive the sampler the additional 12 inches is known as the penetration resistance or N value. The N value is an index of the relative density of cohesionless soils and the consistency of cohesive soils. The relative density terminology is presented in the Log of Test Boring attachment.

1.2.2 Soil Probe Sampling

Soil probes consist of hydraulically advancing a series of one-inch diameter by two-foot long or two-inch diameter by four-foot long, steel tubes into the ground at selected intervals using a truck-mounted rig. Soil samples are collected from dedicated acetate plastic liners placed inside the bottom tube. Soil probe plastic liners are dedicated liners that will be used once and then be discarded.

1.2.3 Decontamination of Drilling Equipment

1.2.3.1 Organic and Inorganic Constituents

Downhole drilling equipment and associated tools are steam cleaned prior to the start of project work. Steam-cleaned drilling equipment is used for each soil boring. The split-barrel sampler also is cleaned between samples to minimize cross-contamination. The cleaning procedure consists of scrubbing the sampler with a brush in a soap-and-water solution followed by one or two tap water rinses. The soap/water solution is changed regularly during sampling. Fluids used in on-site cleaning of the split-barrel sampler and drilling equipment are disposed of at the site.

1.2.3.2 Agriculture Constituents

Downhole drilling equipment and associated tools will be steam cleaned prior to the start of project work. Steam-cleaned drilling equipment is used for each soil boring. The split-barrel sampler also is cleaned between samples to minimize cross-contamination. The cleaning procedure consists of scrubbing the sampler with a brush in a non-phosphate soap-and-water solution followed by an initial rinse in potable water. Washing and rinsing is done in a steel wash basin. The potable water will be obtained from a municipal water supply or offsite water

well, and the soap/water solution is changed regularly during sampling. Sampling equipment is rinsed a second time by wiping with a disposable acetone-saturated towel. A final rinse is done with deionized or distilled water. The sampling equipment is stored on a clean surface until it is used. Water used in on-site cleaning of the split-barrel sampler and drilling equipment is disposed of at the site and acetone wastes are removed from the site.

1.2.4 Soil Classification

As the samples are obtained in the field, they are visually and manually classified by a DPRA representative in general accordance with ASTM: D 2488. Representative portions of the samples are then returned to DPRA's office in the event there is need for further examination and verification of the field classification. The classification of soil boring samples, soil boring depths, identification of the various strata, the N value, water level information, and pertinent information regarding the method of maintaining and advancing the drill holes are recorded on boring logs. Charts describing the soil classification procedure, the descriptive terminology, and symbols used on the boring logs are included with the logs and are presented in Attachment 1.

1.2.5 Soil Organic Vapor Monitoring

Soil samples are screened for organic vapors with a photoionization detector (PID) equipped with either a 10.2, 10.6, or 11.7 eV lamp. When in use, the PID is calibrated daily or more frequently if necessary. The PID is first zeroed in ambient air and allowed to warm up for several minutes before being calibrated. The PID is calibrated for a direct equivalent reading of parts per million (ppm) benzene using a calibration gas consisting of 100 ppm isobutylene. The PID probe is connected to a calibration-gas cylinder by a flexible tube and after allowing the gas to flow through the instrument for several seconds, a reading is observed. The span knob on the instrument is adjusted until a reading is obtained which, according to the manufacturer, corresponds to a direct equivalent reading of benzene. The corresponding reading for a hnu PID with a 10.2 eV lamp is 57 ppm, and that for an 11.7 eV lamp is 62 ppm. The MiniRAE 2000 uses a correction factor of 0.53, The Thermo Determinator 580B uses a correction factor of 0.70, and the Thermo 580SII uses a correction factor of 0.50. Direct readings for other compounds besides benzene are possible by adjusting the span knob to readings listed in the manufacture's instructions.

Organic vapor concentrations are recorded in fresh soil samples using a head space method. Using this method, organic vapors generated from the soil sample are allowed to collect in the head space of a sealed container and then the head-space concentrations are measured with a PID. Fresh soil is placed in a sealable quart-size polyethylene bag and then the bag is immediately sealed. Enough sample is placed in the bag to provide a 1:1 volume ratio of soil to air. Soil clumps are manually broken up within the bag. Organic vapors are allowed to develop in the headspace for at least 10 minutes at room temperature; during cold weather, head space readings are taken in a heated space. The bag is vigorously shaken for 15 seconds both at the beginning and end of the head-space development period. The bag is then unsealed enough to

insert the PID probe to a point about one half of the head-space depth and the reading is recorded.

1.2.6 Soil Sampling for Chemical Analysis

Sample containers shipped to the laboratory are labeled with the work order number, sample number, date sampled, and initials of the individual sampler. A chain-of-custody form is completed and accompanies the samples to the laboratory. Information on the chain-of-custody form includes the project name and number, the sampling company, the sampler name and signature, the sample number, the date and time the sample was collected, the sample location, the analyses required, the preservation method, the number of containers, the sample matrix, the date the samples are shipped or delivered, and signatures/dates/times showing by whom and when the samples are relinquished and received. Upon arrival at the laboratory, the samples are checked in and signed over to the appropriate laboratory personnel. A copy of the chain-of-custody form is retained and returned to the DPRA Project Manager. For samples delivered to a Contract Laboratory Program (CLP), all CLP requirements are followed. A map will be prepared in the field that identifies the location that the soil sample was collected and the depth of the sample.

Generally, for agricultural chemical constituents, the composite soil sample from the 2.0 to 2.5-foot interval is chemically analyzed initially and the shallow composite sample and deep discrete soil samples are frozen. Depending on the results from the 2.0 to 2.5-foot interval analysis, either the shallow composite sample of the deep discrete sample will be analyzed.

1.2.6.1 Organic Constituents

Soil samples submitted for chemical analysis are collected using dedicated or decontaminated sampling tools. Soil samples are collected with the "En Core" sampler which has 5 or 25 gram (g) capacity, or other comparable devices, when the samples are to be analyzed for volatile organic compounds (VOC) using EPA Method 5035. The soil sample collected with the sampler is transferred directly into a laboratory-prepared container, weighed until sufficient sample is collected in the container, and then preserved in accordance with appropriate state agency analytical procedures. After the sample is preserved, the container is immediately sealed and stored in a cooler chilled to approximately 4 degrees Celsius for shipment to the analytical laboratory; where required, trip blanks are transported with the samples.

1.2.6.2 Agricultural Constituents

Composite Soil Samples

Composite soil samples are collected to characterize a large area within the locations where contamination is suspected. Composite soil samples consist of several equal volume sub samples that are thoroughly mixed together to create one sample for analysis. At each composite sampling location, sets of three to six soil probes are advanced to depths between 2.5 and 6 feet within a 15-foot diameter area. A shallow composite soil sample is collected from the 0 to 6-

inch interval, and a mid depth composite sample is collected from the 2.0 to 2.5-foot interval. If a gravel layer is present, the sample intervals will begin below the base of the gravel layer. Composite samples are designated CS-#. Soil samples are collected using dedicated or decontaminated sampling tools. A new pair of disposable gloves is used while collecting each sub sample and while mixing the samples. Composite soil samples are created using all of the soil sub samples from one depth interval at each location. An equal portion of soil is included from each sub sample. Sub samples are thoroughly mixed in a disposable aluminum pan and any liquid, stones or organic debris is removed from the composite sample. After the sample has been thoroughly mixed, the composite sample is transferred into an appropriate sample jar. The treads of the jar are wiped clean prior to installing a cap on the jar.

Discrete Soil Samples

At each of the sampling locations one deep discrete soil sample is collected from the 4.5 to 5-foot interval, generally from a soil probe located near the center of the sample area. Discrete samples are designated DS-#. In addition, one soil probe is advanced to approximately 25 feet below the ground surface to determine the depth to groundwater and the stratigraphy at the site. Discrete soil samples are collected as the soil probe is advanced. Soil samples are collected using dedicated or decontaminated sampling tools. A new pair of disposable gloves is used while collecting each sample. Discrete soil samples are collected from a six-inch vertical sampling interval at a distinct horizontal and vertical location. After any liquid, stones or organic debris have been removed from the sample, the sample is transferred into an appropriate sample jar. The treads of the jar are wiped clean prior to installing a cap on the jar.

Stockpile Soil Samples

Soil samples are collected using dedicated or decontaminated sampling tools. A new pair of disposable gloves is used while collecting each sub sample and while mixing the samples. The number of stockpile composite soil samples collected is calculated, based on the volume of soil stockpiled, as described in MDA Guidance Document 11, Section III. For each stockpile composite sample four to six hand auger borings are advanced into the stockpile and one to three sub samples are collected at different depths from each boring. Borings are advanced at locations described in MDA Guidance Document 11, Figure 1, and sample locations are marked on a drawing showing the stockpile. All of the sub samples are combined into one composite sample. An equal portion of soil is included from each sub sample, which are thoroughly mixed in a disposable aluminum pan. Any liquid, stones or organic debris is removed from the composite sample, and the mixed, composite sample is transferred into an appropriate sample jar. The treads of the jar are wiped clean prior to installing a cap on the jar.

1.2.7 Petroleum Sheen Test

To determine if soil is saturated with petroleum, a petroleum sheen test is used. The test consists of placing approximately 25 grams of soil into a clean glass jar and submerging the soil with water. If droplets or product or rainbow sheen is observed on the water surface, the soil is classified as petroleum saturated.

1.2.8 Bore Hole, Soil Probe, Well Construction, and Abandonment

Soil borings and soil probes not intended for monitoring well construction are abandoned upon completion and in accordance with state regulations. Groundwater monitoring wells are abandoned in accordance with state regulations when they are no longer needed for sampling or monitoring purposes. Abandonment of wells, soil borings, and soil probes in contaminated zones generally involves filling the bore hole or well casing with bentonite chips, granules, or neat cement grout, as outlined in the appropriate state regulations. Soil borings in which no contamination is encountered are abandoned by filling with a mixture of drill cuttings and bentonite chips or granules or a neat cement grout, unless otherwise specified by state regulations.

Well logs are submitted to the appropriate state agency for each well installed. The well logs include descriptions and depths of geologic material encountered, the well construction materials including well casing and size, drilling method, measured water levels, screen type and slot size, nature of sand pack and grout material, surveyed elevation of the top of caping with depths of screen top, bottom, other well materials, and land source referenced to the top of casing elevation, and well location.

1.2.9 Disposal of Drill Cuttings

Contaminated soils removed from the soil borings are disposed on and/or off of the investigation site in a manner that complies with current state agency regulations or guidelines.

1.3 Groundwater Constituent Monitoring

1.3.1 Groundwater Level Measurements

Groundwater level measurements are obtained using a measuring tape equipped with a probe which emits an electronic signal when in contact with water. Measurements are obtained by lowering the probe into a well or sump, and then recording the depth of the probe when an electric signal is emitted. Measurements are referenced to the top of the monitoring well riser pipe, or ground surface at the sump, and recorded to the nearest 0.01 feet. The manufacturer's reported accuracy for the instrument is 0.04 feet.

If free product is expected, an interface probe is used to obtain a groundwater depth. An electric signal is first emitted when the probe encounters free product, a second signal is emitted when the probe encounters water. Measurement is identical to the method described above.

1.3.2 Well Development

Wells are developed after installation and prior to sampling to restore the hydraulic conductivity of the geologic formation around the well, and to reduce well-water turbidity by removing any suspended silt, clay, and/or drilling fluid sediments in the well. Wells are developed by extracting up to 30 well volumes of water from each well with a dedicated disposable bailer or

with a pump. The well volume is determined by measuring the length of the column of water present in the well and calculating the volume of the water column. The development method and the amount of water removed are recorded. During well development, a stabilization test will be done on the well. Specific conductance, temperature, and pH will be measured in the field until three successive readings yield measurements within the following ranges:

- specific conductance +/- 5%
- temperature +/_ 0.1 degrees Celsius
- pH +/-0.04 units

1.3.3 Groundwater Sampling for Chemical Analysis

Just prior to sampling, each monitoring well is stabilized to introduce fresh groundwater from the surrounding geologic formation into the well. The monitoring well is stabilized by removing a minimum of 5 well-water volumes where suitable groundwater recharge occurs. Water is removed from the well by either bailing with a dedicated factory-wrapped disposable polyethylene bailer attached to a new length of nylon 1/8" rope, or by pumping with a decontaminated mechanical pump. Water level measurements are recorded prior to stabilization.

Groundwater samples from monitoring wells are obtained using either a dedicated disposable polyethylene bailer equipped with bottom-closing ball-check valve, or by mechanical pumping. For low flow sampling, a submersible pump is used to purge and collect the groundwater samples. During well purging, the well water is pumped through a flow-thru cell and a YSI Model 556 multi probe meter is connected to the flow-thru cell to record water quality parameters which include temperature, ph, conductivity, dissolved oxygen, and redox. Following well development, the flow-thru cell is disconnected from the low density polyethylene pump tubing and the flow rate is slowed to allow direct filling of the appropriate sample container bottles.

Groundwater samples submitted to a laboratory for chemical analysis are collected in laboratory-cleaned containers. Appropriate preservation techniques are used as specified by the laboratory and/or state agency analytical procedures. Sample bottles shipped to the laboratory are labeled with the work order number, sample number, date sampled, and initials of the individual sampler. A chain-of-custody form is completed and accompanies the samples to the laboratory. Information on the chain-of-custody form includes the project name and number, the sampling company, the sampler name and signature, the sample number, the date and time the sample was collected, the sample location, the analyses required, the preservation method, the number of containers, the sample matrix, the date the samples are shipped or delivered, and signatures/dates/times showing by whom and when the samples are relinquished and received. Upon arrival at the laboratory, the samples are checked in and signed over to the appropriate laboratory personnel. A copy of the chain-of-custody form is retained and returned to the DPRA Project Manager. For samples delivered to a CLP laboratory, all CLP requirements are followed.

1.3.4 Residential Well Sampling for Chemical Analysis

The residential well sample is collected as near the wellhead as possible. If possible, the water sample will be collected prior to the water passing through any pressurized holding tank, water softener, or filtration system. An aerator, if present, will be removed from the tap prior to collecting the water sample. The tap is maintained at a low ("trickle") flow to minimize aeration of the water flow. The well is purged until the pH, temperature, and conductivity stabilizes. If pH, temperature, and conductivity does not stabilize, a minimum of three well volumes (if well dimensions are known) or 10 minutes at full discharge rate is used to purge the well.

1.3.5 Dissolved Oxygen, pH, Redox, Conductivity, Temperature Measurements.

The dissolved oxygen content of the groundwater is measured with a YSI Model 556 Multi Probe Meter. The meters are calibrated according to the manufacture's specifications. After the well is stabilized, either a dedicated bailer is used to retrieve a water sample or the well water is pumped through a flow-thru cell. For the YSI meter, the sample is either poured into a plastic cup and the probe on the meter is inserted into the sample or the probe is inserted into the flow-thru cell. The measurement is recorded following manufacturer instructions for the meter. The meter records the dissolved oxygen content in mg/l.

Redox (reduction-oxidation) and pH measurements are recorded using a YSI Model 556 Multi Probe Meter. A sample is collected in plastic cup or pumped through a flow-thru cell and the probes are inserted in the sample and the redox and pH measurement is recorded. The measurement is recorded following manufacturer instructions for the meter. The pH probes are calibrated daily during use using a 3 point calibration. Three buffers (pH 4, pH 7, and pH 10) are used to calibrate the meters.

Conductivity and temperature measurements are made using the YSI Model 556 Multi Probe Meter. A sample is either collected in a plastic cup or pumped through a flow-thru cell and the probe is inserted in the sample. A conductivity and/or temperature measurement is recorded following manufacturer's instructions for the meter. The meter is calibrated for conductivity during use using a conductivity solution at 1,000 umhos. The probe is inserted in the solution and the meter is calibrated according to the manufacturer's specifications. All probes and sample cups and containers are rinsed several times with distilled water between samples.

1.3.6 Inorganic Biodegradation Parameters

Iron, sulfide, and nitrate concentrations in groundwater that are recorded in the field are measured using a CHEMetrics VVR Water Analysis System. Samples obtained for this measurement method are collected in plastic cups, as described in Section 1.12. Concentrations are measured following the manufacturer's instructions for analysis of each individual inorganic compound. Concentrations are recorded in ppm.

1.3.7 Hydraulic Conductivity Testing

There are a number of test methods used for measuring the hydraulic conductivity of a geologic material and one of the methods commonly employed by DPRA is the slug test. The slug test is an in-situ field method that is used to measure localized hydraulic conductivity characteristics of an aquifer. The test is performed in a monitoring well and measures the near-field hydraulic conductivity property of the surrounding aquifer formation. The slug test involves:

1. Displacing water in the well with a stainless steel rod (the slug);
2. Allowing the displaced water level to equilibrate in the well; and
3. Quickly withdrawing the slug and measuring the subsequent rise of water in the well over a finite period of time as the well is recharged by the surrounding aquifer.

Water levels are measured with a fast response, high precision pressure transducer which measures water levels to 0.01 feet. Water level data is compiled by an automatic data recorder which records water levels as the well is recharging.

Reduction of the slug test data and calculation of a hydraulic conductivity value is performed using the groundwater modeling computer software.

Hydraulic conductivity can also be estimated using the mean grain size. The mean grain size is determined using a dry sieve analysis. A groundwater saturated soil sample is collected and then submitted to a laboratory for the dry sieve analysis. The mean grain size is then compared to published empirical results to determine a hydraulic conductivity for the saturated soils.

1.4 Air Constituent Monitoring

1.4.1 Air Sampling

A sample of the air emissions from a remediation system or field test is obtained using a summa canister. The summa canister is a vacuum filled stainless steel, laboratory cleaned container. The canister vacuum is checked before and after sample collection. The canister is connected to the air sampling port located on an exhaust stack using a new section of tubing. The canister's valve is opened for a period of time which allows the sample air to enter the canister. The canister's valve is then shut and disconnected from the sampling port. The canister is kept from heat and direct sunlight and forwarded with a chain-of-custody to the laboratory for analysis.

Analytical methods performed using the summa canisters are TO-3 (benzene, ethyl-benzene, toluene, xylene, and total petroleum hydrocarbons) and TO-15 (volatile organic compounds). The canister is supplied by the laboratory.

The lower explosive limit and oxygen (LEL/O_2) is measured using a MSA – 260 or a MSA Minigaurd II. Flow rate measurements are made through various sampling ports.

Air flow rate of the emissions from remediation systems and field tests are measured with either a hot-wire anemometer, an ALNOR air-flow meter, or an in-line air flow meter. Flow rate measurements are made through a sampling port on the exhaust stack.

For measurements of vacuum produced at a system manifold or vapor port wellheads a magnehelic vacuum gauge is used.

1.5 Soil Gas Constituent Monitoring

1.5.1 Surficial Soil Gas Sampling

Shallow soil gas samples (i.e., flux sampling) are obtained from the temporary placement of a fixed volume chamber on the ground in selected areas. Flux samples represent soil gas that migrates to the surface and into the ambient air. The chamber is placed on the ground and sealed with native soil or bentonite slurry. On paved surfaces, the chamber is sealed to the surface using bentonite or equivalent sealant (e.g., plumbing putty). A sun shield preventing direct sunlight is placed over the chamber during the deployment period. The chamber is deployed for 8 to 24 hours. The soil gas is withdrawn from the chamber after the deployment period into a gas-tight sampling device (i.e., mini-Summa, Summa, or syringe) for chemical analysis at a laboratory.

1.5.2 Soil Gas Sampling

Soil gas sampling from depths are obtained to evaluate the presence of vapor constituents in isolated soil strata. The soil gas sample is collected using hollow steel rods instrumented with an expendable point holder and expendable point driven to the desired depth. The center rod with an expendable point knockout pin attached is lowered through the rod assembly and is used to disengage the expendable point. A threaded adapter end is connected to the polyethylene tubing and inserted down the probe rod; the threaded adapter is then connected to the terminal end of the rod assembly via threads located in the expendable point holder. The rod assembly is pulled up slightly to ensure complete disengagement of the expendable point. Prior to collection of the soil gas sample, approximately two volumes of the tubing air is extracted using a graduated syringe. The sample is collected by attaching the top end of the tubing to a gas-tight sampling device (i.e., mini-Summa, Summa, or other sealed container) with an in-line vacuum gauge. The sampling device is opened and filled with soil vapor sample. The vacuum gauge is monitored to check progress of canister filling. In clay soils it may be necessary to further pull up the rod assembly to facilitate air movement through the soil/sampling assembly. The sampling device valve is then closed and submitted for laboratory analysis.

The soil gas will be sampled from the source area and near other potential receptors. The soil gas sample from the source area will be collected from a depth of eight to ten feet. The soil gas samples near potential receptors will be collected from a depth of three to five feet for slab on grade construction and eight to ten feet for construction with a basement.

1.6 Other Contaminated Media

1.6.1 X-Ray Fluorescence

An x-ray fluorescence (XRF) is a portable analytical method used in a portable instrument that can be used to detect metal analytes in the field. The instrument uses a radioactive source to bombard the sample with x-rays, and the resultant emissions (fluorescence) are analyzed to yield a concentration of the target analyte in the sample. Metal analytes (e.g., lead, zinc, and chromium) are detected using a Niton XLt 700 series XRF. If the sample is not composed of uniform sized material, the sample will be sieved using a field kit to obtain a uniform sized material prior to analyzing using the XRF. This unit can also be used to screen for lead paint.

1.6.2 PCB Contaminated Surfaces

Polychlorinated biphyenls (PCB) wipe samples are used to sample smooth and impervious surfaces for the presence of PCBs. The wipe comes saturated with a known volume of hexane in a glass jar. Wipe samples are collected from a 100 square centimeter (cm^2) surface area. The wipe is stored in a glass jar at 4 degrees Celsius for transportation to the analytical laboratory.

1.6.3 Mercury Contaminated Surfaces

Mercury vapor screening is conducted using a Lumex RA 915 + Mercury Vapor Analyzer (Lumex). The Lumex records a reading every second and calculates a ten second average. The Lumex records mercury vapors in nanograms per meter cubed (ng/m^3). Room temperature is mesurured using a digital thermometer and background screening is conducted in the general area. The Lumex is then used to screen a specific object or area. More accurate Lumex screening is obtained by collecting damp wipe samples and placing them in a disposable ziplock bag for one hour. The headspace in the bag is then screened with the Lumex.

Areas previously identified or areas exhibiting elevated Lumex results are selected for mercury wipe samples. Mercury wipe samples are collected using a damp gauze pad. Surface temperatures are recorded using a noncontact infrared thermometer. Wipe samples are collected from a 100 square centimeter (cm^2) surface area.

2.0 Risk Surveys

2.1.1 Groundwater Receptor Survey

Groundwater receptor surveys are performed to assess the risk of impact to water supplies within a designated radius of the project site. A minimum of 500 feet from the source will be surveyed. The survey includes door-to-door contacts with occupants of properties in the designated survey area, and a water-well record search. A "Receptor Survey Checklist" is completed for interviews with home owners that occur during door-to-door contacts. If a home owner is not home, a stamped, self-addressed postcard questionnaire is left at the residence. The water-well search is performed to gather information on the availability of municipal water supplies and the location, construction, depth and use of public and private water wells in the designated area.

2.1.2 Surface Water Receptor Survey

A surface waters survey is conducted to identify potential waterbodies at risk. The surface water survey includes drainage pathways such as drainage ditches, drain tiles, and sewers. The survey is conducted in the same designated radius of the groundwater receptor survey.

2.1.3 Vapor Receptor Survey

Investigation results and site conditions are reviewed in order to assess the risk of volatile organic compound (VOC) vapors impacting nearby basements or utilities. If there is a risk of vapor impact, a vapor survey is performed. A vapor survey can entail the following activity:

- LEL and PID readings are recorded in accessible utility manholes up-gradient and down-gradient from the investigation site.
- Water or sewage samples are observed for a petroleum sheen and/or petroleum odors.
- Water or sewage samples are submitted for laboratory analysis if a potential chemical impact is indicated by PID or LEL readings.
- Basements are screened with an LEL and a PID. Basement screening is directed toward sumps, sewer drains, cracks in the foundation, crawl spaces, and any other potential entry ways for VOC vapors. The location of the screening is documented on a map of the building.

2.1.4 Surface Soil Survey

Surface soil surveys are performed to assess the risk of direct dermal contact and contaminated runoff that may reach a surface waterbody. The survey is limited to the top two feet of soils. Corrective action is required at sites where surface soil is visibly contaminated, headspace

screening exceeds 10 ppm, or evidence of free product is present. A site walk through consisting of visual inspection of assessable areas where storage of petroleum or other chemicals has occurred is used to identify surface soils with visible contamination. Surface soils in the uppermost two feet of soils are screened using a PID in the procedure described in Section 1.2.5 Soil Organic Vapor Monitoring. To determine if the saturated soils are present, the procedure described in Section 1.2.7 Petroleum Sheen Test.

ATTACHMENT 1

Log of Test Boring

Classification of Soils for Engineering Purposes

LOG OF TEST BORING

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General Notes

SOIL DESCRIPTION TERMINOLOGY

GRAIN SIZE TERMINOLOGY

Soil Fraction		Particle Size	U.S. Standard Sieve Size
Boulders		Larger than 300 mm	Larger than 12"
Cobbles		7.5 mm to 300 mm	3" to 12"
Gravel:	Coarse	19 mm to 75 mm	3/4" to 3"
	Fine	4.75 mm to 19 mm	#4 to 3/4"
Sand:	Coarse	2.00 mm to 4.75 mm	#10 to #4
	Medium	0.42 mm to 2.00 mm	#40 to #10
	Fine	0.075 mm to 0.42 mm	#200 to #40
Silt		0.005 mm to 0.075 mm	Smaller than #200
Clay		Smaller than 0.005 mm	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

DENSITY TERM	"N" VALUE	CONSISTENCY TERM
Very Loose	0-4	Soft
Loose	5-10	Medium Stiff
Medium Dense	11-29	Stiff
Dense	30-49	Very Stiff
Very Dense	Over 50	Hard

Standard "N" Penetration: Blows Per Foot of a 140 Pound Hammer Falling 30 inches on a 2-inch OD Split Barrel Sampler

RELATIVE GRAVEL PROPORTIONS

Soil Type	Term	Range
Coarse Grained Soils	With trace gravel	5 - 14%
	With gravel	15 - 49%
Fine Grained Soils		
15 - 25% + No. 200	With trace gravel	5 - 14%
15 - 25% + No. 200	With gravel	15 - 29%
30% + No. 200	With trace gravel	5 - 14%
30% + No. 200	With gravel	15 - 24%
30% + No. 200	Gravelly	25 - 49%

SOIL STRUCTURE TERMS

Lamination	Up to ¼" thick stratum
Layer	Over ¼" thick stratum
Lens	¼" to 6" discontinuous stratum, pocket
Varved	Alternating colored laminations of clay, silt and/or fine-grained sand, or colors thereof

SYMBOLS

DRILLING AND SAMPLING

CS - Continuous Sampling
RC - Rock Coring; Size AQ, BQ, NQ, PQ
RB - Rock Bit
DC - Drove Casing
C - Casing: Size 2 ½", NW, 4", HW
CW - Clear Water
DM - Drilling Mud
HSA - Hollow Stem Auger
FA - Flight Auger
HA - Hand Auger
SS - 2" Diameter Split-Barrel Sample
2ST - 2" Diameter Thing-Walled Tube Sample
3ST - 3" Diameter Thin-Walled Tube Sample
AS - Auger Sample
WS - Wash Sample
NR - No Recovery
S - Sounding
NMR - No Measurement Recorded
JW - Jetting Water
ND - No Detected Above Background
NS - Not Sampled
WD - While Drilling
AD - After Drilling

WATER LEVEL MEASUREMENT

▽ - Perched Water Level
▼ - Water Level

Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

SOIL MOISTURE TERMS

Dry	Dr	Powdery, no noticeable water
Damp	Da	Residual moisture on soil grains
Moist	M	Below Saturation
Wet	W	Saturated
Water-bearing	Wb	Pervious soil below water

GEOLOGIC TERMS

Coarse Alluvium	Sand and/or gravel sediments deposited by water action
Fine Alluvium	Silt and/or clay sediment deposited by water action
Mixed Alluvium	Mixture of Coarse and Fine Alluvium
Till	Soil Sediments deposited directly by glacial ice
Colluvium	Talus and slope deposits
Eolian or Loess	Sediments deposited by wind action
Lacustrine	Sediments deposited at the bottom of a lake or pond
Fill	Sediments placed by man
Topsoil	Organic, dark-colored surface soil deposit

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES
ASTM Designation: D 2487
(Based on Unified Soil Classification System)

COARSE-GRAINED SOILS

(More than half of material is larger than No. 200 sieve size.)

GRAVELS More than half of coarse fraction larger than No. 4 sieve size		**Clean Gravels** (Less than 5% fines)
	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravels with Fines (Greater than 12% fines)
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures

SANDS More than half of coarse fraction smaller than No. 4 sieve size		**Clean Sands** (Less than 5% fines)
	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
		Sands with Fines (Greater than 12% fines)
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures

FINE-GRAINED SOILS

(More than half of material is smaller than No. 200 sieve size.)

SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays,
	OL	Organic silts and organic silty clays of low plasticity

SILTS AND CLAYS Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts

HIGHLY ORGANIC SOILS		Fabric Peat > 67% fibers
	PT	Peat: Hemic peat 33% - 67% fibers

LABORATORY CLASSIFICATION CRITERIA

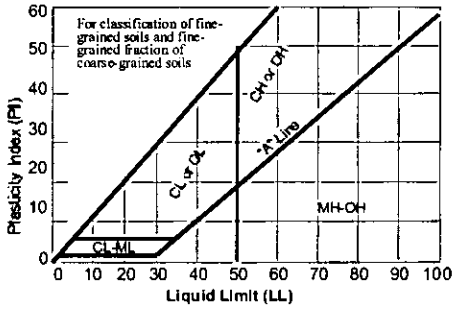
GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limit below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SW	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in hatched zone with P.I. Between 4 and 7 are bor-derline cases requiring use of dual symbols
SC	Atterberg limit above "A" line with P.I. greater than 7	

Gravels with 5 to 12% fines require dual symbols:

GW-GM	well-graded gravel with silt
GW-GC	well-graded gravel with clay
GP-GM	poorly graded gravel with silt
GP-GC	poorly graded gravel with clay

Sands with 5 to 12% fines require dual symbols:

SW-SM	well-graded sand with silt
SW-SC	well-graded sand with clay
SP-SM	poorly graded sand with silt
SP-SC	poorly graded sand with clay



Equation of "A" Line: PI = 0.73 (LL - 20), horizontal at PI = 4 to LL = 25.5

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FIELD REPORT

Report No. _____
Job No. 5351.0014.0003
Date 11/12/08
Sheet 1 of 1

BY: Curtis Poarch ARRIVED @ SITE 7:20 LEFT SITE 1:15
PROJECT: Former Jiffy Gas Station

LOCATION: Roseville, MN
WEATHER: Overcast / Foggy TEMPERATURE 30 °F @ 1200
PRESENT AT SITE: CP

EQUIPMENT ON JOB: Paint / Flags

WORK IN PROGRESS AND OBSERVATIONS *(include any recommendations and approvals)*:

Arrived @ site + noticed I forgot the well locations (will call to mark)

Started vapor / receptor / water survey
Called Donovan For placement of wells/points
① North of tank basin center in tank basin east + west
② NE corner of ~~Est~~ Old bld South of basin
③ South of blds along prop boundry
④ NE of mill disp.
⑤ Far NW of property
⑥ North of tank basin on N property bound
just east of well SG

Finished surveys, marked locations + left for office

REPORT APPROVED BY: _____ DATE: _____

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FIELD REPORT

Report No. _____
Job No. 5381.0044.0001
Date 11/17/05
Sheet 1 of 1

BY: Curtis Prager ARRIVED @ SITE 800 LEFT SITE ~~1645~~ 1700
PROJECT: Tiff, Gas Station

LOCATION: Roseville, MN
WEATHER: Sunny/Overcast/Snow TEMPERATURE 20 °F @ 800
PRESENT AT SITE: CR / Andy/Chad/Dave

EQUIPMENT ON JOB: PID, Sampling Supplies

WORK IN PROGRESS AND OBSERVATIONS *(include any recommendations and approvals)*:

Arrived @ site with no one there Got things set up & ready for when BK arrive

BK arrive with push probe & drill rig Start on Soil gas while drill rig sets up
Started MW while still doing SG points once Finished with SG Points started on Push Probes (called Mary about SG points) (depth of SG on worst case

Finished Push probes Drillers took lunch while I caught up on bagging Samples Finished Push Probes & MW placement Put samples in ~~Bags~~ Jars & placed on ice Started to get late & I didn't want to pull any bentonite into the screen. So left boiling well & sampling for tomorrow morning Took van home (much closer)

REPORT APPROVED BY: _____ DATE: _____

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Field Boring/Well Log

Boring Number: MW-1B	Project Number: 005351.0044.0003
Drilling Co./Chief: Berg - Cesc / Glen	Project Name: Former J.P.'s Gas Station
DPRA Field Rep: Curtis Ranger	Site Location: Roseville MN
Drilling Method HSA	Backfill Material/Quantity: Bentonite
Drilling Start Date 11/17/08	UTM Northing: —
Drilling End Date: 11/17/08	UTM Easting: —

Layer Depth	Sample Depth	1/2	3/4	R"	M	USCS	PID/ bkgd	Soil Classification
0-1.5	0-2	8/6	3/3	18	M	SP	62	0-1.5 Brown Med Gen Sand w/gravel
1.5-9						CL		1.5-2 Dark Brown Sandy Clay
	2-4	3/3	3/3	0	m			No Recovery
	4-6	2/2	2/2	16	m	CL	132	Dark Brown Sandy Clay (strong Odor)
	6-8	2/2	2/2	8	M	CL	172	"
9-15	8-10	8/5	5/5	16	M	CL/	110	" 9-10 Light Gray Sandy Clay
	10-12	8/10	10/10	13	M	CL	66	"
	12-14	6/6	5/5	17	M	CL	194	"
15-30	14-16	10/6	10/10	8	M	CL/SP	172	" 15-16 Light Gray Med Gen Sand
	16-18	6/6	8/10	12	M	SP	178	" w/gravel
	18-20	6/6	10/10	9	M	SP	230	" "
	20-22	10/10	12/12	0	M	SP		No Recovery
	22-24	6/5	10/16	5	M	SP	220	light Gray Gravely Sand
	24-26	11/10	9/10	16	M	SP	205	"
	26-28	5/5	5/5	14	M	SP	210	"
	28-30	8/8	12/14	14	M	SP	220	"
30-39	30-32	6/5	12/12	13	M	SP	205	light Gray Med-Fine Gen Sand
	32-34	6/6	6/6	15	M	SP	195	"
	34-36	12/10	12/14	14	M	SP	200	"
	36-38	4/6	6/5	5	M	SP	205	"
39-66	38-40	6/6	5/5	13	M	SP	210	" 39-40 Gray Fine Gen Sand
	40-42	7/7	10/12	15	M	SP	182	"
	42-44	6/6	5/5	17	M	SP	58	"
	44-48	6/6	6/6	14	M	SP/SM	44	" 45.5-46 Silty Sand lense Gray
	48-50	5/5	10/10	16	M	SP	198	"
	50-52	10/10	14/18	15	M	SP	190	"
	52-54	10/10	10/10	20	M	SP	58	"
	54-56	10/14	20/18	22	M	SP	132	"
	56-58	5/6	13/12	23	M	SP	196	"
	58-60	6/6	6/6	17	W	SP	132	"
	60-62	5/5	7/10	14	W	SP	62	"
	62-64	5/5	5/5	13	W	SP	50	"
	64-66	4/4	5/5	9	W	SP	71	~~End of Boring Depth~~ "

Sampling Information

Soil			Water			
Date	Depth	Time	Date	Screen Interval	Time	Water Level
11/17/08	28-30	1045	11/15/08		1310	61.92
11/17/08	58-60	1130				
11/17/08	62-64	1200				

End of Boring @: 66 Feet

Well Set @: 66 Feet

DPRA
Creative People. Smart Solutions.

Field Boring/Well Log

Boring Number:	SP-1	Project Number:	005391.0044.0003
Drilling Co./Chief:	Berg Cuge / Dave	Project Name:	Former Jiffy Gas Station
DPRA Field Rep:	CB	Site Location:	Roseville, MN
Drilling Method	Push Probe	Backfill Material/Quantity:	Bentonite Chips
Drilling Start Date	11/17/08	UTM Northing:	
Drilling End Date:	11/17/08	UTM Easting:	

Layer Depth	Sample Depth	1/2	3/4	R"	M	USCS	PID/ bkgd	Soil Classification
0-3	0-2			18	M	SP	0	light Brown Gravely Sand
3-16	2-4			16	M	SP/CL	0	light Brown Gravely Sand
	[redacted]							3-4 Tan Sandy Clay
	4-6			16	M	CL	3.1	"
	6-8			16	M	CL	8.4	" 7-8 Greenish Grey Sandy Clay Odors
	8-10			16	M	CL	3.2	"
	10-12			18	M	CL	4.0	" w Gravel
	12-14			18	M	CL	5.2	"
	14-16			18	M	CL	3.8	"
16-20	16-18			16	M	SP	2.2	Reddish Brown Med Grn Sand
	18-20			14	M	SP	2.6	" w/gravel

Sampling Information

Soil			Water			
Date	Depth	Time	Date	Screen Interval	Time	Water Level
11/17/08	6-8	1100				

End of Boring @: 20 Feet

Well Set @: Feet

DPRA
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Field Boring/Well Log

Boring Number: SP-2	Project Number: 005351.0044.0003
Drilling Co./Chief: Berg-Case/Dave	Project Name: Former Tiffy Gas Station
DPRA Field Rep: CB	Site Location: Roseville, MN
Drilling Method: Push Probe	Backfill Material/Quantity: Grout (Bentonite Chips)
Drilling Start Date: 11/17/05	UTM Northing:
Drilling End Date: 11/17/05	UTM Easting:

Layer Depth	Sample Depth	1/2	3/4	R"	M	USCS	PID/ -bkgd	Soil Classification
								Concrete
0-3	0-2			18	M	SP	5.2	light Brown Gravely Sand
3-15.5	2-4			14	M	SP/CL	111	" 3-4 Greenish Gray Sand Clay mix
	4-6			14	M	CL	~~55~~	"
	6-8			14	M	CL	~~162~~ 38	" (Tuned black @ 6-7)
	8-10			20	M	CL	152	"
	10-12			20	M	CL	30	" with red streaking
	12-14			20	M	CL	149	" w/ gravel
15.5-20	14-16			20	M	CL/SP	54	" 15.5-16 Dark brown Gravely Sand
	16-18			18	M	SP	5.4	"
	18-20			18	M	SP	5.2	"

Sampling Information

Soil			Water			
Date	Depth	Time	Date	Screen Interval	Time	Water Level
11/17/05	5-7	1145				

End of Boring @: 20 Feet

Well Set @: Feet

DPRA
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SOIL GAS SAMPLING INFORMATION

Site Name: Former Jiffy Gas Station
Address: 2154 Lexington Ave N
City/State: Roseville, MN

Staff: Curtis Pfaeger
Date: 11/17/08
Temperature (°F): 25° F

Weather Conditions (Circle all that apply)

Sunny Partly Cloudy Overcast Rain

4 ml per foot of 1/8" tubing 9.65 ml per foot of 1/2" OD

Sample Name	Method Temp./Perm.	Installer	Sample Depth	Reason	Tubing Diameter (inches)	Tubing Length (ft)	Tubing Volume (ml)	Volume Extracted (ml)	Extraction Method	Pre Sample Summa Can Vac. (in. Hg)	Sample Duration (min)	PID Reading (ppm)	Post Sample Summa Can Vac. (in. Hg)	Comments
SG-1	Temp	Driller	8'	Basement 50' SW	1/4"	10.5	105	120	Syringe	28"	30 sec.		0	
SG-1	Temp	Boring Crew	4'		1/4"	5'	45.75	240	Syringe	29"	2 min	0	0	900
SG-2	"	"	"		1/2"	6'	57.9	240	Syringe	24"	30 sec	0	0	945
SG-3	"	"	"		"	6'	57.9	240	Syringe	29"	35 sec	0	0	1040
SG-4	"	"	8'	worst case	"	10'	96.5	240	Syringe	28	12 sec	120	0	1035

ELEVATION SURVEY FIELD NOTES

Job No. 5351.0044.0001 Date: 11/17/08 Checked By: _____

Surveyor: Curtis Praeger Rod Person: Andy (Berg-Cal)

Note: T.B.M description and sketch on other side

Remarks: BM. - Ground surface @ MW-3

No. of Turning Points: 0 Error of closure .01 ft.

Station	B.S. +	H.I.	F.S. -	Elevation	Contour Elevation	Explanation
BM	5.38	105.38		100.00		MW-3
MW-1B			2.90	104.48		
MW-1BG			5.04	[redacted]00.34		
SP-2			5.08	99.70		
SP-1			4.46	100.92		
BM-	[redacted]		5.37	100.01		

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FIELD REPORT

Report No. _____
Job No. 5381.00M.0003
Date 11/18/08
Sheet 1 of 1

BY: Curtis Pranger ARRIVED @ SITE 10:00 LEFT SITE 1400
PROJECT: Former Jiffy Gas Station

LOCATION: Roseville, MN
WEATHER: Overcast TEMPERATURE 20 °F @ 1000
PRESENT AT SITE: CP

EQUIPMENT ON JOB: DB + Rope

WORK IN PROGRESS AND OBSERVATIONS *(include any recommendations and approvals)*:

Arrived @ site + started purging well A lot of sand/silt in well bailed ~ 30 gallons without it clearing up Took sample + left for office

REPORT APPROVED BY: _____ DATE: _____

10/13/06

DPRA
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PROJECT NAME: Former Jiffy Gas Station PROJECT NO. 5351.0044.0003 PAGE 1 OF 1

LOCATION: Roseville, MN SAMPLING DATE: 11/18/08 BY CP

SAMPLING DEVICE: Disposable Bailer PURGING METHOD: DB CLEANING METHOD:

SAMPLE NUMBER	TOTAL DEPTH*	DEPTH TO WATER*	REDOX MV	P.H.	TEMP °C	D.O. mg/l	COND	ODOR	COLOR	VOLUME PURGED	WELL CAPACITY	TIME SAMPLED	COMMENTS
MW-13	66'	61.92'						Yes	Tan	30 gal			

* REFERENCED TO TOP-OF-WELL CASING (TOC)

COMMENTS _____

Hydraulic Conductivity and Transmissivity Calculations
Former Jiffy Gas Station
2154 Lexington Avenue North
Roseville, MN

The hydraulic conductivity (K) was calculated using the grain size analysis results and the following formula from Applied Hydrogeology by C.W Fetter, 1988.

$K = C(d_{10})^2$

where K is the hydraulic conductivity in cm/sec, d_{10} is the effective grain size in centimeters (cm), and C is a coefficient that ranges from 40 to 80 for fine sands.

One saturated soil sample was collected for grain size analysis. The average of the three d_{10} values was used to calculate hydraulic conductivity.

MW-1B (62-64) d_{10} = 0.223 mm or 0.0223 cm

$K = 40\ (0.0223\ cm)^2 =$ **1.99×10^{-2} cm/s**

(1 foot/30.48 cm) (86,400 sec/1 day) = 2,835

(1.99×10^{-2} cm/s) (2,835 ft/cm / sec/day) K = **56.39 ft/day**

Aquifer transmissivity (T) will be calculated using the equation T = Kb, where b is the thickness of the groundwater:

Although the thickness of the groundwater at the Site is unknown, the monitoring well MW-1B boring log indicates that the groundwater thickness is at least four feet. A groundwater thickness of four feet was used to calculate transmissivity; however, this is a conservative calculation as groundwater thickness is expected to be greater at the Site.

$T = Kb = 56.39\ ft/day \times 4\ ft = 225.56\ ft^2/day$

The transmissivity is greater than 50 ft^2/day; therefore, the groundwater is an aquifer.

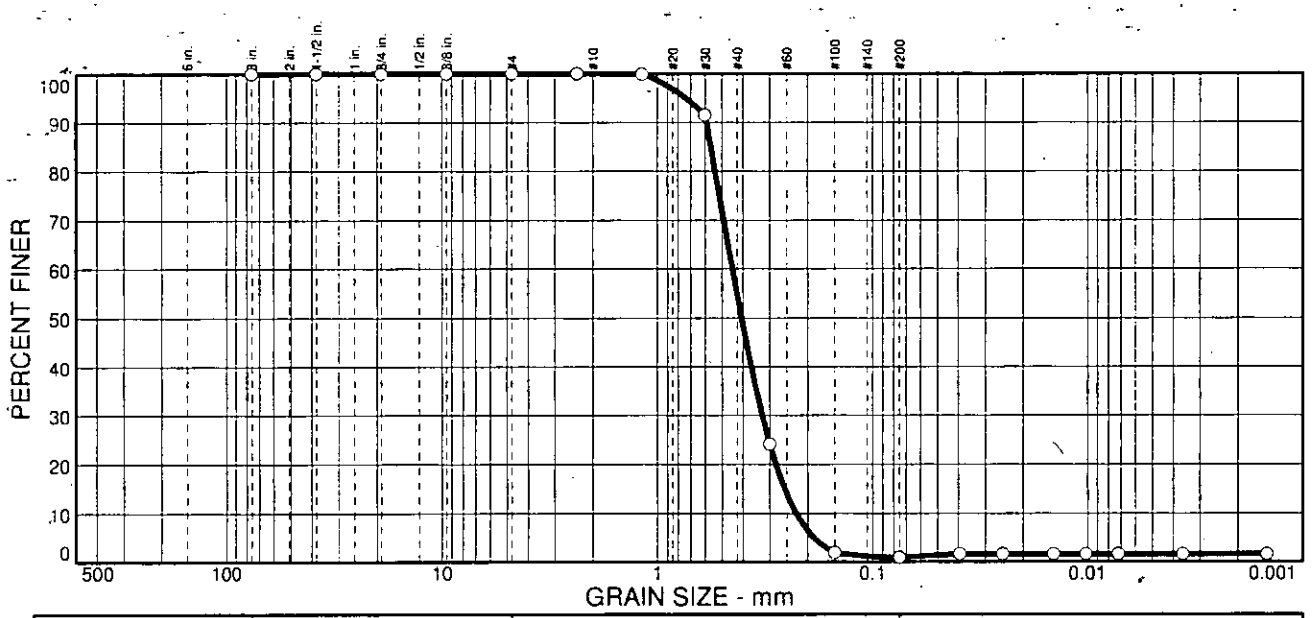
Particle Size Distribution Report

Project: WO# 1084716 WO NAME 005381.0044.0003 JIFFY GAS ST **Report No.:** 08-336-2016

Client: PACE ANALYTICAL SERVICES

Sample No: 1509157 **Source of Sample:** **Date:** 11/17/2008

Location: MW-1B 62-64' **Elev./Depth:**



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	45.6	53.5		1.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3 in.	100.0		
1.5 in.	100.0		
.75 in.	100.0		
.375 in.	100.0		
#4	100.0		
#8	100.0		
#16	99.9		
#30	91.5		
#50	24.1		
#100	1.9		
#200	0.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.565 D_{60}= 0.449 D_{50}= 0.407

D_{30}= 0.325 D_{15}= 0.256 D_{10}= 0.227

C_u= 1.98 C_c= 1.04

Classification

USCS= AASHTO=

Remarks

Figure

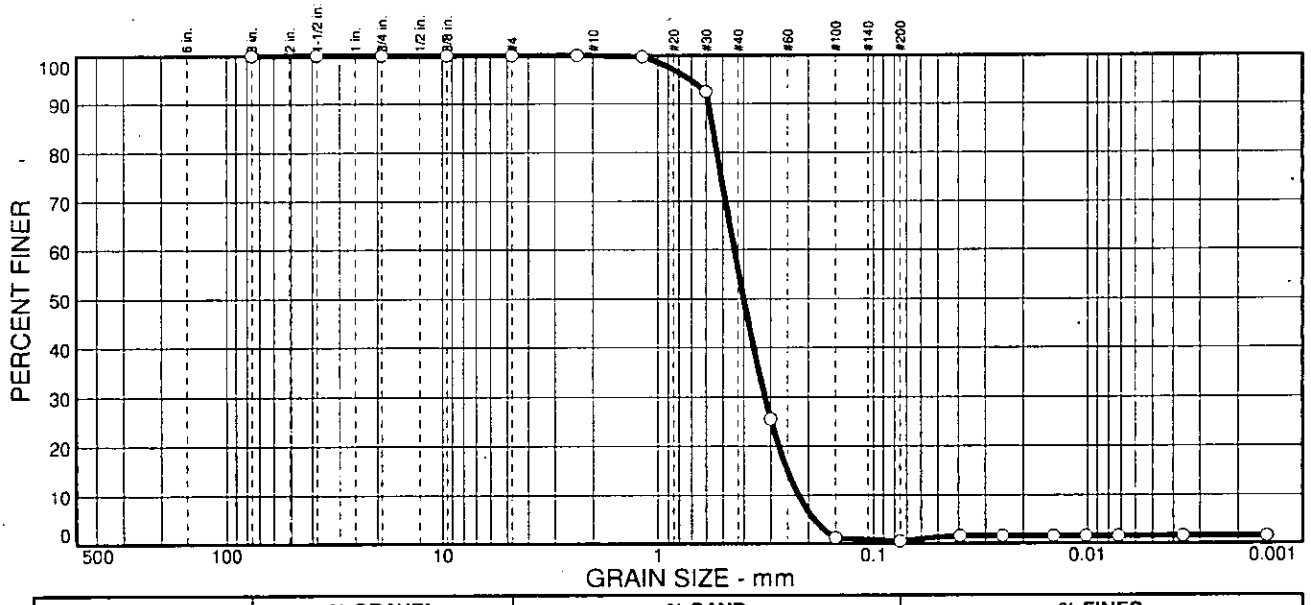
Particle Size Distribution Report

Project: WO# 1084716 WO NAME 005381.0044.0003 JIFFY GAS ST **Report No.:** 08-336-2016

Client: PACE ANALYTICAL SERVICES

Sample No: 1509157 DUP **Source of Sample:** **Date:** 11/17/2008

Location: MW-1B 62-64' DUP **Elev./Depth:**



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	44.2	55.3		1.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3 in.	100.0		
1.5 in.	100.0		
.75 in.	100.0		
.375 in.	100.0		
#4	100.0		
#8	100.0		
#16	99.7		
#30	92.4		
#50	25.5		
#100	1.2		
#200	0.5		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.560 D_{60}= 0.443 D_{50}= 0.401

D_{30}= 0.319 D_{15}= 0.251 D_{10}= 0.223

C_u= 1.99 C_c= 1.03

Classification

USCS= AASHTO=

Remarks

Figure

Minnesota Unique Well No.
200105

County Ramsey
Quad New Brighton
Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
Update Date 01/07/2004
Received Date

Well Name SPETZ AND BERG
Township Range Dir Section Subsections Elevation 945 ft.
29 23 W 11 CCCB Elevation Method 7.5 minute topographic map (+/- 5 feet)

Well Depth	Depth Completed	Date Well Completed
325 ft.	325 ft.	09/14/1961

Drilling Method Cable Tool

Drilling Fluid --

Well Hydrofractured? ☐ Yes ☐ No
From Ft. to Ft.

Use Domestic

Casing Type Steel (black or low carbon) Joint No Information Drive Shoe? ☐ Yes ☐ No Above/Below 0 ft.

Casing Diameter	Weight	Hole Diameter
10 in. to 146 ft.	lbs./ft.	
6 in. to 192 ft.	lbs./ft.	

Open Hole from ft. to ft.

Screen NO Make Type

Diameter	Slot/Gauze	Length	Set Between

Static Water Level
108 ft. from Land surface Date Measured 09/14/1961

PUMPING LEVEL (below land surface)
128 ft. after hrs. pumping 200 g.p.m.

Well Head Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Well Address
2206 LEXINGTON AV N
ROSEVILLE MN

Geological Material	Color	Hardness	From	To
SAND AND GRAVEL	BROWN		0	53
CLAYEY SAND	BROWN		53	63
SAND AND ROCKS			63	72
CLAY	GRAY		72	82
SAND	BROWN		82	109
SAND AND COARSE GRAVEL	GRAY		109	146
CEMENTED SAND AND GRAVEL PIECES L			146	158
PLATTEVILLE LIMEROCK			158	173
SHALE GLENWOOD	GREEN		173	177
ST PETER	WHITE		177	242
ST PETER SHALESTREAKS	YELLOW		242	252
ST PETER SHALE STREAKS	WHT/BLU		252	275
ST PETER SHALIER			275	281
SHALE	GRAY		281	290
ST PETER COARSE	GRAY		290	325

REMARKS
CASING: 010 TO 0146;006 TO 0192.
OPEN HOLE.

Grouting Information Well Grouted? ☐ Yes ☐ No

Located United States Geological Survey Method Digitized - scale 1:24,000 or larger (Digitizing Table)
Unique Number Verification N/A Date N/A
System *UTM - Nad83, Zone15, Meters* X: 488499 Y: 4983822

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name Model number __ HP 0_ Volts
Length of drop Pipe ft. Capacity g.p.m Type Material

Abandoned Wells Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Well Contractor Certification
Aamot Well Co. 27062
License Business Name Lic. Or Reg. No. Name of Driller

First Bedrock Platteville
Last Strat St.Peter
Aquifer St.Peter
Depth to Bedrock 158 ft.

County Well Index Online Report **200105** Printed 1/8/2009 HE-01205-07

Minnesota Unique Well No.
200102

County Ramsey
Quad New Brighton
Quad ID 119C

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING RECORD
Minnesota Statutes Chapter 103I

Entry Date 08/14/1991
Update Date 01/07/2004
Received Date

Well Name CONNING HOUSE
Township Range Dir Section Subsections Elevation 945 ft.
29 23 W 10 DBCDDD Elevation Method 7.5 minute topographic map (+/- 5 feet)

Well Depth	Depth Completed	Date Well Completed
154 ft.	154 ft.	02/07/1961

Drilling Method --

Drilling Fluid --

Well Hydrofractured? ☐ Yes ☐ No From Ft. to Ft.

Use Industrial

Casing Type Joint No Information Drive Shoe? ☐ Yes ☐ No Above/Below 0 ft.

Casing Diameter	Weight	Hole Diameter
4 in. to 144 ft.	lbs./ft.	

Well Address
1290 36 HY
ROSEVILLE MN

Open Hole from ft. to ft.

Screen Make Type

Diameter	Slot/Gauze	Length	Set Between

Geological Material	Color	Hardness	From	To
CLAY			0	27
SAND AND GRAVEL			27	78
CLAY			78	108
GRAVEL			108	116
CLAY			116	144
LIMEROCK			144	154

Static Water Level
92 ft. from Land surface Date Measured 02/07/1961

PUMPING LEVEL (below land surface)
97 ft. after hrs. pumping 12 g.p.m.

Well Head Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

NO REMARKS

Grouting Information Well Grouted? ☐ Yes ☐ No

Located Minnesota Geological Survey
Method Digitized - scale 1:24,000 or larger (Digitizing Table)
Unique Number Verification N/A Date N/A
System *UTM - Nad83, Zone15, Meters* X: 487824 Y: 4984088

Nearest Known Source of Contamination
_feet _direction _type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☑ Not Installed Date Installed
Manufacturer's name STA RITE Model number __ HP 0.5_ Volts
Length of drop Pipe 110 ft. Capacity 8 g.p.m Type Submersible Material

Abandoned Wells Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance Was a variance granted from the MDH for this well? ☐ Yes ☐ No

First Bedrock Platteville
Last Strat Platteville
Aquifer Platteville
Depth to Bedrock 144 ft.

Well Contractor Certification

License Business Name | Lic. Or Reg. No. | Name of Driller

County Well Index Online Report **200102** Printed 1/8/2009 HE-01205-07