

M-0001

**Quality Environmental Professionals, Inc.**

July 21, 2008

Ms. Lory Timmer
Department of Redevelopment
City of Mishawaka
600 East Third Street
Mishawaka, Indiana 46544

**Re: Further Site Investigation Offsite Sampling and Analysis Report
Former Union Street Sunoco Station
1126 South Union Street
Mishawaka, Indiana
Qepi Project #07-01-05.04**

Dear Ms. Timmer:

Quality Environmental Professionals, Inc. (Qepi) is pleased to provide the City of Mishawaka with this Further Site Investigation (FSI) Offsite Sampling and Analysis Report. This report documents the site investigation activities completed on the vacant properties located directly north and south of the subject site. The objective of this offsite sampling and analysis investigation was to determine the presence or absence of offsite petroleum hydrocarbon impacts to soil and/or groundwater and to evaluate the potential for migration of petroleum impacts present at the subject property. Provided below is a background summary followed by a description of the limited sampling and analysis activities, the findings, conclusions and recommendations.

Background

The site was historically used as a gasoline service station and automotive repair shop. The site ceased operation as a gasoline service station in 1995 and continued operation as an automotive repair shop until 2005, when it was vacated. The site was originally developed for use as a service station in 1932. Prior to 1932 the site was undeveloped. The station building was demolished in late 2007. The site is currently vacant and used for green space.

The site historically operated five steel USTs, including three 3,000 gallon tanks and two 1,000 gallon tanks, which were registered on May 2, 1986 to J & K Oil Company of Elkhart, Indiana. Four of the tanks were installed in 1971 and one of the tanks was installed in 1976. The three 3,000 gallon USTs were stationed on the southern portion of the site in one tank pit. One 1,000 gallon UST was stationed adjacent to the building to the south and the other 1,000 gallon UST was stationed adjacent to the building to the north. The USTs contained gasoline.

Qepi completed a Phase I Environmental Site Assessment (Phase I ESA) in March 2007. Findings from the Phase I ESA confirmed a potential concern for subsurface impacts associated with the former USTs and pump island area.



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Ms. Lory Timmer
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With the finding from the Phase I ESA, Qepi completed a Limited Subsurface Investigation in May 2007. Qepi advanced five soil borings (SB-1 through SB-5) to 16 feet below ground surface (bgs) and collected soil and groundwater samples. The five soil borings advanced were performed to evaluate the potential for impacts at locations not addressed by the Heartland site investigation. According to the *Limited Phase II Sampling and Analysis Report* dated May 10, 2007, petroleum impacts to the soil and groundwater onsite were present at concentrations exceeding the IDEM RISC Residential Default Cleanup Levels (RDCLs) and Industrial Default Cleanup Levels (IDCLs) throughout the property. Additional investigation was recommended to further delineate impacts to soil and groundwater at the site.

Qepi advanced nine soil borings and installed five monitoring wells in activities dated February 28 and February 29, 2008, in an attempt to delineate impacts in soil and groundwater found during the previously conducted limited subsurface investigation. Groundwater was encountered from ten feet to twelve feet bgs. Soil borings were advanced throughout the property in order to assess potential impacts associated with historical service station operations at the site. Four soil borings (SB-6, SB-7, SB-8 and SB-9) were advanced north of the former station building, along East 12th Street, to delineate groundwater impacts found in soil borings advanced in May 2007. Two soil borings (SB-12 and SB-13) were advanced west of the former station building, along South Union Street, and three soil borings (SB-10, SB-11 and SB-14) were advanced south of the former station building, directly north of East 13th Street, to determine whether groundwater impacts exist along the property boundary and to evaluate the potential for impacts to have migrated across the streets. Soil borings SB-6, SB-9, SB-11 and SB-12 were completed as monitoring wells MW-2, MW-3, MW-4 and MW-5, respectively. In addition, one groundwater monitoring well, MW-1, was installed in the center of the property in a location previously shown to exhibit elevated groundwater impacts.

A total of four soil samples and ten groundwater samples were collected during further site investigation activities. Of the four soil samples collected, one exceeded IDEM RISC RDCLs for TPH (GRO). No additional soil impacts were encountered exceeding IDEM RISC RDCLs or IDCLs. Of the ten groundwater samples collected, six exceeded the IDEM RISC RDCLs for TPH (GRO) and eight exceeded IDEM RISC RDCLs for TPH (ERO). Additionally, three groundwater samples exceeded IDEM RISC IDCLs for TPH (GRO) and six exceeded IDEM RISC IDCLs for TPH (ERO). Two groundwater samples exhibited benzene, naphthalene, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene impacts exceeding IDEM RISC RDCLs; however these impacts did not exceed IDEM RISC IDCLs.

After evaluation of these results, it was determined that additional assessment was necessary to evaluate the potential for impacts to migrate offsite. As an amendment to the original scope of work conducted at the site, Qepi was tasked to advanced two additional soil borings to evaluate the presence/absence of impacts offsite and to complete delineation activities at the site.



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FSI Offsite Sampling and Analysis Investigation

On June 18, 2008, Qepi personnel provided oversight for the advancement of 2 direct-push soil borings to a maximum depth of 16 feet below ground surface (bgs). The soil borings were advanced off the subject property, with soil boring SB-16 advanced north of the subject site on the property across East 12th Street and soil boring SB-15 advanced south of the subject site on the vacant parcel across East 13th Street. Soil boring locations are illustrated on Figure 1.

Soil sample intervals were continuously logged and the soil lithology was described on Qepi boring logs. Soils in the area of investigation were consistent with soils previously identified at the subject site. The soil samples were inspected for indications of petroleum hydrocarbon impacts, such as staining and odors. The soil samples collected from the borings were continuously screened for soil vapors using a pre-calibrated MSA Passport photo-ionization detector (PID) organic vapor monitor. None of the soil borings exhibited staining, petroleum odors or elevated PID readings. Soil borings logs are included as Attachment A.

The soil sample interval at each soil boring location that exhibited the highest PID reading was submitted to Envision Laboratories, Inc. (Envision) in Indianapolis, Indiana for laboratory analysis of total petroleum hydrocarbons (TPH) gasoline range organics (GRO) and extended range organics (ERO) using USEPA SW-846 Method 8015 and benzene, toluene, ethylbenzene, xylene and methyl tertiary butyl ether (BTEX/MTBE) using USEPA SW-846 Method 8260.

In addition to the soil samples collected, groundwater samples were collected from each soil boring advanced and submitted for laboratory analysis of TPH (GRO/ERO) using USEPA SW-846 Method 8015 and BTEX/MTBE using USEPA SW-846 Method 8260.

The samples were placed into laboratory-prepared sample containers and stored in a secured, iced cooler (at 4°C). Samples were transported to Envision and submitted for laboratory analysis under Qepi's chain of custody protocol.

Soil Analytical Results

None of the samples submitted for laboratory exhibit impacts exceeding laboratory detection limits for the chemicals of concern analyzed. Soil analytical results are depicted on Figure 2 and summarized in Table 1. The laboratory Certificate of Analysis is provided as Attachment B.

Groundwater Analytical Results

None of the samples submitted for laboratory exhibit impacts exceeding laboratory detection limits for the chemicals of concern analyzed. Groundwater analytical results are depicted on Figure 3 and summarized in Table 2. The laboratory Certificate of Analysis is provided as Attachment B.



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Conclusion & Recommendations

Qepi has completed the offsite sampling and analysis investigation at the subject property that included advancing 2 soil borings and analyzing soil and groundwater samples from the properties directly north and south from the subject property. The objective of this limited sampling and analysis investigation was to determine the presence or absence of petroleum hydrocarbon impacts to soil and/or groundwater north and south of the location of the subject property and to evaluate the potential for impacts present at the subject property to migrate offsite.

Based upon the results of this limited offsite investigation, it does not appear that impacts are present to soil or groundwater on the properties to the north and south of the site. Based on this investigation, it is unlikely that impacts present at the subject property migrated offsite on to the neighboring properties. Qepi believes that impacts present are likely contained within the subject property, as shown in the previously conducted FSI Investigation and as such, Qepi does not recommend further investigation offsite at this time.

Qepi will evaluate remedial alternatives for the subject site and will determine the correct regulatory action to take with regards to impacts present at the subject site. Qepi will consult with City officials after determining which regulatory compliance agency to enroll the subject site into and will work to provide remedial and closure alternatives to the City.

Report Disclaimer

In preparing this FSI Sampling and Analysis Report, Qepi has applied generally-accepted professional practices and standards and exercised its professional judgment, skill, and care in a manner consistent with that of other professionals performing similar work under similar conditions. Please note that the results of any investigation can vary with time and location. All conclusions and opinions concerning the site are based on research and investigations of the site by Qepi, unless as otherwise noted in the report. Qepi is not responsible for unrecorded data pertaining to the site. Furthermore, Qepi makes no warranties, expressed or implied, as to the fitness of the site for any particular purpose and Qepi is not responsible for independent conclusions or opinions made by others based on this report. Qepi's sampling protocol used for this investigation was for determining the presence or absence of soil and/or groundwater impacts. This investigation was limited to the areas illustrated on the figures of this report.

Should you have any questions regarding this letter report, please contact Nivas R. Vijay at (574) 234-1475.

Sincerely,

A handwritten signature in black ink, appearing to read "Nivas R. Vijay".

Nivas R. Vijay
Project Manager

A handwritten signature in black ink, appearing to read "Brent A. Dayharsh".

Brent A. Dayharsh
Director of Technical Operations

Figures

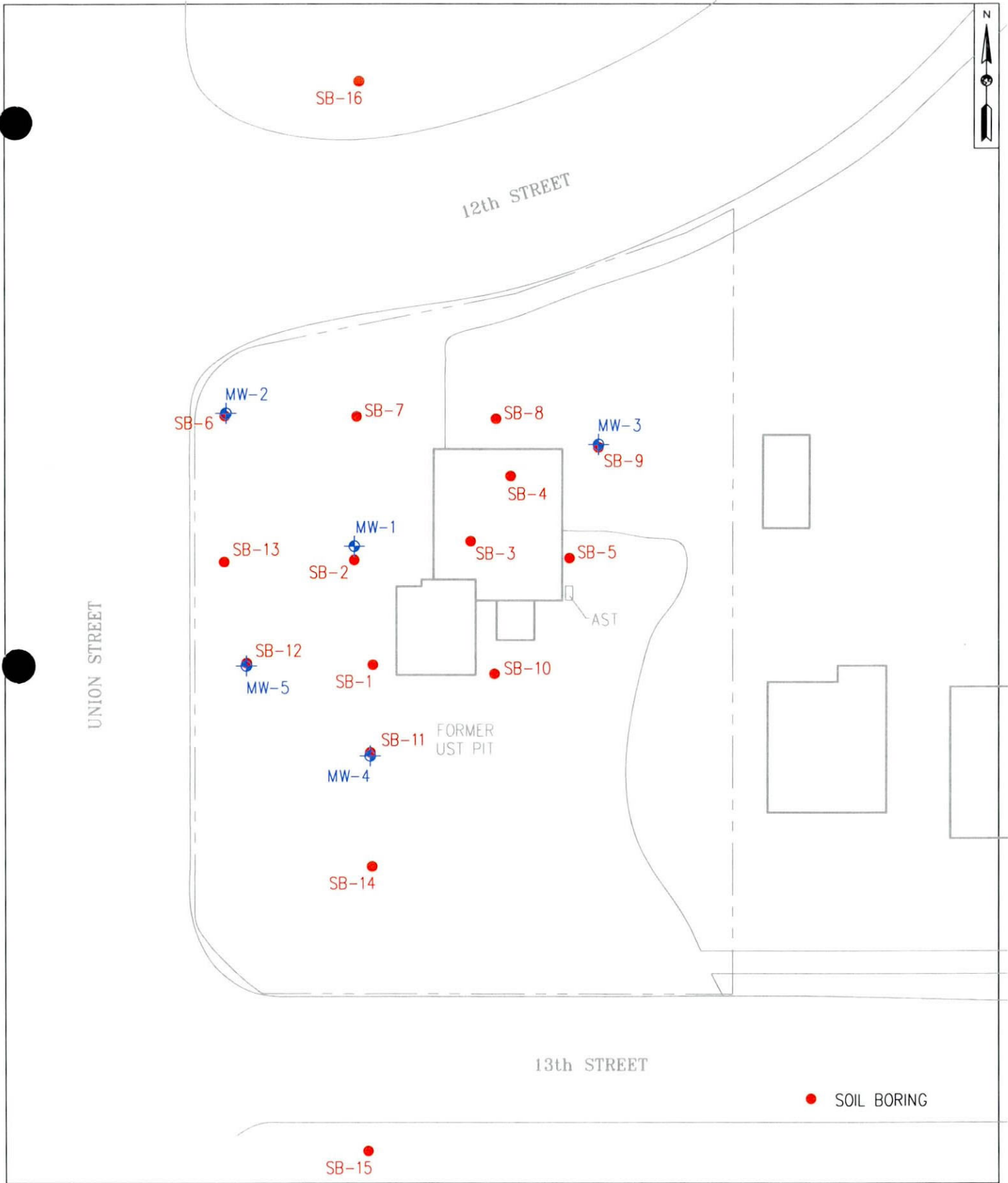


FIGURE 1
 SITE MAP WITH SOIL BORINGS AND
 MONITORING WELL LOCATIONS
 FORMER UNION STREET SUNOCO
 1126 SOUTH UNION STREET
 MISHAWAKA, INDIANA

PROJECT NO.	DATE
07-01-05	7/12/08
DRAWN BY	SCALE
CWH	1" = 30'
CHECKED BY	SHEET
NRV	1

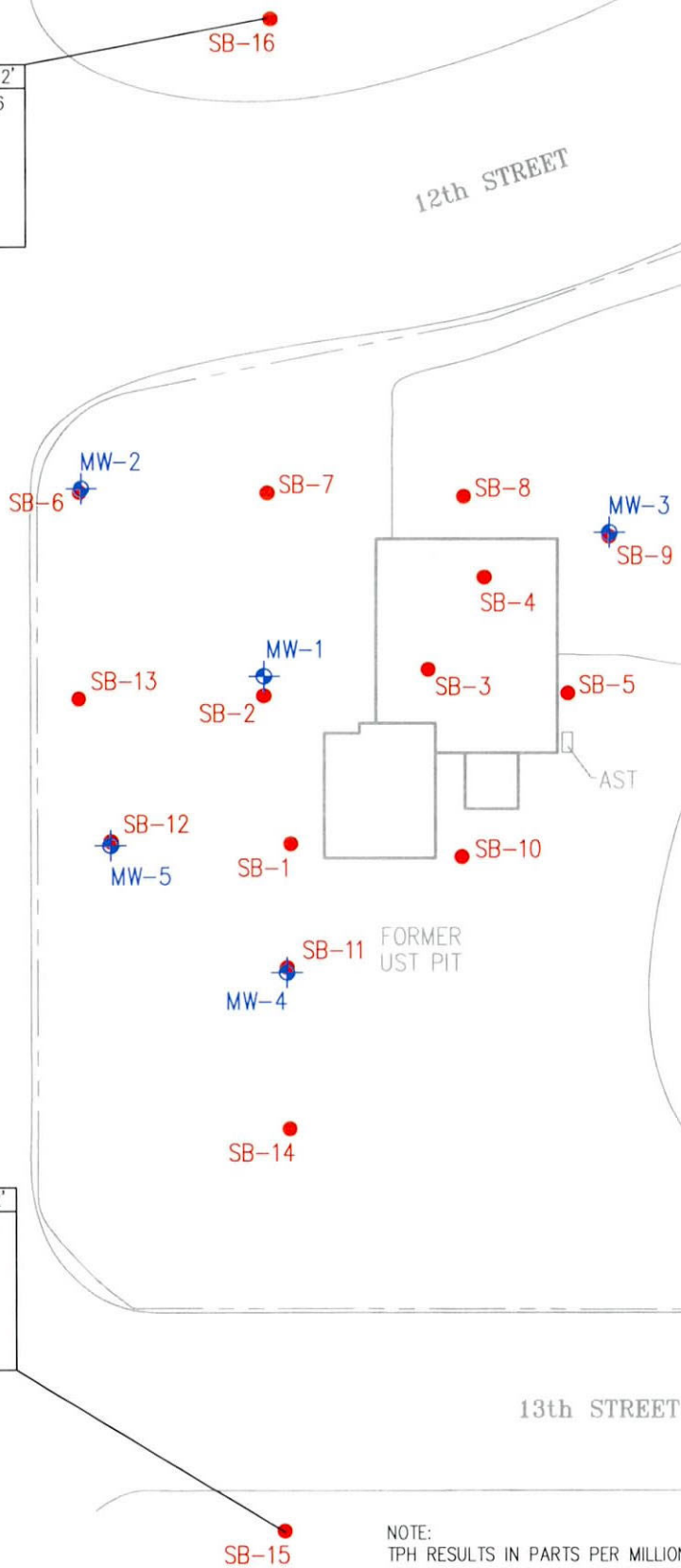
Depth	10-12'
GRO	<15.6
ERO	<21
Benzene	<5
Toluene	<5
Ethylbenzene	<5
Xylene	<10
MTBE	<5

Depth	10-12'
GRO	<16.3
ERO	<22
Benzene	<5
Toluene	<5
Ethylbenzene	<5
Xylene	<11
MTBE	<5

UNION STREET

12th STREET

13th STREET



LEGEND

	MONITORING WELL
	SOIL BORING

NOTE:
TPH RESULTS IN PARTS PER MILLION, ALL OTHERS IN PARTS PER BILLIONS



FIGURE 2
OFFSITE SOIL ANALYTICAL RESULTS
FORMER UNION STREET SUNOCO
1126 SOUTH UNION STREET
MISHAWAKA, INDIANA

PROJECT NO.	DATE
07-01-05	7/12/08
DRAWN BY	SCALE
CWH	1"=30'
CHECKED BY	SHEET
NRV	1

GRO	<220
ERO	<100
Benzene	<5
Toluene	<5
Ethylbenzene	<5
Xylene	<10
MTBE	<5

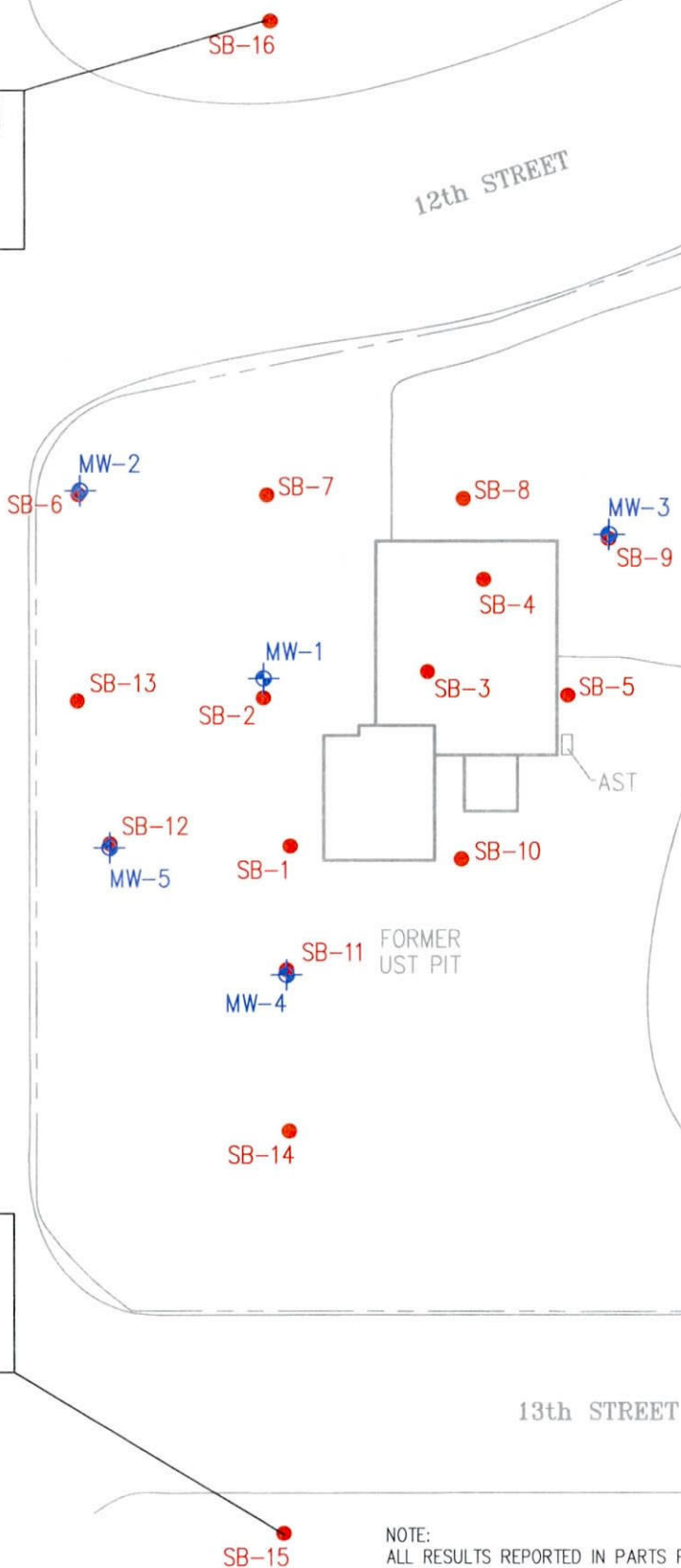
GRO	<220
ERO	<100
Benzene	<5
Toluene	<5
Ethylbenzene	<5
Xylene	<10
MTBE	<5



UNION STREET

12th STREET

13th STREET



NOTE:
ALL RESULTS REPORTED IN PARTS PER BILLION

LEGEND

	MONITORING WELL
	SOIL BORING



FIGURE 3
OFFSITE WATER ANALYTICAL RESULTS
FORMER UNION STREET SUNOCO
1126 SOUTH UNION STREET
MISHAWAKA, INDIANA

PROJECT NO.	DATE
07-01-05	7/12/08
DRAWN BY	SCALE
CWH	1"=30'
CHECKED BY	SHEET
NRV	1

Tables

Table 1
Soil Sample Analytical Results
Former Union Street Sunoco
1126 South Union Street
Mishawaka, Indiana

Sample I.D.	Date	Sample Depth (ft)	TPH Gasoline Range	TPH Extended Range	Benzene	Toluene	Ethylbenzene	Total Xylene	MTBE
			(ppm)	(ppm)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
SB-1	4/13/2007	2-4	<1.1	NA	<6	<6	<6	<11	<6
SB-2	4/13/2007	4-6	<1.1	NA	<6	<6	83.4	138	<6
SB-3	4/13/2007	8-10	<1.0	122	<5	<5	<5	15	<5
SB-4	4/13/2007	6-8	2.33	53	<7	8.83	271	479	<7
SB-5	4/13/2007	4-6	<1.9	<37	<9	<9	<9	<19	<9
SB-6	2/28/2008	8'-10'	<20	46	NS	NS	NS	NS	NS
SB-8	2/28/2008	8'-10'	<20	26	NS	NS	NS	NS	NS
SB-10	2/29/2008	8'-10'	<20	53	NS	NS	NS	NS	NS
SB-11	2/28/2008	6'-8'	<20	595	NS	NS	NS	NS	NS
SB-15	6/18/2008	10'-12'	<16.3	<22	<5	<5	<5	<11	<5
SB-16	6/18/2008	10'-12'	<15.6	<21	<5	<5	<5	<10	<5
RISC Default Residential			25	80	34	13,000	12,000	170,000	180
RISC Default Industrial			330	1,000	350	160,000	240,000	170,000	3,900

Laboratory analysis by ENVision Laboratories, Inc. Indianapolis, Indiana

Results in **bold** exceed IDEM RISC Default Residential Cleanup Goals (January 2004 guidance)

Results Shaded exceed IDEM RISC Default Industrial Cleanup Objectives (January 2004 guidance).

NA = Parameter not analyzed; ND = None Detected

< = result is less than laboratory detection limit

ppb = parts per billion

ppm = parts per million

Table 2
Groundwater Analytical Results
Former Union Street Sunoco
1126 South Union Street
Mishawaka, Indiana

Sample I.D.	Date	TPH Gasoline Range	TPH Extended Range	Benzene	Toluene	Ethylbenzene	Total Xylene	MTBE	Napthalene	n-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene
		(ppm)	(ppm)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
SB-1	4/13/2007	1,510	NA	6.84	<5	53.2	192	<5	NA	NA	NA	NA
SB-2	4/13/2007	13,400	NA	47.1	<50	1,130	2,480	<40	NA	NA	NA	NA
SB-3	4/13/2007	1,830	2,410	<5	<5	40.2	121	<5	53.8	54	171	134
SB-4	4/13/2007	<100	434	<5	<5	<5	5.21	<5	2.0	<5	8.32	<5
SB-5	4/13/2007	<100	<100	<5	<5	<5	<10	<5	<5	<5	<5	<5
SB-7	2/28/2008	474	1,100	<5	<5	82.2	248	<5	69	35	209	56.9
SB-8	2/28/2008	1,520	1,820	<5	<5	180	301	<5	231	73.8	392	140
SB-10	2/29/2008	<220	1,420	<5	<5	<5	<10	<5	<5	<5	<5	<5
SB-13	2/28/2008	<220	<100	<5	<5	<5	5.9	<5	<5	<5	6.89	<5
SB-14	2/29/2008	<220	660	<5	<5	<5	<10	<5	<5	9.3	32.8	13.2
MW-1	3/25/2008	8,450	8,900	18.6	<50	877	2,970	<40	NS	NS	NS	NS
SB-6/MW-2	3/25/2008	3,690	1,700	<5	<50	37.6	137	<40	NS	NS	NS	NS
SB-9/MW-3	3/25/2008	<220	<100	<5	<5	<5	<10	<5	NS	NS	NS	NS
SB-11/MW-4	3/25/2008	2,750	4,200	<5	<50	158	1,230	<40	NS	NS	NS	NS
SB-12/MW-5	3/25/2008	3,830	2,800	7.74	<5	65.0	300	<5	NS	NS	NS	NS
SB-15	6/18/2008	<220	<100	<5	<5	<5	<10	<5	NS	NS	NS	NS
SB-16	6/18/2008	<220	<100	<5	<5	<5	<10	<5	NS	NS	NS	NS
RISC Default Residential Cleanup Objective		220	80	5	1,000	700	10,000	40	8.3	310	16.0	16.0
RISC Default Industrial Cleanup Objective		3,000	1,100	52	20,000	10,000	20,000	870	170	4,100	5,100	5,100

Laboratory analysis by ENVision Laboratories, Inc. Indianapolis, Indiana

Results in **bold** exceed IDEM RISC Default Residential Cleanup Goals (January 2004 guidance)

Results Shaded exceed IDEM RISC Default Industrial Cleanup Objectives (January 2004 guidance).

NA = Parameter not analyzed

ND = None Detected

< = result is less than laboratory detection limit

ppb = parts per billion

ppm = parts per million

Attachment A



Project Number: **07-01-05**

Client: City of Mishawaka		Drilling Method: Direct Push
Project: Former Union Street Sunoco		Sampling Method: Continuous
Location: 1126 South Union Street, Mishawaka, Indiana		Weather: 70°F, sunny
Logged By: JML		Time Terminated:
Drilling Company: Midway	Drillers: Mark	Completion Date: June 18, 2008

Depth (feet)	SOIL DESCRIPTION	Sample	REMARKS	PID (ppm)	Depth (feet)
0	Gravel Fill, Poor Recovery				0
2					2
4	10YR 4/3 brown, fine grained SAND with gravel, moist			0.3	4
6	10YR 6/3 pale brown, fine grained SAND with gravel, moist			0.0	6
8	very moist at 8'			0.0	8
10					10
11	wet at 11'			0.0	11
12	10YR 4/3 brown, medium to coarse grained SAND with gravel, saturated at 12'		Soil sample from 10 to 12 feet bgs submitted for laboratory analysis	0.0	12
14	10YR 4/4 dark yellowish brown at 14'			0.0	14
16	Bottom of Boring at 16 ft				16

BORING LOG 07-01-05.GPJ BORING LOG.GDT 7/16/08



Project Number: **07-01-05**

Client: City of Mishawaka	Drilling Method: Direct Push
Project: Former Union Street Sunoco	Sampling Method: 4' Sleeve
Location: 1126 South Union Street, Mishawaka, Indiana	Weather: 70°F, sunny
Logged By: JML	Time Terminated:
Drilling Company: Midway	Drillers: Mark
Completion Date: June 18, 2008	

Depth (feet)	SOIL DESCRIPTION	Sample	REMARKS	PID (ppm)	Depth (feet)
	Asphalt				
	10YR 3/4 dark yellowish brown, SILTY SAND			0.0	
2	10YR 3/1 very dark gray, SILTY SAND, slightly soft, dry			0.0	2
4	10YR 5/1 gray mottling at 4'			0.0	4
6	10YR 5/6 yellowish brown, fine to medium grained SAND, moist			0.0	6
8	10YR 5/4 yellowish brown, very moist at 8'			0.0	8
10	wet at 10'			0.0	10
12	Saturated at 12'		Soil sample from 10 to 12 feet bgs submitted for laboratory analysis.	0.0	12
14				0.0	14
16	Bottom of Boring at 16 ft			0.0	16

BORING LOG 07-01-05.GPJ BORING LOG.GDT 7/16/08

Attachment B



ENVision Laboratories, Inc.
1439 Sadlier Circle West Drive
Indianapolis, IN 46239
Tel: 317.351.8632
Fax: 317.351.8639
www.envisionlaboratories.com

Mr. Nivas Vijay
QEPI
1611 South Franklin Road
Indianapolis, IN 46239

July 2, 2008

ENVision Project Number: 2008-1255
Client Project Name: 07-01-05/Union St.

Dear Mr. Vijay,

Please find the attached analytical report for the samples received June 20, 2008. All test methods performed were fully compliant with local, state, and federal EPA methods unless otherwise noted. The project was analyzed as requested on the enclosed chain of custody record. Please review the comments section for additional information about your results or Quality Control data.

Feel free to contact me if you have any questions or comments regarding your analytical report or service.

Thank you for your business. ENVision Laboratories looks forward to working with you on your next project.

Yours Sincerely,

A handwritten signature in cursive script that reads "David Norris".

David Norris

Client Services Manager
ENVision Laboratories, Inc.

IL ELAP / NELAC Accreditation # 100454





ENVision Laboratories, Inc.
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 Indianapolis, IN 46239
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 Fax: 317.351.8639
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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255
Analytical Method: 8260
Prep Method: 5035A
Analytical Batch: 062508VS

Client Sample ID: SB-15 (10-12) **Sample Collection Date/Time:** 6/18/08 15:30
Envision Sample Number: 8-8945 **Sample Received Date/Time:** 6/20/08 16:30
Sample Matrix: soil

Compounds	Sample Results (ug/kg)	Rep. Limit (ug/kg)	Flags
Benzene	< 5	5	
Toluene	< 5	5	
Ethylbenzene	< 5	5	
Xylene, M&P	< 5	5	
Xylene, Ortho	< 5	5	
Xylene, Total	< 11	11	
Methyl-tert-butyl-ether	< 5	5	

Dibromofluoromethane (surrogate) 111%
 1,2-Dichloroethane-d4 (surrogate) 111%
 Toluene-d8 (surrogate) 102%
 4-bromofluorobenzene (surrogate) 120%
Analysis Date/Time: 06/25/08/15:33
Analyst Initials: tjg

Percent Solids: 92%

All results reported on dry weight basis.



ENVision Laboratories, Inc.
 1439 Sadlier Circle West Drive
 Indianapolis, IN 46239
 Tel: 317.351.8632
 Fax: 317.351.8639
 www.envisionlaboratories.com

Client Name: QEPI
 Project ID: Union St. / 07-01-05
 Client Project Manager: Nivas Vijay
 ENVision Project Number: 2008-1255
 Analytical Method: 8015 TPH Gasoline Range
 Prep Method: 5035A
 Analytical Batch: 062608GS
 Client Sample ID: SB-15 (10-12) Sample Collection Date/Time: 6/18/08 15:30
 Envision Sample Number: 8-8945 Sample Received Date/Time: 6/20/08 16:30
 Sample Matrix: soil

<u>Compounds</u>	<u>Sample Results (mg/kg)</u>	<u>Reporting Limit (mg/kg)</u>	<u>Flags</u>
TPH-Gasoline	< 16.3	16.3	
4-bromofluorobenzene (surrogate)	93%		
Analysis Date/Time:	06/26/08/16:13		
Analyst Initials	tig		
Percent Solids	92%		

All results reported on dry weight basis.



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 Indianapolis, IN 46239
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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255
Analytical Method: 8015 TPH Extended C8-C36
Prep Method: 3550B
Analytical Batch: 062408E

Client Sample ID: SB-15 (10-12) **Sample Collection Date/Time:** 6/18/08 15:30
Envision Sample Number: 8-8945 **Sample Received Date/Time:** 6/20/08 16:30
Sample Matrix: soil

<u>Compounds</u>	<u>Sample Results (mg/kg)</u>	<u>Reporting Limit (mg/kg)</u>	<u>Flags</u>
TPH-Extended C8-C36	< 22	22	
o-Terphenyl (surrogate)	64%		
Analysis Date/Time:	6/26/2008 1:27		
Analyst Initials:	gjd		
Date Extracted:	6/25/2008		
Initial Sample Weight:	30.0 g		
Final Volume:	3.0 mL		
Percent Solids	92%		

All results reported on dry weight basis.



ENVision Laboratories, Inc.
 1439 Sadler Circle West Drive
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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255

Client Sample ID: SB-15 (10-12) **Sample Collection Date/Time:** 6/18/08 15:30
Envision Sample Number: 8-8945 **Sample Received Date/Time:** 6/20/08 16:30
Sample Matrix: soil

<u>Analyte</u>	<u>Sample Results</u>	<u>Flags</u>	<u>Method</u>
Percent Moisture	8.0%		1684
Percent Solids	92.0%		1684
Analysis Date:	6/24/08		
Analyst Initials	ZTC		



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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255
Analytical Method: 8260
Prep Method: 5035A
Analytical Batch: 062508VS

Client Sample ID: SB-16 (10-12) **Sample Collection Date/Time:** 6/18/08 16:30
Envision Sample Number: 8-8946 **Sample Received Date/Time:** 6/20/08 16:30
Sample Matrix: soil

Compounds	Sample Results (ug/kg)	Rep. Limit (ug/kg)	Flags
Benzene	< 5	5	
Toluene	< 5	5	
Ethylbenzene	< 5	5	
Xylene, M&P	< 5	5	
Xylene, Ortho	< 5	5	
Xylene, Total	< 10	10	
Methyl-tert-butyl-ether	< 5	5	

Dibromofluoromethane (surrogate) 112%
 1,2-Dichloroethane-d4 (surrogate) 107%
 Toluene-d8 (surrogate) 99%
 4-bromofluorobenzene (surrogate) 122%
Analysis Date/Time: 06/25/08/15:54
Analyst Initials: tjg

Percent Solids: 96%

All results reported on dry weight basis.



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 Indianapolis, IN 46239
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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255

Analytical Method: 8015 TPH Gasoline Range
Prep Method: 5035A
Analytical Batch: 062608GS

Client Sample ID: SB-16 (10-12) **Sample Collection Date/Time:** 6/18/08 16:30
Envision Sample Number: 8-8946 **Sample Received Date/Time:** 6/20/08 16:30
Sample Matrix: soil

<u>Compounds</u>	<u>Sample Results (mg/kg)</u>	<u>Reporting Limit (mg/kg)</u>	<u>Flags</u>
TPH-Gasoline	< 15.6	15.6	
4-bromofluorobenzene (surrogate)	90%		
Analysis Date/Time:	06/26/08/16:32		
Analyst Initials	tjg		
Percent Solids	96%		

All results reported on dry weight basis.



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Client Name: QEPI

Project ID: Union St. / 07-01-05

Client Project Manager: Nivas Vijay

ENVISSION Project Number: 2008-1255

Analytical Method: 8015 TPH Extended C8-C36

Prep Method: 3550B

Analytical Batch: 062408E

Client Sample ID: SB-16 (10-12)

Envision Sample Number: 8-8946

Sample Matrix: soil

Sample Collection Date/Time: 6/18/08 16:30

Sample Received Date/Time: 6/20/08 16:30

<u>Compounds</u>	<u>Sample Results (mg/kg)</u>	<u>Reporting Limit (mg/kg)</u>	<u>Flags</u>
TPH--Extended C8-C36	< 21	21	
o-Terphenyl (surrogate)	63%		
Analysis Date/Time:	6/26/2008 1:57		
Analyst Initials:	gjd		
Date Extracted:	6/25/2008		
Initial Sample Weight:	30.0 g		
Final Volume:	3.0 mL		
Percent Solids	96%		

All results reported on dry weight basis.



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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255
Client Sample ID: SB-16 (10-12) **Sample Collection Date/Time:** 6/18/08 16:30
Envision Sample Number: 8-8946 **Sample Received Date/Time:** 6/20/08 16:30
Sample Matrix: soil

<u>Analyte</u>	<u>Sample Results</u>	<u>Flags</u>	<u>Method</u>
Percent Moisture	4.0%		1684
Percent Solids	96.0%		1684
Analysis Date:	6/24/08		
Analyst Initials	zrc		



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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255

Analytical Method: 8260
Prep Method: 5030B
Analytical Batch: 062508VW

Client Sample ID: SB-15 **Sample Collection Date/Time:** 6/18/08 15:45
Envision Sample Number: 8-8947 **Sample Received Date/Time:** 6/20/08 16:30
Sample Matrix: water

<u>Compounds</u>	<u>Sample Results (ug/L)</u>	<u>Reporting Limit (ug/L)</u>	<u>Flags</u>
Benzene	< 5	5	
Toluene	< 5	5	
Ethylbenzene	< 5	5	
Xylene, M&P	< 5	5	
Xylene, Ortho	< 5	5	
Xylenes, Total	<10	10	
Methyl-tert-butyl-ether	< 5	5	
Dibromofluoromethane (surrogate)	50.6	101%	
1,2-Dichloroethane-d4 (surrogate)	51.3	103%	
Toluene-d8 (surrogate)	48.1	96%	
4-bromofluorobenzene (surrogate)	47.3	95%	
Analysis Date/Time:	06/25/08/06:50		
Analyst Initials	tjg		



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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255
Analytical Method: 8015M TPH-Ext C8-C36
Prep Method: 3520C
Analytical Batch: 062608E

Client Sample ID: SB-15
Envision Sample Number: 8-8947
Sample Matrix: water
Sample Collection Date/Time: 6/18/08 15:45
Sample Received Date/Time: 6/20/08 16:30

<u>Compounds</u>	<u>Sample Results (ug/L)</u>	<u>Reporting Limit (ug/L)</u>	<u>Flags</u>
TPH--Extended C8-C36	< 100	100	
o-Terphenyl (surrogate)	63%		
Analysis Date/Time:	6/26/2008 20:54		
Analyst Initials:	gjd		
Date Extracted:	6/24/2008		
Initial Sample Volume:	990 mL		
Final Volume:	1.0 mL		



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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255

Analytical Method: 8015 GRO
Prep Method: 5030
Analytical Batch: 062608GW

Client Sample ID: SB-15 **Sample Collection Date/Time:** 6/18/08 15:45
Envision Sample Number: 8-8947 **Sample Received Date/Time:** 6/20/08 16:30
Sample Matrix: water

<u>Compounds</u>	<u>Sample Results (ug/L)</u>	<u>Reporting Limit (ug/L)</u>	<u>Flags</u>
TPH-Gasoline	< 220	220	
4-bromofluorobenzene (surrogate)	99%		
Analysis Date/Time:	06/26/08/17:32		
Analyst Initials	tjg		



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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255

Analytical Method: 8260
Prep Method: 5030B
Analytical Batch: 062508VW

Client Sample ID: SB-16 **Sample Collection Date/Time:** 6/18/08 16:45
Envision Sample Number: 8-8948 **Sample Received Date/Time:** 6/20/08 16:30
Sample Matrix: water

<u>Compounds</u>	<u>Sample Results (ug/L)</u>	<u>Reporting Limit (ug/L)</u>	<u>Flags</u>
Benzene	< 5	5	
Toluene	< 5	5	
Ethylbenzene	< 5	5	
Xylene, M&P	< 5	5	
Xylene, Ortho	< 5	5	
Xylenes, Total	<10	10	
Methyl-tert-butyl-ether	< 5	5	
Dibromofluoromethane (surrogate)	48.6	97%	
1,2-Dichloroethane-d4 (surrogate)	51.8	104%	
Toluene-d8 (surrogate)	48	96%	
4-bromofluorobenzene (surrogate)	43.8	88%	
Analysis Date/Time:	06/25/08/07:13		
Analyst Initials	tjg		



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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255
Analytical Method: 8015M TPH-Ext C8-C36
Prep Method: 3520C
Analytical Batch: 062608E

Client Sample ID: SB-16
Envision Sample Number: 8-8948
Sample Matrix: water
Sample Collection Date/Time: 6/18/08 16:45
Sample Received Date/Time: 6/20/08 16:30

<u>Compounds</u>	<u>Sample Results (ug/L)</u>	<u>Reporting Limit (ug/L)</u>	<u>Flags</u>
TPH--Extended C8-C36	< 100	100	
o-Terphenyl (surrogate)	65%		
Analysis Date/Time:	6/27/2008 2:58		
Analyst Initials:	gjd		
Date Extracted:	6/24/2008		
Initial Sample Volume:	950 mL		
Final Volume:	1.0 mL		



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Client Name: QEPI
Project ID: Union St. / 07-01-05
Client Project Manager: Nivas Vijay
ENVision Project Number: 2008-1255
Analytical Method: 8015 GRO
Prep Method: 5030
Analytical Batch: 062608GW
Client Sample ID: SB-16
Envision Sample Number: 8-8948
Sample Matrix: water
Sample Collection Date/Time: 6/18/08 16:45
Sample Received Date/Time: 6/20/08 16:30

<u>Compounds</u>	<u>Sample Results (ug/L)</u>	<u>Reporting Limit (ug/L)</u>	<u>Flags</u>
TPH-Gasoline	< 220	220	
4-bromofluorobenzene (surrogate)	90%		
Analysis Date/Time:	06/26/08/17:51		
Analyst Initials	tjg		



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8260 Quality Control Data

ENVision Batch Number: 062508VS

<u>Method Blank (MB):</u>	<u>MB Results (ug/kg)</u>	<u>Rep Lim (ug/kg)</u>	<u>Flag</u>
Methyl-tert-butyl-ether	< 5	5	
Benzene	< 5	5	
Toluene	< 5	5	
Ethylbenzene	< 5	5	
Xylene, M&P	< 5	5	
Xylene, Ortho	< 5	5	
Xylenes, Total	<10	10	
Dibromofluoromethane (surrogate)	99%		
1,2-Dichloroethane-d4 (surrogate)	122%		
Toluene-d8 (surrogate)	103%		
4-bromofluorobenzene (surrogate)	109%		
Analysis Date/Time:	06/25/08/07:27		
Analyst Initials	tjg		

<u>Laboratory Control Standard (LCS):</u>	<u>LCS Results (ug/kg)</u>	<u>LCS Conc (ug/kg)</u>	<u>% Rec</u>	<u>Flag</u>
Methyl-tert-butyl-ether	53.4	50	107%	
Benzene	54.7	50	109%	
Toluene	52.4	50	105%	
Ethylbenzene	50.7	50	101%	
Xylene, M&P	102	100	102%	
Xylene, Ortho	52.7	50	105%	
Dibromofluoromethane (surrogate)	91%			
1,2-Dichloroethane-d4 (surrogate)	100%			
Toluene-d8 (surrogate)	104%			
4-bromofluorobenzene (surrogate)	105%			
Analysis Date/Time:	06/25/08/07:07			
Analyst Initials	tjg			



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8015 TPH-Gasoline Quality Control Data

ENVision Batch Number: 062608GS

<u>Method Blank (MB):</u>	<u>MB Results (mg/kg)</u>	<u>Rep Lim (mg/kg)</u>	<u>Flag</u>
TPH-Gasoline	< 15	15	
4-bromofluorobenzene (surrogate)	98%		
Analysis Date/Time:	06/26/08/11:39		
Analyst Initials:	tjg		

<u>Laboratory Control Standard (LCS):</u>	<u>LCS Results (mg/kg)</u>	<u>LCS Conc (mg/kg)</u>	<u>% Rec</u>	<u>Flag</u>
TPH-Gasoline	10.1	10	101	
4-bromofluorobenzene (surrogate)	98%			
Analysis Date/Time:	06/26/08/15:54			
Analyst Initials:	tjg			



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8015 TPH-Extended Range Quality Control Data

ENVISSION Batch Number:	062508DS							
Method Blank (MB):	MB Results	Reporting Limit						
TPH-Extended Range	(mg/kg)	(mg/kg)	Flag					
o-Terphenyl (surrogate)	< 20	20						
Analysis Date/Time:	60%							
Analyst Initials:	06-25-08/16:52							
Date Extracted:	gjd							
Initial Sample Weight:	6/25/2008							
Final Volume:	30.0 g							
	3.0 mL							
LCS/LCSD	LCS Result	LCS/LCSD Conc.	LCSD Result	LCS	LCSD	RPD	Flag	
TPH-Extended Range	(mg/kg)	(mg/kg)	(mg/kg)	Rec.	Rec.			
o-Terphenyl (surrogate)	83.41	100	78.58	83.4%	78.6%	6.0%		
Analysis Date/Time:	85%		80%					
Analyst Initials:	06-25-08/17:22		06-25-08/17:53					
Date Extracted:	gjd		gjd					
Initial Sample Weight:	6/25/2008		6/25/2008					
Final Volume:	30.0 g		30.0 g					
	3.0 mL		3.0 mL					
Matrix Spike/Matrix Spike Dup	Sample Result	MS Result	MSD Result	Spike	MS	MSD	RPD	Flag
TPH-Extended Range	(mg/kg)	(mg/kg)	(mg/kg)	Conc.	%Rec.	%Rec.		
o-Terphenyl (surrogate)	7.34	76.69	75.42	(mg/kg)	69.4%	68.1%	1.7%	
Analysis Date/Time:	57%	77%	74%					
Analyst Initials:	06-25-08/22:56	06-25-08/23:26	06-25-08/23:56					
Date Extracted:	gjd	gjd	gjd					
Initial Sample Weight:	6/25/2008	6/25/2008	6/25/2008					
Final Volume:	30.0 g	30.0 g	30.0 g					
Original Sample Number Spiked:	3.0 mL	3.0 mL	3.0 mL					
	8-8922							



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8260 Quality Control Data

ENVision Batch Number: 062508VW

<u>Method Blank (MB):</u>	<u>MB Results (ug/L)</u>	<u>Rep Lim (ug/L)</u>	<u>Flag</u>
Methyl-tert-butyl-ether	< 5	5	
Benzene	< 5	5	
Toluene	< 5	5	
Ethylbenzene	< 5	5	
Xylene, M&P	< 5	5	
Xylene, Ortho	< 5	5	
Xylenes, Total	<10	10	
Dibromofluoromethane (surrogate)	95%		
1,2-Dichloroethane-d4 (surrogate)	106%		
Toluene-d8 (surrogate)	94%		
4-bromofluorobenzene (surrogate)	93%		
Analysis Date/Time:	06/25/08/05:41		
Analyst Initials	tjg		

<u>Laboratory Control Standard (LCS):</u>	<u>LCS Results (ug/L)</u>	<u>LCS Conc (ug/L)</u>	<u>% Rec</u>	<u>Flag</u>
Methyl-tert-butyl-ether	47.7	50	95%	
Benzene	47	50	94%	
Toluene	47.7	50	95%	
Ethylbenzene	47	50	94%	
Xylene, M&P	94.9	100	95%	
Xylene, Ortho	51.4	50	103%	
Dibromofluoromethane (surrogate)	97%			
1,2-Dichloroethane-d4 (surrogate)	104%			
Toluene-d8 (surrogate)	98%			
4-bromofluorobenzene (surrogate)	94%			
Analysis Date/Time:	06/25/08/04:55			
Analyst Initials	tjg			



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8015 TPH-Gasoline Quality Control Data

ENVision Batch Number: 062608GW

<u>Method Blank (MB):</u>	<u>MB Results (mg/L)</u>	<u>Rep Lim</u>	<u>Flag</u>
TPH-Gasoline	< 0.22 mg/L	0.22 mg/L	
4-bromofluorobenzene (surrogate)	98%		
Analysis Date/Time:	06/26/08/11:39		
Analyst Initials:	tjg		

<u>Laboratory Control Standard (LCS):</u>	<u>LCS Results (mg/L)</u>	<u>LCS Conc.</u> <u>(mg/L)</u>	<u>% Rec</u>	<u>Flag</u>
TPH-Gasoline	9.84	10	98.4	
4-bromofluorobenzene (surrogate)	117%			
Analysis Date/Time:	06/26/08/11:01			
Analyst Initials:	tjg			



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8015 TPH-Extended Range Quality Control Data

ENVISSION Batch Number: 062408DW

	MB Results (ug/L)	Reporting Limit (ug/L)	Flag
Method Blank (MB):	< 100	100	
TPH-Extended Range	63%		
o-Terphenyl (surrogate)			
Analysis Date/Time:	06-25-08/08:21		
Analyst Initials:	gjd		
Date Extracted:	6/24/2008		
Initial Sample Volume:	1000 mL		
Final Volume:	1.0 mL		

	LCS Results (ug/L)	LCS/LCSD Conc. (ug/L)	LCSD Results (ug/L)	LCS Rec.	LCSD Rec.	RPD	Flag
LCS/LCSD	609.95	1000	655.09	61%	66%	7.1%	
TPH-Extended Range	74%		77%				
o-Terphenyl (surrogate)							
Analysis Date/Time:	06-25-08/08:51		06-25-08/09:21				
Analyst Initials:	gjd		gjd				
Date Extracted:	6/24/2008		6/24/2008				
Initial Sample Volume:	1000 mL		1000 mL				
Final Volume:	1.0 mL		1.0 mL				

	Sample Result (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	Conc. (ug/L)	MS %Rec.	MSD %Rec.	RPD	Flag
Matrix Spike/Matrix Spike Dup	344.84	750.52	727.65	1000	40.568	38.281	3.1	
TPH-Extended Range	64%	54%	51%					
o-Terphenyl (surrogate)								
Analysis Date/Time:	06-27-08/01:27	06-27-08/01:57	06-27-08/02:28					
Analyst Initials:	gjd	gjd	gjd					
Date Extracted:	6/25/2008	6/25/2008	6/25/2008					
Initial Sample Volume	1000 mL	1000 mL	1000 mL					
Final Volume:	1.0 mL	1.0 mL	1.0 mL					
Original Sample Number Spiked:	8-9142							



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Flag Number

Comments



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QUALITY ENVIRONMENTAL PROFESSIONALS, INC.

CHAIN OF CUSTODY RECORD

2008-1255

Project Name: <u>Union st.</u>		Analyses Requested										Date Results Requested By: <u>Standard</u>	
Laboratory: <u>Envision</u>												<input checked="" type="checkbox"/> Please return original copy of Chain Of Custody Record to QEPI <input checked="" type="checkbox"/> We request that you submit chromatographs with all laboratory results, plus QA/QC documentation.	
Job #: <u>07-01-05</u>	Sampled By: <u>JML</u>												
Report To: Quality Environmental Professionals, Inc. 1611 South Franklin Road • PHONE 317.351.4255 Indianapolis, IN 46239 • FAX 317.351.4265		Sample (Matrix) <u>TPH (620/ER0)8015</u> <u>BTEX/MTOE 8260</u>										Remarks	
Attention: <u>Nivas Vijay</u>												Sample Description Date Time Comp Grab	
SB-15 (10-12)		<u>6/18/08</u>	<u>15:30</u>	<u>X</u>	<u>S</u>	<u>X</u>	<u>X</u>					<u>8-8945</u>	
SB-16 (10-12)		<u>↓</u>	<u>16:30</u>	<u>X</u>	<u>S</u>	<u>↓</u>	<u>↓</u>					<u>8-8946</u>	
SB-15		<u>↓</u>	<u>15:45</u>	<u>X</u>	<u>W</u>	<u>↓</u>	<u>↓</u>					<u>8-8947</u>	
SB-16		<u>↓</u>	<u>16:45</u>	<u>X</u>	<u>W</u>	<u>↓</u>	<u>↓</u>					<u>8-8948</u>	
Relinquished By: (Signature) <u>[Signature]</u>		Date/Time: <u>16:30</u> <u>6/20/08</u>		Received By: (Signature)				Date/Time		Temperature When Shipped		Total # of Containers <u>14</u>	
Relinquished By: (Signature)		Date/Time:		Received By: (Signature)				Date/Time		Remarks			
Relinquished By: (Signature)		Date/Time:		Received For Lab By: (Signature) <u>[Signature]</u>				Date/Time <u>16:30</u> <u>6/20/08</u>		Temperature Upon Arrival at Lab: <u>5°C</u>			