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September 8, 2010
ERI 31163.05.LR18

LUST Coordinator
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, Washington 98008

SUBJECT Air Sparge - Soil Vapor Extraction Feasibility Test Technical Memo
Former Mobil Station 99MPB
2200 24th Avenue East
Seattle, Washington

LUST Coordinator:

At the request of ExxonMobil Environmental Services Company (EMES), on behalf of ExxonMobil Oil Corporation, Environmental Resolutions, Inc. (ERI) of Tukwila, Washington, conducts environmental site assessment activities at the subject site. Enclosed is ERI's *Air Sparge/Soil Vapor Extraction Feasibility Test* Technical Memo, dated September 8, 2010, presenting results of air sparge - soil vapor extraction feasibility test activities at the subject site.

In an effort to reduce our environmental impact and paper use in our operations, we will be sending electronic copies of all reports to the recipients listed below. The addressee will continue to receive paper copies. If you would like to continue to receive paper copies, or you have any questions or concerns, please contact our office at (206) 575-6220.

ERI and EMES greatly appreciate your cooperation in this matter. Please contact Mr. John H. McCorkle, ERI's Project Manager for this site, at (206) 575-6427, or Mr. Andrew Gray, EMES Project Manager for this site, at (714) 545-1800, with any questions or comments.

Sincerely,
Environmental Resolutions, Inc.

John H. McCorkle
Project Manager

Enclosure: *Air Sparge - Soil Vapor Extraction Feasibility Test Technical Memo*, dated September 8, 2010

cc: w/ enclosure
Mr. Andrew Gray, ExxonMobil Environmental Services

Environmental Resolutions, Inc.

815 Industry Drive, Tukwila, WA 98188 | Tel: 206.575.6220 | Fax: 206.575.6423 | Contr. Reg. ENVIRR1044JD



*Southern California
Northern California
Central California
Pacific Northwest
New England
Southwest
Montana
Texas*

September 8, 2010
ERI 31163.05.R18

Mr. Andrew Gray
ExxonMobil Environmental Services
2701 Harbor Boulevard, Suite E-2 PMB-224
Costa Mesa, California 92626

SUBJECT Air Sparge - Soil Vapor Extraction Feasibility Test Technical Memo
Former Mobil Station 99MPB
2200 24th Avenue East
Seattle, Washington

Mr. Gray:

At the request of ExxonMobil Environmental Services (EMES), on behalf of ExxonMobil Oil Corporation, Environmental Resolutions, Inc. (ERI) conducted an AS/SVE feasibility test at the subject site. The AS/SVE feasibility test was started on Wednesday, May 19 at 9:15 A.M. and concluded Wednesday, May 19, 2010 at 4:45 P.M.

Former Mobil Station 99MPB is located at the northeastern corner of the intersection of 24th Avenue East and East Boston Street in the City of Seattle, King County, Washington (Plate 1). The surrounding area consists of primarily residential properties. The site is currently owned by Community Birth and Health, LLC, and is vacant and unpaved (Plate 2). An electric substation remains on the northeastern portion of the property. Prior to demolition, the site was occupied by a two-story professional building and two paved parking lots.

ERI utilized groundwater monitoring well MW13 as the extraction well for the SVE portion of the test and AS well AS9 for the AS/SVE portion of the test. Wells MW11, MW12, MW14, and MW15 were monitored for changes in vacuum to determine if SVE is a viable remedial alternative, and if so, to calculate a radius of influence (ROI) for SVE (Graph 1). Changes in groundwater elevation in wells MW11, MW12, MW14, and MW15 were monitored during AS testing to determine if AS is also a feasible remedial alternative for the subject site. Tables 1 through 4 summarize the data collected during the 7.5-hour test. Laboratory analytical reports and COC records are included in Appendix A.

Based on the data collected during the AS/SVE feasibility test:

- An average air flow rate of 60 scfm can be achieved from a single SVE well.
- Vapor extraction resulted in the removal of approximately 0.125 pounds TPHg, and 0.0015 pounds of benzene from MW13. Equivalent long-term extraction rates are approximately 62.7 pounds/year of TPHg (0.172 pounds/day), and 0.75 pounds/year benzene (0.002 pounds/day) per well from the northwestern portion of the subject site.
- Based on a limit of 0.1-inch water column induced vacuum, a ROI for vacuum of 24 feet was achieved during vapor extraction from MW13.
- The equipment utilized for the test system induced a maximum vacuum of 25 inches of mercury (in Hg) for short periods on five occasions to evaluate whether the higher vacuum would increase influent concentrations. On all five of these occasions, observed influent vapor concentrations measured via the PID increased from less than 1 ppmv to between 32.8 to 64.1 ppmv when the higher vacuum was applied. However, the reduction in flow during those periods indicate that successful vapor extraction from the site would be time-intensive to bring concentrations to

Environmental Resolutions, Inc.

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regulatory cleanup standards or that larger SVE equipment would be required to generate maximum flow.

- Data collected during AS activities indicates that the effect of introducing AS into the aquifer was limited.
 - Introducing AS into the aquifer did not appear to induce increased average concentrations of influent hydrocarbon vapors as compared to SVE alone, which indicates that AS was not effective at removing hydrocarbons from soil below groundwater.
 - An increase in groundwater elevations in observation wells MW12, MW14, and MW15 were noted relative to the initiation of sparging, but an increase in groundwater elevations had been noted in these wells during initial SVE testing prior to the initiation of sparging and cannot be reliably linked to the introduction of air into the subsurface by sparging alone.
 - No significant increase of dissolved oxygen was noted in observation wells MW11, MW12, MW14, or MW15. This indicates AS would not be an appropriate supplement to SVE remedial technology.

Based on the results of the AS/SVE feasibility test alone, combining AS with SVE at the subject site would likely not be an effective remedial solution. ERI recommends the following:

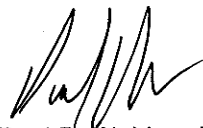
- Evaluate other remedial alternatives, including excavation and long-term monitored natural attenuation.
- Continue with groundwater monitoring and sampling at the subject site.

Please call Mr. John H. McCorkle, ERI's Project Manager for this site, at (206) 575-6427, with questions regarding this recommendation.

Sincerely,
Environmental Resolutions, Inc.



Christopher Dela Pena, P.E.
Staff Engineer

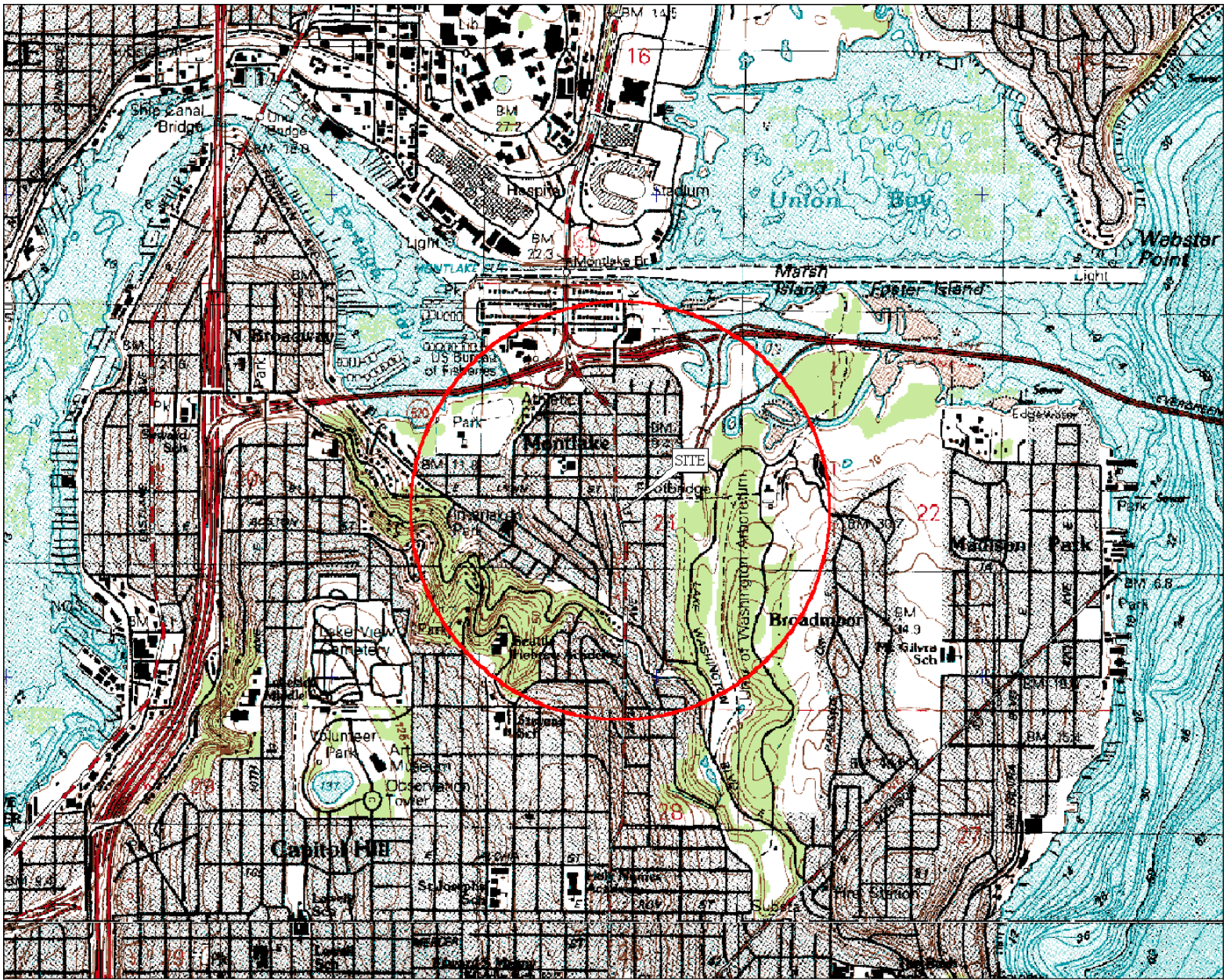


Paul B. Webber, P.E.
Branch Manager

Enclosures:

Acronym List

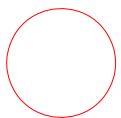
Plate 1	Site Location Map
Plate 2	Generalized Site Plan
Graph 1	Vapor Extraction Radius of Influence – Well MW13
Table 1	Air Sparge/Soil Vapor Extraction Test – Well Data
Table 2	Air Sparge/Soil Vapor Extraction Test – Operational Data
Table 3	Soil Vapor Sample Analytical Results
Table 4	Soil Vapor Extraction Test – Vapor-Phase Hydrocarbon Removal
Appendix A	Laboratory Analytical Report and Chain-of-Custody Documentation



3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS
 544 ft Scale: 1 : 19,200 Detail: 13-0 Datum: NAD27

FN 31163.05.R18.0001

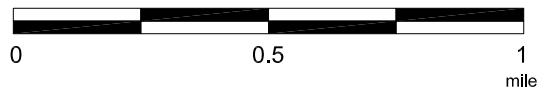
EXPLANATION



1/2-mile radius circle



APPROXIMATE SCALE



SOURCE:
 Modified from a map
 provided by
 DeLorme 3-D TopoQuads



SITE LOCATION MAP

FORMER MOBIL STATION 99MPB
 2200 24th Avenue East
 Seattle, Washington

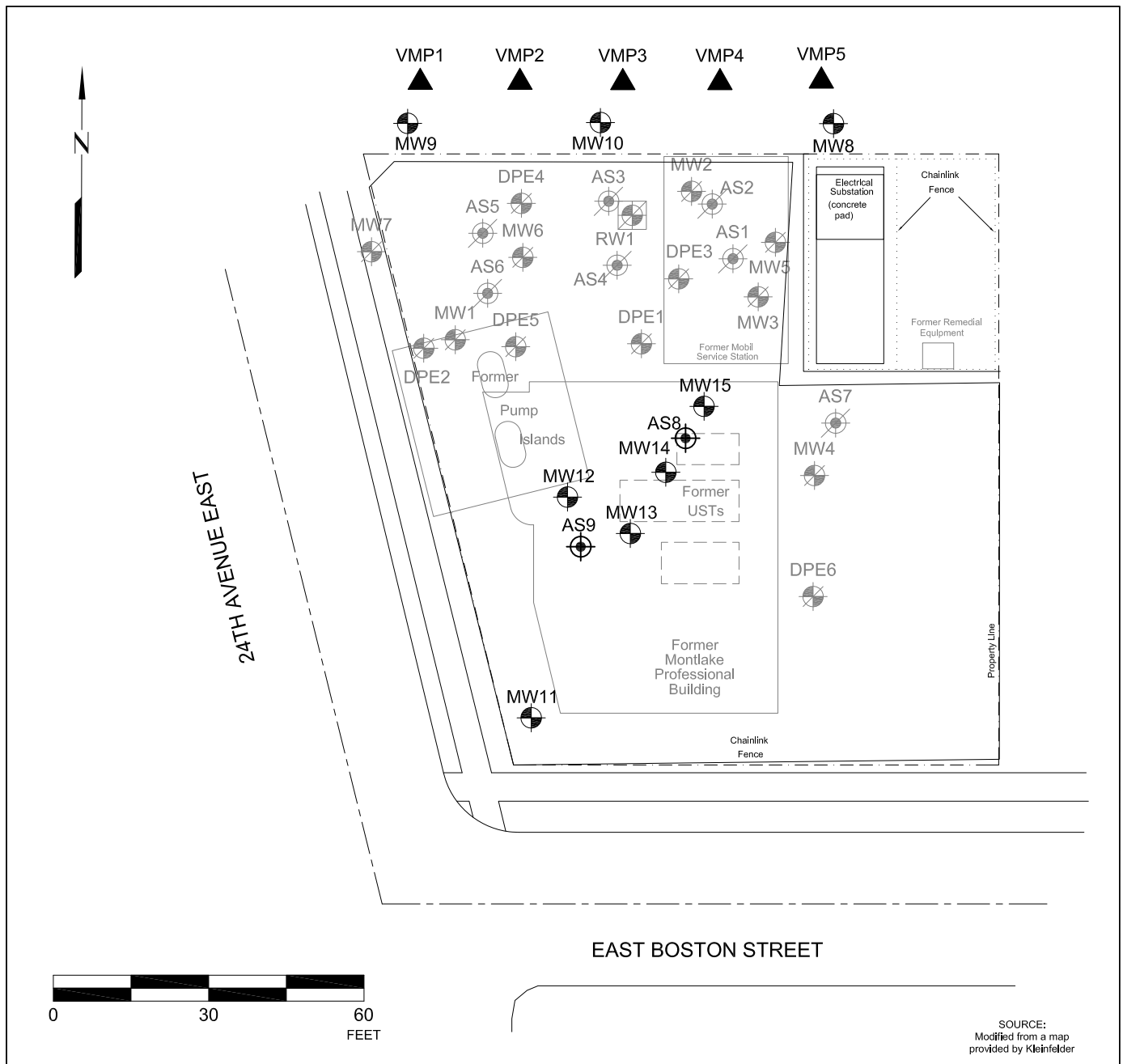
PROJECT NO.

31163

PLATE

1

CCD: 06/22/10



FN 31163.05.R18.0002

EXPLANATION

- MW10
Groundwater Monitoring Well
- AS7
Air Sparging Well
- VMP5
Vapor Monitoring Point

- AS7
Destroyed Air Sparging Well
- MW7
Destroyed Groundwater Monitoring Well
- DPE4
Destroyed Dual Phase Extraction Well
- RW1
Destroyed Groundwater Recovery Well



GENERALIZED SITE PLAN

FORMER MOBIL STATION 99MPB
2200 24th Avenue East
Seattle, Washington

PROJECT NO.

31163

PLATE

2

CCD: 06/23/10

GRAPH 1
VAPOR EXTRACTION RADIUS OF INFLUENCE - WELL MW13
Former Mobil Station 99MPB
2200 24th Avenue East
Seattle, Washington

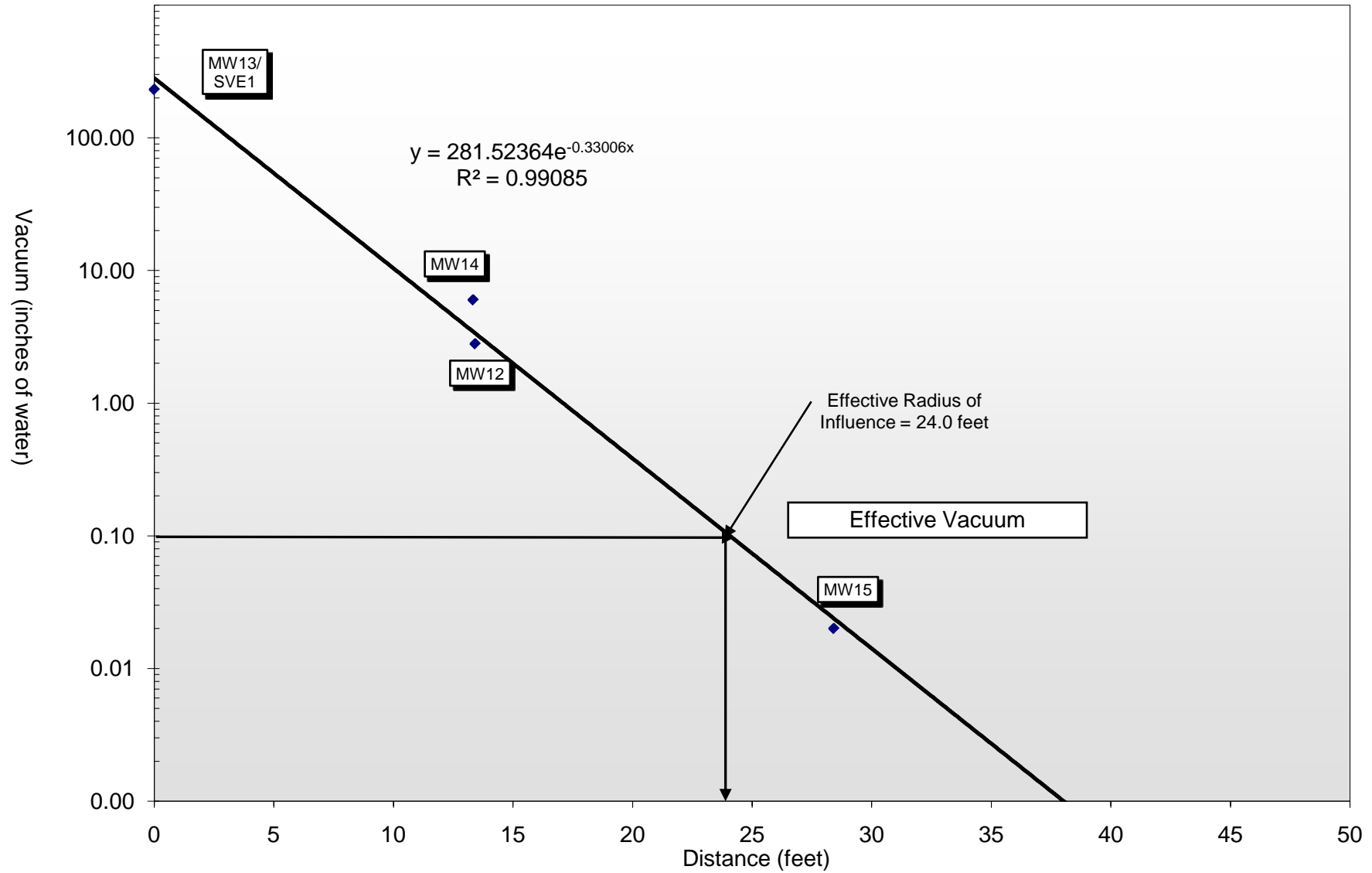


TABLE 1
AIR SPARGE/SOIL VAPOR EXTRACTION TEST - WELL DATA
Former Mobil Station 99MPB
2200 24th Avenue East
Seattle, Washington
Page 1 of 1

Date	Time	Vacuum					Depth to Water					Sparge Well		Temperature					Dissolved Oxygen				
		EXTR(MW13)	MW14	MW15	MW12	MW11	EXTR(MW13)	MW14	MW15	MW12	MW11	Pressure	Flow	EXTR(MW13)	MW14	MW15	MW12	MW11	EXTR(MW13)	MW14	MW15	MW12	MW11
		(in. Hg)	(in. H ₂ O)	(in. H ₂ O)	(in. H ₂ O)	(in. H ₂ O)	(Feet)	(Feet)	(Feet)	(Feet)	(Feet)	(PSI)	(SCFM)	(°C)	(°C)	(°C)	(°C)	(°C)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
SYSTEM STARTED DAY 1 - SVE SYSTEM ON USING MW13/AS SYSTEM OFF																							
05/19/10	9:15	0.00	0.00	0.00	0.00	0.00	NM	7.15	8.00	6.58	8.95	4.25	NA	NM	12.1	11.9	11.8	11.9	NM	3.06	0.56	3.51	7.43
05/19/10	9:30	17.0	2.10	0.00	0.48	0.00	NM	7.31	8.00	6.60	8.95	4.25	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
05/19/10	9:45	17.0	2.25	0.02	0.50	0.00	NM	7.53	8.00	6.60	8.80	4.25	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
05/19/10	10:00	16.0	2.30	0.02	1.00	0.00	NM	7.60	7.87	6.65	8.88	4.25	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
05/19/10	10:15	15.0	2.40	0.02	1.25	0.00	NM	7.65	8.02	6.83	8.88	4.25	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
05/19/10	10:45	15.0	2.35	0.00	1.60	0.00	NM	7.70	8.06	6.75	8.85	4.25	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SVE SYSTEM ON USING MW/13/AS SYSTEM TURNED ON																							
05/19/10	11:45	15.0	1.98	0.02	1.40	0.00	NM	7.87	8.10	6.95	8.88	4.25	3.50	NM	12.2	11.9	11.6	11.9	NM	1.83	1.35	3.85	7.76
05/19/10	11:45	14.5	2.10	0.02	1.20	0.00	NM	8.02	8.13	7.02	8.80	4.25	3.50	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
05/19/10	12:15	14.5	1.50	0.02	2.80	0.00	NM	8.00	8.16	7.03	8.83	4.25	3.50	NM	12.2	12.0	11.6	11.9	NM	2.54	1.40	3.70	8.03
05/19/10	12:45	14.5	1.50	0.02	1.20	0.00	NM	8.09	8.14	7.03	8.80	4.25	3.50	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
05/19/10	13:15	14.5	2.50	0.02	1.90	0.00	NM	8.15	8.17	7.11	8.75	4.25	3.50	NM	12.4	11.9	11.6	11.9	NM	2.55	1.61	3.70	7.65
05/19/10	13:45	13.5	2.50	0.02	1.40	0.00	NM	8.16	8.25	7.17	8.74	4.25	3.50	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
05/19/10	14:15	13.5	2.50	0.02	2.50	0.00	NM	8.27	8.30	7.22	8.77	4.25	3.50	NM	12.2	11.9	11.6	11.9	NM	2.26	1.93	3.89	7.71
05/19/10	14:45	13.5	2.50	0.02	1.95	0.00	NM	8.28	8.35	7.31	8.80	4.25	3.50	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
05/19/10	15:15	14.0	4.00	0.02	2.05	0.00	NM	8.54	8.40	7.40	8.77	4.25	3.50	NM	12.0	12.0	11.6	11.8	NM	2.00	2.20	4.39	7.76
05/19/10	15:45	14.0	5.00	0.02	2.00	0.00	NM	8.55	8.40	7.45	8.78	4.25	3.50	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
05/19/10	16:15	14.0	6.00	0.02	2.70	0.00	NM	8.72	8.51	7.56	8.80	4.25	3.50	NM	12.0	12.0	11.6	11.8	NM	2.26	2.31	4.14	7.67
05/19/10	16:45	NM	NM	NM	NM	NM	5.31	NM	NM	NM	NM	NM	NM/NA	12.4	NM	NM	NM	NM	4.08	NM	NM	NM	NM

DISTANCES:

MW13 to MW14 = 13'4"
MW13 to MW15 = 28'5"
MW13 to MW12 = 13'5"
MW13 to MW11 = 42'8"

EXPLANATION:

In. Hg = inches of mercury
In. H₂O = inches of water
PSI = pounds per square inch
SCFM = standard cubic feet per minute
EXTR = extraction
NM = No readings collected; NA = not applicable
AS = air sparge
SVE - soil vapor extraction

TABLE 2
AIR SPARGE/SOIL VAPOR EXTRACTION TEST - OPERATIONAL DATA
Former Mobil Station 99MPB
2200 24th Avenue East
Seattle, Washington
Page 1 of 2

Date	Time	Inlet Velocity (ft/min)	Inlet Temp (°F)	Inlet Vacuum (in. Hg)	Inlet Flow (acfm)	AWS Inlet Flow (scfm)	Dilution Valve (% open)	Throttle Valve Position (% open)	Recirc Valve (% open)	Manifold Vacuum (in. Hg)	T1 (°F)	T2 (°F)	T3 (°F)	Infuent Vapor HC (ppmv)	Effluent Vapor HC (ppmv)	Sparge Pressure (psi)	Sparge Flow (cfm)	Totalizer (gallons)
SYSTEM STARTED DAY 1 - SVE SYSTEM ON USING MW13/AS SYSTEM OFF																		
05/19/10	9:30	NM	58	NM	NM	60.0	10	100	0	17.0	328	337	331	27.3	0.1	4.25	NA	7,820.7
05/19/10	9:45	NM	58	NM	NM	60.0	10	100	0	17.0	330	332	333	0.3	0.0	4.25	NA	7,820.7
05/19/10	10:00	NM	58	NM	NM	60.0	10	100	0	17.5	331	332	334	1.1	0.0	4.25	NA	7,820.7
05/19/10	10:15	NM	58	NM	NM	60.0	10	100	0	17.5	331	333	334	1.3	0.0	4.25	NA	7,820.7
05/19/10	10:45	NM	58	NM	NM	60.0	10	100	0	17.8	330	332	334	0.7	0.0	4.25	NA	7,820.7
SVE SYSTEM ON USING MW13/AS SYSTEM TURNED ON USING AS9																		
05/19/10	11:15	NM	58	NM	NM	60.0	10	100	0	18.3	330	332	334	0.1	0.0	4.25	3.5	7,820.7
05/19/10	11:45	NM	58	NM	NM	60.0	10	100	0	18.5	330	332	334	0.2	0.0	4.25	3.5	7,820.7
05/19/10	12:15	NM	58	NM	NM	60.0	10	100	0	17.0	330	332	334	NM	0.0	4.25	3.5	7,820.7
05/19/10	12:15	NM	58	NM	NM	17.5	0	100	0	NM	330	332	334	0.6	NM	4.25	3.5	7,820.7
05/19/10	12:45	NM	58	NM	NM	60.0	10	100	0	17.0	330	332	333	0.7	0.0	4.25	3.5	7,820.7
05/19/10	13:15	NM	58	NM	NM	60.0	10	100	0	17.0	330	332	334	0.5	0.0	4.25	3.5	7,820.7
05/19/10	13:45	NM	58	NM	NM	60.0	10	100	0	17.0	330	332	334	0.5	0.0	4.25	3.5	7,820.7
05/19/10	14:15	NM	58	NM	NM	60.0	10	100	0	17.0	330	332	334	0.3	0.0	4.25	3.5	7,820.7
05/19/10	14:15	NM	58	NM	NM	17.5	0	100	0	25.0	330	332	334	64.1	NM	4.25	3.5	7,820.7
05/19/10	14:45	NM	58	NM	NM	60.0	10	100	0	17.0	330	333	334	0.1	0.0	4.25	3.5	7,820.7
05/19/10	14:45	NM	58	NM	NM	17.5	0	100	0	25.0	330	333	334	32.9	NM	4.25	3.5	7,820.7
05/19/10	15:15	NM	58	NM	NM	60.0	10	100	0	17.0	330	332	334	0.2	0.0	4.25	3.5	7,820.7
05/19/10	15:15	NM	58	NM	NM	17.5	0	100	0	25.0	330	332	334	33.3	NM	4.25	3.5	7,820.7
05/19/10	15:45	NM	58	NM	NM	60.0	10	100	0	17.0	330	332	334	0.2	0.0	4.25	3.5	7,820.7
05/19/10	15:45	NM	58	NM	NM	17.5	0	100	0	25.0	330	332	334	32.8	NM	4.25	3.5	7,820.7
05/19/10	16:15	NM	58	NM	NM	60.0	10	100	0	17.0	330	332	334	4.6	0.0	4.25	3.5	7,820.7
05/19/10	16:15	NM	58	NM	NM	17.5	0	100	0	25.0	330	332	334	40.4	NM	4.25	3.5	7,820.7

TABLE 2
AIR SPARGE/SOIL VAPOR EXTRACTION TEST - OPERATIONAL DATA
Former Mobil Station 99MPB
2200 24th Avenue East
Seattle, Washington
Page 2 of 2

EXPLANATION:

AWS = air/water separator

HC = hydrocarbons

ft/min = feet per minute

°F = degrees fahrenheit

in. Hg = inches of mercury

acfm = actual cubic feet per minute

scfm = standard cubic feet per minute

% = percent

ppmv = parts per million by volume

psi = pounds per square inch

cfm = cubic feet per minute

NM = not measured

AS = air sparge

SVE = soil vapor extraction

TABLE 3
SOIL VAPOR SAMPLE ANALYTICAL RESULTS
Former Mobil Station 99MPB
2200 24th Avenue East
Seattle, Washington
Page 1 of 1

Extraction Well	Sample ID	Sampling Date	Sampling Time	A-INF PID (ppmv)	A-EFF PID (ppmv)	TPHg (mg/m ³)	B (mg/m ³)	T (mg/m ³)	E (mg/m ³)	X (mg/m ³)
MW13	V-INF-OX1	05/19/10	9:30	27.3	0.1	150	3.13	<0.500	<0.500	<1.50
MW13	V-INF-OX2	05/19/10	10:45	0.7	0	<50.0	<0.500	<0.500	<0.500	<1.50
MW13	V-INF-OX3	05/19/10	11:15	0.1	0.0	<50.0	<0.500	<0.500	<0.500	<1.50
MW13	V-INF-OX4	05/19/10	13:45	0.5	0.0	<50.0	<0.500	<0.500	<0.500	<1.50
MW13	V-INF-OX5	05/19/10	14:45	0.1	0	343	5.07	3.24	5.25	<1.50
MW13	V-INF-OX6	05/19/10	16:15	4.6	0	60.1	<0.500	<0.500	<0.500	<1.50
MW13	V-INF-OX7	05/19/10	16:20	NM	NM	225	3.88	2.86	5.40	<1.50

EXPLANATION:

A-INF = soil vapor sample collected at the influent port

A-EFF = soil vapor sample collected at the effluent port

PID = photo ionization detector

TPHg = Total petroleum hydrocarbons as gasoline analyzed in accordance with EPA Method 18M

BTEX = benzene, toluene, ethylbenzene, and total xylenes analyzed in accordance with EPA Method 18M

ppmv = parts per million by volume

mg/m³ = milligrams per cubic meter

< = less than the stated laboratory reporting limit

TABLE 4
SOIL VAPOR EXTRACTION TEST - VAPOR-PHASE HYDROCARBON REMOVAL
Former Mobil Station 99MBP
2200 24th Avenue East
Seattle, Washington
Page 1 of 1

Well ID	Date	Time	Sample ID	Field Measurements			Laboratory Analytical Results		TPHg Removal ^a		Benzene Removal ^a	
				Hours of Operation	Flow (scfm)	PID (ppmv)	TPHg (mg/m ³)	Benzene (mg/m ³)	Per Period (lbs)	Cumulative (lbs)	Per Period (lbs)	Cumulative (lbs)
Feasibility Test - MW10 and MW4												
MW13	05/19/10	9:30	V-INF-OX1	0	60.0	27.3	150.0	3.13	0.000	0.000	0.0000	0.0000
MW13	05/19/10	10:45	V-INF-OX2	1.25	60.0	0.7	<50.0	<0.500	0.007	0.007	0.0001	0.0001
MW13	05/19/10	11:15	V-INF-OX3	1.75	60.0	0.1	<50.0	<0.500	0.003	0.010	0.0000	0.0001
MW13	05/19/10	13:45	V-INF-OX4	4.25	60.0	0.5	<50.0	<0.500	0.014	0.024	0.0001	0.0002
MW13	05/19/10	14:45	V-INF-OX5	5.25	60.0	0.1	343	5.07	0.077	0.101	0.0011	0.0014
MW13	05/19/10	16:15	V-INF-OX6	6.75	60.0	4.6	60.1	<0.500	0.020	0.121	0.0001	0.0014
MW13	05/19/10	16:20	V-INF-OX7	6.83	60.0	NM	225	3.88	0.004	0.125	0.0001	0.0014
TOTALS:										0.125	0.0015	
ESTIMATED ANNUAL TOTAL AT THIS RATE:										62.7	0.75	

EXPLANATION:

PID = photo ionization detector

A-INF = influent soil vapor sample (collected prior to carbon treatment)

TPHg = total petroleum hydrocarbons as gasoline analyzed in accordance with EPA Method 18M

Benzene analyzed using EPA Method TO-15M

scfm = standard cubic feet per minute

mg/m³ = milligrams per cubic meter

lbs = pounds

ppmv = parts per million by volume

NS = not sampled; -- = not measured; NA = not applicable

a = TPHg and Benzene removal results calculated using half of the method reporting limit

APPENDIX A

LABORATORY ANALYTICAL REPORT AND CHAIN-OF-CUSTODY DOCUMENTATION

June 02, 2010

2:56:32PM

Client: ERI Tukwila (10313)
815 Industry Drive
Tukwila, WA 98188
Attn: John McCorkle

Work Order: NTE2168
Project Name: Exxon 99MPB
Project Nbr: 31163
P/O Nbr: 4511988083
Date Received: 05/21/10

SAMPLE IDENTIFICATION	LAB NUMBER	COLLECTION DATE AND TIME
V-INF-OX1	NTE2168-01	05/19/10 09:30
V-INF-OX2	NTE2168-02	05/19/10 10:45
V-INF-OX3	NTE2168-03	05/19/10 11:15
V-INF-OX4	NTE2168-04	05/19/10 13:45
V-INF-OX5	NTE2168-05	05/19/10 14:45
V-INF-OX6	NTE2168-06	05/19/10 16:15
V-INF-OX7	NTE2168-07	05/19/10 16:20

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accreditation.

This material is intended only for the use of the individual(s) or entity to whom it is addressed, and may contain information that is privileged and confidential. If you are not the intended recipient, or the employee or agent responsible for delivering this material to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this material is strictly prohibited. If you have received this material in error, please notify us immediately at 615-726-0177.

Additional Laboratory Comments:

Airbag for V-DSCHG deflated during shipment therefore no analysis performed.
Washington Certification Number: C1712

The Chain(s) of Custody, 2 pages, are included and are an integral part of this report.

These results relate only to the items tested. This report shall not be reproduced except in full and with permission of the laboratory.

All solids results are reported in wet weight unless specifically stated.

Estimated uncertainty is available upon request.

This report has been electronically signed.

Report Approved By:



Leah R. Klingensmith

Senior Project Management

Client ERI Tukwila (10313)
815 Industry Drive
Tukwila, WA 98188
Attn John McCorkle

Work Order: NTE2168
Project Name: Exxon 99MPB
Project Number: 31163
Received: 05/21/10 08:00

ANALYTICAL REPORT

Analyte	Result	Flag	Units	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
Sample ID: NTE2168-01 (V-INF-OX1 - Air) Sampled: 05/19/10 09:30								
BTEX in Air by GC/PID								
Benzene	3.13		mg/m3	0.500	1	05/21/10 16:51	EPA 18M	10E3683
Toluene	ND		mg/m3	0.500	1	05/21/10 16:51	EPA 18M	10E3683
Ethylbenzene	ND		mg/m3	0.500	1	05/21/10 16:51	EPA 18M	10E3683
Xylenes, total	ND		mg/m3	1.50	1	05/21/10 16:51	EPA 18M	10E3683
>C4 - C10 Hydrocarbons	150		mg/m3	50.0	1	05/21/10 16:51	EPA 18M	10E3683
BTEX in Air by GC-PID in ppmv								
Benzene	0.979		ppmv	0.100	1	05/21/10 16:51	EPA 18M	10E3750
Toluene	ND		ppmv	0.100	1	05/21/10 16:51	EPA 18M	10E3750
Ethylbenzene	ND		ppmv	0.100	1	05/21/10 16:51	EPA 18M	10E3750
Xylenes, total	ND		ppmv	0.300	1	05/21/10 16:51	EPA 18M	10E3750
>C4 - C10 Hydrocarbons	36.6		ppmv	10.0	1	05/21/10 16:51	EPA 18M	10E3750
Sample ID: NTE2168-02 (V-INF-OX2 - Air) Sampled: 05/19/10 10:45								
BTEX in Air by GC/PID								
Benzene	ND		mg/m3	0.500	1	05/21/10 17:22	EPA 18M	10E3683
Toluene	ND		mg/m3	0.500	1	05/21/10 17:22	EPA 18M	10E3683
Ethylbenzene	ND		mg/m3	0.500	1	05/21/10 17:22	EPA 18M	10E3683
Xylenes, total	ND		mg/m3	1.50	1	05/21/10 17:22	EPA 18M	10E3683
>C4 - C10 Hydrocarbons	ND		mg/m3	50.0	1	05/21/10 17:22	EPA 18M	10E3683
BTEX in Air by GC-PID in ppmv								
Benzene	ND		ppmv	0.100	1	05/21/10 17:22	EPA 18M	10E3750
Toluene	ND		ppmv	0.100	1	05/21/10 17:22	EPA 18M	10E3750
Ethylbenzene	ND		ppmv	0.100	1	05/21/10 17:22	EPA 18M	10E3750
Xylenes, total	ND		ppmv	0.300	1	05/21/10 17:22	EPA 18M	10E3750
>C4 - C10 Hydrocarbons	ND		ppmv	10.0	1	05/21/10 17:22	EPA 18M	10E3750
Sample ID: NTE2168-03 (V-INF-OX3 - Air) Sampled: 05/19/10 11:15								
BTEX in Air by GC/PID								
Benzene	ND		mg/m3	0.500	1	05/21/10 18:24	EPA 18M	10E3683
Toluene	ND		mg/m3	0.500	1	05/21/10 18:24	EPA 18M	10E3683
Ethylbenzene	ND		mg/m3	0.500	1	05/21/10 18:24	EPA 18M	10E3683
Xylenes, total	ND		mg/m3	1.50	1	05/21/10 18:24	EPA 18M	10E3683
>C4 - C10 Hydrocarbons	ND		mg/m3	50.0	1	05/21/10 18:24	EPA 18M	10E3683
BTEX in Air by GC-PID in ppmv								
Benzene	ND		ppmv	0.100	1	05/21/10 18:24	EPA 18M	10E3750
Toluene	ND		ppmv	0.100	1	05/21/10 18:24	EPA 18M	10E3750
Ethylbenzene	ND		ppmv	0.100	1	05/21/10 18:24	EPA 18M	10E3750
Xylenes, total	ND		ppmv	0.300	1	05/21/10 18:24	EPA 18M	10E3750
>C4 - C10 Hydrocarbons	ND		ppmv	10.0	1	05/21/10 18:24	EPA 18M	10E3750

Client ERI Tukwila (10313)
815 Industry Drive
Tukwila, WA 98188
Attn John McCorkle

Work Order: NTE2168
Project Name: Exxon 99MPB
Project Number: 31163
Received: 05/21/10 08:00

ANALYTICAL REPORT

Analyte	Result	Flag	Units	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
Sample ID: NTE2168-04 (V-INF-OX4 - Air) Sampled: 05/19/10 13:45								
BTEX in Air by GC/PID								
Benzene	ND		mg/m3	0.500	1	05/21/10 18:54	EPA 18M	10E3683
Toluene	ND		mg/m3	0.500	1	05/21/10 18:54	EPA 18M	10E3683
Ethylbenzene	ND		mg/m3	0.500	1	05/21/10 18:54	EPA 18M	10E3683
Xylenes, total	ND		mg/m3	1.50	1	05/21/10 18:54	EPA 18M	10E3683
>C4 - C10 Hydrocarbons	ND		mg/m3	50.0	1	05/21/10 18:54	EPA 18M	10E3683
BTEX in Air by GC-PID in ppmv								
Benzene	ND		ppmv	0.100	1	05/21/10 18:54	EPA 18M	10E3750
Toluene	ND		ppmv	0.100	1	05/21/10 18:54	EPA 18M	10E3750
Ethylbenzene	ND		ppmv	0.100	1	05/21/10 18:54	EPA 18M	10E3750
Xylenes, total	ND		ppmv	0.300	1	05/21/10 18:54	EPA 18M	10E3750
>C4 - C10 Hydrocarbons	ND		ppmv	10.0	1	05/21/10 18:54	EPA 18M	10E3750
Sample ID: NTE2168-05 (V-INF-OX5 - Air) Sampled: 05/19/10 14:45								
BTEX in Air by GC/PID								
Benzene	5.07		mg/m3	0.500	1	05/21/10 19:25	EPA 18M	10E3683
Toluene	3.24		mg/m3	0.500	1	05/21/10 19:25	EPA 18M	10E3683
Ethylbenzene	5.25		mg/m3	0.500	1	05/21/10 19:25	EPA 18M	10E3683
Xylenes, total	ND		mg/m3	1.50	1	05/21/10 19:25	EPA 18M	10E3683
>C4 - C10 Hydrocarbons	343		mg/m3	50.0	1	05/21/10 19:25	EPA 18M	10E3683
BTEX in Air by GC-PID in ppmv								
Benzene	1.58		ppmv	0.100	1	05/21/10 19:25	EPA 18M	10E3750
Toluene	0.861		ppmv	0.100	1	05/21/10 19:25	EPA 18M	10E3750
Ethylbenzene	1.20		ppmv	0.100	1	05/21/10 19:25	EPA 18M	10E3750
Xylenes, total	ND		ppmv	0.300	1	05/21/10 19:25	EPA 18M	10E3750
>C4 - C10 Hydrocarbons	83.6		ppmv	10.0	1	05/21/10 19:25	EPA 18M	10E3750
Sample ID: NTE2168-06 (V-INF-OX6 - Air) Sampled: 05/19/10 16:15								
BTEX in Air by GC/PID								
Benzene	ND		mg/m3	0.500	1	05/21/10 19:56	EPA 18M	10E3683
Toluene	ND		mg/m3	0.500	1	05/21/10 19:56	EPA 18M	10E3683
Ethylbenzene	ND		mg/m3	0.500	1	05/21/10 19:56	EPA 18M	10E3683
Xylenes, total	ND		mg/m3	1.50	1	05/21/10 19:56	EPA 18M	10E3683
>C4 - C10 Hydrocarbons	60.1		mg/m3	50.0	1	05/21/10 19:56	EPA 18M	10E3683
BTEX in Air by GC-PID in ppmv								
Benzene	ND		ppmv	0.100	1	05/21/10 19:56	EPA 18M	10E3750
Toluene	ND		ppmv	0.100	1	05/21/10 19:56	EPA 18M	10E3750
Ethylbenzene	ND		ppmv	0.100	1	05/21/10 19:56	EPA 18M	10E3750
Xylenes, total	ND		ppmv	0.300	1	05/21/10 19:56	EPA 18M	10E3750
>C4 - C10 Hydrocarbons	14.7		ppmv	10.0	1	05/21/10 19:56	EPA 18M	10E3750

Client ERI Tukwila (10313)
815 Industry Drive
Tukwila, WA 98188
Attn John McCorkle

Work Order: NTE2168
Project Name: Exxon 99MPB
Project Number: 31163
Received: 05/21/10 08:00

ANALYTICAL REPORT

Analyte	Result	Flag	Units	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
Sample ID: NTE2168-07 (V-INF-OX7 - Air) Sampled: 05/19/10 16:20								
BTEX in Air by GC/PID								
Benzene	3.88		mg/m3	0.500	1	05/21/10 20:27	EPA 18M	10E3683
Toluene	2.86		mg/m3	0.500	1	05/21/10 20:27	EPA 18M	10E3683
Ethylbenzene	5.40		mg/m3	0.500	1	05/21/10 20:27	EPA 18M	10E3683
Xylenes, total	ND		mg/m3	1.50	1	05/21/10 20:27	EPA 18M	10E3683
>C4 - C10 Hydrocarbons	225		mg/m3	50.0	1	05/21/10 20:27	EPA 18M	10E3683
BTEX in Air by GC-PID in ppmv								
Benzene	1.21		ppmv	0.100	1	05/21/10 20:27	EPA 18M	10E3750
Toluene	0.760		ppmv	0.100	1	05/21/10 20:27	EPA 18M	10E3750
Ethylbenzene	1.24		ppmv	0.100	1	05/21/10 20:27	EPA 18M	10E3750
Xylenes, total	ND		ppmv	0.300	1	05/21/10 20:27	EPA 18M	10E3750
>C4 - C10 Hydrocarbons	55.0		ppmv	10.0	1	05/21/10 20:27	EPA 18M	10E3750

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PROJECT QUALITY CONTROL DATA

Blank

Analyte	Blank Value	Q	Units	Q.C. Batch	Lab Number	Analyzed Date/Time
BTEX in Air by GC/PID						
10E3683-BLK1						
Benzene	<0.100		mg/m3	10E3683	10E3683-BLK1	05/21/10 12:10
Toluene	<0.300		mg/m3	10E3683	10E3683-BLK1	05/21/10 12:10
Ethylbenzene	<0.200		mg/m3	10E3683	10E3683-BLK1	05/21/10 12:10
Xylenes, total	<1.20		mg/m3	10E3683	10E3683-BLK1	05/21/10 12:10
>C4 - C10 Hydrocarbons	<5.00		mg/m3	10E3683	10E3683-BLK1	05/21/10 12:10

BTEX in Air by GC-PID in ppmv

10E3750-BLK1						
Benzene	<0.0300		ppmv	10E3750	10E3750-BLK1	05/21/10 12:10
Toluene	<0.0800		ppmv	10E3750	10E3750-BLK1	05/21/10 12:10
Ethylbenzene	<0.0500		ppmv	10E3750	10E3750-BLK1	05/21/10 12:10
Xylenes, total	<0.300		ppmv	10E3750	10E3750-BLK1	05/21/10 12:10
>C4 - C10 Hydrocarbons	<1.40		ppmv	10E3750	10E3750-BLK1	05/21/10 12:10

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Work Order: NTE2168
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Project Number: 31163
Received: 05/21/10 08:00

PROJECT QUALITY CONTROL DATA

Duplicate

Analyte	Orig. Val.	Duplicate	Q	Units	RPD	Limit	Batch	Sample Duplicated	% Rec.	Analyzed Date/Time
BTEX in Air by GC/PID										
10E3683-DUP1										
Benzene	3.13	3.15		mg/m3	0.7	16	10E3683	NTE2168-01		05/21/10 22:28
Toluene	ND	ND		mg/m3		29	10E3683	NTE2168-01		05/21/10 22:28
Ethylbenzene	ND	ND		mg/m3		29	10E3683	NTE2168-01		05/21/10 22:28
Xylenes, total	ND	ND		mg/m3		40	10E3683	NTE2168-01		05/21/10 22:28
>C4 - C10 Hydrocarbons	150	147		mg/m3	2	26	10E3683	NTE2168-01		05/21/10 22:28
BTEX in Air by GC-PID in ppmv										
10E3750-DUP1										
Benzene	0.979	0.986		ppmv	0.7	16	10E3750	NTE2168-01		05/21/10 22:28
Toluene	ND	ND		ppmv		29	10E3750	NTE2168-01		05/21/10 22:28
Ethylbenzene	ND	ND		ppmv		29	10E3750	NTE2168-01		05/21/10 22:28
Xylenes, total	ND	ND		ppmv		40	10E3750	NTE2168-01		05/21/10 22:28
>C4 - C10 Hydrocarbons	36.6	36.0		ppmv	2	26	10E3750	NTE2168-01		05/21/10 22:28

Client ERI Tukwila (10313)
815 Industry Drive
Tukwila, WA 98188
Attn John McCorkle

Work Order: NTE2168
Project Name: Exxon 99MPB
Project Number: 31163
Received: 05/21/10 08:00

PROJECT QUALITY CONTROL DATA LCS

Analyte	Known Val.	Analyzed Val	Q	Units	% Rec.	Target Range	Batch	Analyzed Date/Time
BTEX in Air by GC/PID								
10E3683-BS1								
Benzene	16.0	16.1		mg/m3	100%	70 - 130	10E3683	05/21/10 23:29
Toluene	19.0	18.8		mg/m3	99%	70 - 130	10E3683	05/21/10 23:29
Ethylbenzene	21.7	20.4		mg/m3	94%	70 - 130	10E3683	05/21/10 23:29
Xylenes, total	65.5	62.3		mg/m3	95%	70 - 130	10E3683	05/21/10 23:29
>C4 - C10 Hydrocarbons	226	219		mg/m3	97%	70 - 130	10E3683	05/21/10 23:29
BTEX in Air by GC-PID in ppmv								
10E3750-BS1								
Benzene	5.05	5.03		ppmv	100%	70 - 130	10E3750	05/21/10 23:29
Toluene	5.05	4.99		ppmv	99%	70 - 130	10E3750	05/21/10 23:29
Ethylbenzene	5.05	4.68		ppmv	93%	70 - 130	10E3750	05/21/10 23:29
Xylenes, total	15.2	14.3		ppmv	94%	70 - 130	10E3750	05/21/10 23:29
>C4 - C10 Hydrocarbons	55.5	53.4		ppmv	96%	70 - 130	10E3750	05/21/10 23:29

Client ERI Tukwila (10313)
815 Industry Drive
Tukwila, WA 98188
Attn John McCorkle

Work Order: NTE2168
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PROJECT QUALITY CONTROL DATA

Matrix Spike

Analyte	Orig. Val.	MS Val	Q	Units	Spike Conc	% Rec.	Target Range	Batch	Sample Spiked	Analyzed Date/Time
BTEX in Air by GC/PID										
10E3683-MS1										
Benzene	ND	19.5		mg/m3	16.0	122%	70 - 130	10E3683	NTE2168-02	05/21/10 22:59
Toluene	ND	23.4		mg/m3	19.0	123%	70 - 130	10E3683	NTE2168-02	05/21/10 22:59
Ethylbenzene	ND	25.4		mg/m3	21.7	117%	70 - 130	10E3683	NTE2168-02	05/21/10 22:59
Xylenes, total	ND	77.5		mg/m3	65.5	118%	70 - 130	10E3683	NTE2168-02	05/21/10 22:59
>C4 - C10 Hydrocarbons	34.5	284		mg/m3	226	110%	70 - 130	10E3683	NTE2168-02	05/21/10 22:59

BTEX in Air by GC-PID in ppmv

10E3750-MS1										
Benzene	ND	6.10		ppmv	5.05	121%	70 - 130	10E3750	NTE2168-02	05/21/10 22:59
Toluene	ND	6.20		ppmv	5.05	123%	70 - 130	10E3750	NTE2168-02	05/21/10 22:59
Ethylbenzene	ND	5.84		ppmv	5.05	116%	70 - 130	10E3750	NTE2168-02	05/21/10 22:59
Xylenes, total	ND	17.8		ppmv	15.2	117%	70 - 130	10E3750	NTE2168-02	05/21/10 22:59
>C4 - C10 Hydrocarbons	8.41	69.2		ppmv	55.5	110%	70 - 130	10E3750	NTE2168-02	05/21/10 22:59

Client ERI Tukwila (10313)
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Attn John McCorkle

Work Order: NTE2168
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Project Number: 31163
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CERTIFICATION SUMMARY

TestAmerica Nashville

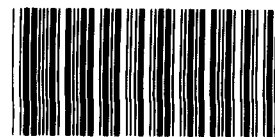
Method	Matrix	AIHA	Nelac	Washington
EPA 18M	Air			

Client ERI Tukwila (10313)
815 Industry Drive
Tukwila, WA 98188
Attn John McCorkle

Work Order: NTE2168
Project Name: Exxon 99MPB
Project Number: 31163
Received: 05/21/10 08:00

DATA QUALIFIERS AND DEFINITIONS

ND Not detected at the reporting limit (or method detection limit if shown)



NTE2168

Cooler Received/Opened On 5/21/10 @ 08:00

1. Tracking # 9770 (last 4 digits, FedEx)

Courier: FedEx IR Gun ID 96210146

2. Temperature of rep. sample or temp blank when opened N/A Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? YES...NO...NA

If yes, how many and where: 2 front

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) [Signature]

7. Were custody seals on containers: YES NO and Intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence #

I certify that I unloaded the cooler and answered questions 7-14 (initial) [Signature]

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) [Signature]

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) [Signature]

I certify that I attached a label with the unique LIMS number to each container (initial) [Signature]

21. Were there Non-Conformance issues at login? YES...NO Was a PIPE generated? YES...NO...#

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Nashville Division

Phone: 615-726-0177

2960 Foster Creighton

Toll Free: 800-765-0980

Nashville, TN 37204

Fax: 615-726-3404

ExxonMobil

NTE2168

06/07/10 23:59

Consultant Name: Environmental Resolutions, Inc.

Account #: 10313

PO: 4511988083

Consultant Address: 815 Industry Drive

Invoice To: Andrew Gray

Consultant City/State/Zip: Tukwila, WA 98188

Report To: John McCorkle

ExxonMobil Project Mgr: Andrew Gray

Project Name: 031163

Consultant Project Mgr: John McCorkle

ExxonMobil Site #: 99MPB

Major Project (AFE #):

Consultant Telephone Number: (206) 575-6220

Fax No.: (206) 575-6423

Site Address: 2200 24th Avenue E

Sampler Name (Print): Nicholas Gerkin

Site City, State, Zip: Seattle, WA 98112

Sampler Signature: 

Oversight Agency: Washington Department of Ecology

Sample ID	Field Point Name	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Preservative										Matrix					Analyze For:										RUSH TAT (Pre-Schedule)	5-day TAT	Standard 10-day TAT	Due Date of Report																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
								Methanol	Sodium Bisulfate	HCl (Blue Label)	NaOH (Orange Label)	H ₂ SO ₄ Plastic (Yellow Label)	H ₂ SO ₄ Glass (Yellow Label)	HNO ₃ (Red Label)	Ice	Other	None (Black Label)	Groundwater	Wastewater	Drinking Water	Sludge	Soil	Air	Other (specify)	EPA18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

Comments/Special Instructions:

PLEASE E-MAIL ALL PDF FILES TO
mmiller@eri-us.com

Laboratory Comments:

Temperature Upon Receipt: NA
Sample Containers Intact? Y N
VOCs Free of Headspace? Y N

QC Deliverables (please circle one)

Level 2
Level 3
Level 4

Site Specific - if yes, please attach pre-schedule w/ TestAmerica
Project Manager or attach specific instructions

Relinquished by:

Nicholas Gerkin

Date
5/20/2010

Time
16:00

Received by:

Date

Time

Relinquished by:

Date

Time

Received by (Lab personnel):

Date

Time

5/21/2010 8:00