Groundwater
& Environmental Services, Inc.

2142 Priest Bridge Court • Suite 1 • Crofton, Maryland 21114 • (800) 220-3606 • FAX (410) 721-3733

February 2, 2010

Mr. Kurt Kochan
Virginia Department of Environmental Quality - Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193-1453

Re: ***Remediation Feasibility Testing Report***
Exxon Station #2-6140
9901 Georgetown Pike
Great Falls, Virginia
PC# 2010-1938

Dear Mr. Kochan:

Groundwater & Environmental Services, Inc. (GES) has prepared this summary of remedial feasibility testing on behalf of ExxonMobil Environmental Services Company (EMES) for your review. Feasibility testing of soil vapor extraction (SVE), groundwater extraction (GWE), vacuum enhanced groundwater extraction (VEGE), and total phase extraction (TPE) was conducted on December 16, 2009 utilizing GES' mobile Data Acquisition and Processing Laboratory (DAPL) platform. Descriptions of the proposed feasibility test objectives, proposed data collection techniques, and feasibility testing methodologies were presented in the Remediation Feasibility Testing Work Plan submitted to the Department on December 8, 2009. This correspondence includes a summary of the feasibility test methodologies, data collection techniques, and results of the tests that were performed.

FEASIBILITY TEST METHODOLOGIES

Feasibility tests for SVE, GWE, VEGE, and TPE were conducted on December 16, 2009 at the following locations (see **Figure 1**):

- SVE test at monitoring well MW-11;
- Groundwater extraction and VEGE tests at monitoring well MW-11;
- SVE test at monitoring well MW-2; and,
- TPE test at monitoring well MW-2;

SVE Test Methodology

Separate SVE tests were performed at monitoring wells MW-11 and MW-2. During each SVE test, vacuum was applied to the extraction well in various increments. Vacuum response and groundwater drawdown/upwelling were monitored in nearby observation wells to monitor vacuum influence.

Groundwater Pumping Test Methodology

A groundwater pumping test was performed at monitoring well MW-11. A pneumatic submersible total fluids pump was utilized during the groundwater pumping test. Groundwater flow rates were calculated

utilizing an in-line flow totalizer. Liquid levels were measured by pressure transducers installed in monitoring well MW-11 and surrounding observation wells or by manually gauging observation wells.

VEGE Test Methodology

A VEGE test was performed at monitoring well MW-11 immediately following the groundwater pumping test. During the VEGE test, vacuum was applied to the extraction well at two increments while groundwater pumping was continued. Vacuum response and groundwater drawdown were monitored by pressure transducers at nearby observation wells to determine vacuum influence and to estimate hydraulic characteristics under vacuum conditions.

TPE Test Methodology

A TPE test was performed at monitoring well MW-2. During the test, a drop-tube was lowered into the well to a depth just below the static water table, and vacuum was applied to the drop-tube. Groundwater and vapor were extracted simultaneously, and separated in the DAPL unit's vapor-liquid separator. Groundwater extraction rates were calculated based on the amount of fluid recovered in the vapor-liquid separator. Vacuum response and groundwater drawdown were monitored by pressure transducers at nearby observation wells to determine vacuum influence and to estimate hydraulic characteristics under vacuum conditions.

DATA COLLECTION TECHNIQUES

Prior to the start of testing, static measurements of groundwater elevations were recorded from each monitoring well. These measurements provided a baseline to compare to subsequent readings taken periodically throughout each test.

During the SVE, groundwater pumping, and VEGE tests, the resulting vacuum influence and changes in groundwater elevation were measured with pressure transducers placed in the observation wells located around the selected extraction well. Manual air flow measurements and volatile organic compound (VOC) headspace readings were periodically collected from the influent and effluent vapor streams during testing. VOC headspace readings were measured with a photoionization detector (PID); the lower explosive limit (LEL) and oxygen concentration (O_2) were also monitored in the influent and effluent vapor stream. In addition, influent vapor samples were collected periodically during the SVE, VEGE, and TPE tests, and analyzed by Accutest Laboratories of Dayton, NJ (Accutest) for benzene, toluene, ethylbenzene, total xylenes (BTEX), methyl tert-butyl ether (MTBE), C_1-C_4 and C_5-C_{10} hydrocarbons, Ethylene dibromide (DCE), tetrachloroethylene (PCE), trichloroethylene (TCE), and vinyl chloride via Environmental Protection Agency (EPA) methods TO3 and TO15. Laboratory data are included as **Appendix A,** and the analytical results of the vapor samples collected are presented in **Table 1.**

Near the end of the groundwater pumping test at MW-11 and the TPE test at MW-2, an influent groundwater sample was collected and analyzed for BTEX, MTBE, total petroleum hydrocarbons as gasoline range organics (TPH-GRO), and total petroleum hydrocarbons as diesel range organics (TPH-DRO) via EPA method 8120B and 1,2-dichloroethane and ethylene dibromide via EPA method 8011. In addition, the influent sample from MW-11 was also analyzed for oil and grease, total suspended solids (TSS), total dissolved solids (TDS), total metals, dissolved metals, and pH. Laboratory data are included as **Appendix A,** and a summary of the groundwater analytical results are presented in **Table 2**.

During feasibility testing activities, the extracted vapor stream was treated using vapor-phase granular activated carbon (VGAC) vessels (two 200-lb vessels plumbed in series) prior to discharging to the

atmosphere. Recovered groundwater was treated using liquid-phase granular activated carbon (LGAC) vessels (two 200-lb vessels plumbed in series). The total volume of groundwater (approximately 54 gallons) recovered during testing was contained in the LGAC vessels; therefore, groundwater was not discharged to the storm sewer and the LGAC vessels were picked up by Siemens.

FEASIBILITY TEST RESULTS

The following is a summary of the individual tests conducted and the subsequent results.

Results of the SVE Test at Monitoring Well MW-11

A four-step SVE test was conducted at monitoring well MW-11, with applied vacuums ranging from 30 inches of water (i.w.) to 190 i.w., resulting in vapor extraction flow rates ranging from 10.8 standard cubic feet per minute (scfm) to 92.2 scfm. A maximum influent VOC level of 479.3 parts per million (ppm) was observed during the second step of the test (applied vacuum of 60 i.w.), and a maximum C_5-C_{10} hydrocarbon recovery rate of 12 pounds per day (lbs/day) was calculated from the vapor sample collected during the final step of the test (applied vacuum of 190 i.w.). The influent vapor data and hydrocarbon recovery calculations are presented in **Table 1**. Laboratory data are presented in **Appendix A**. Additional details from each step of the test are presented in **Appendix B**. Vacuum-versus-flow graphs are presented in **Appendix C**.

The maximum vacuum influence was observed during the final step of the SVE test at four of the surrounding observation wells. Based on the observed vacuum influence, the maximum SVE vacuum radius-of-influence (ROI) at MW-11 extends 43 feet, assuming 0.10 i.w. is the minimal effective vacuum influence. Vacuum influence ROI graphs from each step of the SVE test at monitoring well MW-11 are presented in **Appendix D**.

Results of the SVE Test at Monitoring Well MW-2

A two-step SVE test was conducted at monitoring well MW-2, at applied vacuums of 67 i.w. and 284 i.w., resulting in vapor extraction flow rates of 18.1 scfm and 65.4 scfm, respectively. The maximum influent VOC level measured during the SVE test was 54.6 ppm (applied vacuum of 284 i.w.). Details from each step of the test are presented in **Appendix B**. Vacuum-versus-flow graphs are presented in **Appendix C**.

The maximum vacuum influence was observed during the final step of the SVE test at two of the surrounding observation wells. Based on the observed vacuum influence, the maximum SVE ROI at MW-2 extends 35 feet, assuming 0.10 i.w. is the minimal effective vacuum influence. Vacuum influence ROI graphs from both steps of the SVE test at monitoring well MW-2 are presented in **Appendix D**.

Results of the Groundwater Pumping and VEGE Test at Monitoring Well MW-11

A groundwater pumping test was conducted at monitoring well MW-11. The test resulted in a groundwater drawdown of 8.08 feet at an average sustained groundwater flow rate of 0.2 gallons per minute (gpm). Measurable groundwater drawdown (greater than 0.10 feet) was observed at monitoring well MW-1 (drawdown of 0.27 feet) during the groundwater pumping test.

During the groundwater pumping test at MW-11, an influent groundwater sample was collected and analyzed for BTEX, MTBE, TPH-GRO, TPH-DRO, 1,2-dichloroethane, ethylene dibromide, oil and

grease, TSS, TDS, total metals, dissolved metals, and pH. The dissolved-phase laboratory analytical data are summarized in **Table 2**. Laboratory data are presented in **Appendix A.**

During VEGE testing activities at monitoring well MW-11, two vacuum steps (71 i.w. and 190 i.w.) were applied to the well, as pumping was continued, yielding vapor flow rates of 40.7 scfm and 93.0 scfm, respectively. The groundwater pumping rates during the first and second steps of the test were 0.2 gpm and 0.5 gpm, respectively. Measurable groundwater drawdown (greater that 0.10 feet) was not observed at any of the surrounding monitoring wells during either step of the test. Measurable groundwater mounding was observed at MW-1 (upwelling of 0.11 ft) during the second step of the VEGE test.

The VOC concentrations of the vapor stream during VEGE testing were 327.6 ppm and 338.7 ppm at vacuums of 71 i.w., and 190 i.w., respectively. The vapor-phase C_5-C_{10} hydrocarbon recovery rates during the VEGE test were calculated to 4 lbs/day and 10 lbs/day, respectively during the first and second steps of the test. Vapor data and hydrocarbon recovery rate calculations are presented in **Table 1**. Laboratory data is presented in **Appendix A**. Details from each step of the test are presented in **Appendix B**. Vacuum-versus-flow graphs are presented in **Appendix C**.

The maximum vacuum influence was observed during the second step of the VEGE test at four of the surrounding observation wells. Based on the observed vacuum influence, the maximum VEGE vacuum ROI at MW-11 extends 48 feet, assuming 0.10 i.w. is the minimal effective vacuum influence. Vacuum influence ROI graphs from both steps of the VEGE test at MW-11 are presented in **Appendix D**.

Results of the TPE Test at Monitoring Well MW-2

A TPE test was conducted at monitoring well MW-2. A drop-tube was lowered into the well to a depth of approximately 35 feet and a vacuum of 285 i.w. was applied to the tube. The test resulted in an average groundwater flow rate of 0.4 gpm and a vapor extraction flow rate of 78.3 scfm. Measurable groundwater drawdown (greater than 0.10 feet) was not observed at any of the surrounding monitoring wells during the test.

During the TPE test at monitoring well MW-2, an influent groundwater sample was collected and analyzed for BTEX, MTBE, TPH-GRO, TPH-DRO, 1,2-dichloroethane, and ethylene dibromide. The dissolved-phase laboratory analytical data are summarized in **Table 2**. Laboratory data are presented in **Appendix A.**

The measured VOC concentration of the vapor stream during the TPE testing was 80.1 ppm. The vapor-phase C_5-C_{10} hydrocarbon recovery rate during the TPE test was calculated to be 0.8 lbs/day. Vapor data and hydrocarbon recovery rate calculations are presented in **Table 1**. Laboratory data are presented in **Appendix A**. Details from each step of the test are presented in **Appendix B**. Vacuum-versus-flow graphs are presented in **Appendix C**.

Vacuum influence was observed during the TPE test at three of the surrounding monitoring wells. Based on the observed vacuum influence, the TPE vacuum ROI at monitoring well MW-2 extends 38 feet, assuming 0.10 i.w. is the minimal effective vacuum influence. The vacuum influence ROI graph from the TPE test at monitoring well MW-2 is presented in **Appendix D**.

SUMMARY OF FINDINGS

The results of feasibility testing conducted on December 16, 2009 were described above. Based on the results of the feasibility testing, the following points summarize the findings and observations:

- The vapor-phase mass recovery and vacuum ROI at both monitoring wells MW-11 and MW-2 increased when the applied vacuum was increased.
- At monitoring well MW-11, vapor-phase hydrocarbon recovery remained constant during SVE-only testing and VEGE testing (after the groundwater table was lowered by pumping).
- During the vapor extraction testing at monitoring well MW-11 (SVE and VEGE), significant vacuum influence was not observed within the underground storage tank (UST) field (TF-1 located approximately 19 feet from MW-11), while the greatest vacuum influence was observed at a similar distance outside the UST field (MW-1 located approximately 18 feet from MW-11) during the same test.
- Groundwater extraction rates ranged between 0.2 gpm and 0.5 gpm during all groundwater extraction tests (groundwater pumping and VEGE at MW-11, and TPE at MW-2).

Please contact the undersigned at 1(800) 220-3606 extensions 3057, 3703 and 3014, respectively, if you should have any questions regarding this report.

Sincerely,
GROUNDWATER & ENVIRONMENTAL SERVICES, INC.

Heather M. Nelson	Andrea Taylorson-Collins	Richard K. Evans, P.E.
Associate Scientist	Project Manager	Regional Engineering Manager

Attachments

c: Alexandria McBride, ExxonMobil
Melissa Tacchino, ExxonMobil
Tom Buggey, Roux Associates, Inc.
File, GES-MD

FIGURES

GEORGETOWN PIKE

WALKER ROAD

PARKING

ASPHALT

MULTI-TENANT RETAIL

GRASS

PARKING

ASPHALT

MW-3

MW-9

MW-5

FORMER PUMP ISLANDS

CANOPY

DISPENSER ISLANDS

FORMER USTs

SIGN

VP-1

MW-2

SIDEWALK

GRASS

HYDRAULIC LIFTS (2)

STATION BUILDING

VP-2S/ VP-2D

TF2

TANK FIELD

MW-8

EMERGENCY SHUT-OFF

TF1

GRASS

TREES

FENCE

PROPANE AST

MW-11

MW-1

SEPTIC FIELD

MW-7

TEMPORARY WATER TANK

2" FORCED SANITARY SEWER

MW-6S

MW-6D

SB4

VP-3

SIDEWALK

SHELL STATION

SIDEWALK

SIDEWALK

SHOPPING CENTER

ASPHALT

UNDERGROUND GARAGE

OFFICE BUILDING
746 WALKER ROAD

PARKING

SIDEWALK

SIDEWALK

MW-10

LEGEND

- PROPERTY BOUNDARY
- FENCE
- WATER
- STORM SEWER
- SANITARY SEWER
- ELECTRIC
- GAS
- UNDERGROUND TELEPHONE
- UNKNOWN UTILITY
- FORMER SITE FEATURES
- TRANSFORMER
- DUMPSTER
- LIGHT POLE
- DISPENSER ISLAND
- UNDERGROUND STORAGE TANK
- CATCH BASIN
- VENT PIPE
- VACUUM
- SUPPLY WELL
- MONITORING WELL
- 6" BEDROCK WELL
- SOIL BORING
- VAPOR MONITORING POINT
- TANK FIELD WELL
- WATER METER

DRAFTED BY: AM	SITE MAP
CHECKED BY: MS	EXXONMOBIL CORPORATION EXXON STATION #2-6140 9901 GEORGETOWN PIKE GREAT FALLS, VIRGINIA
REVIEWED BY: SS	Groundwater & Environmental Services, Inc. 2142 PRIEST BRIDGE COURT, SUITE 1, CROFTON, MD 21114
NORTH	SCALE IN FEET: 0 – 40 / DATE: 11-11-09 / FIGURE: 1

TABLES

TABLE 1
Feasibility Test Vapor Data & Hydrocarbon Recovery Summary

Exxon Station #2-6140
9901 Georgetown Pike
Great Falls, Virginia

12/16/09

Extraction Well ID	Type of Test	Vac. On Well (i.w.)	Vapor Flowrate (scfm)	GW Flowrate (gpm)	Diff. in water table elev. (ft)	PID (ppm)	PCE Conc. (ppmv)	BTEX Conc. (ppmv)	MTBE Conc. (ppmv)	C_1-C_4 Hydrocarbon Conc. (ppmv)	C_5-C_{10} Hydrocarbon Conc. (ppmv)	PCE Recovery (lb/day)	BTEX Recovery (lb/day)	MtBE Recovery (lb/day)	C_1-C_4 Hydrocarbon Recovery (lb/day)	C_5-C_{10} Hydrocarbon Recovery (lb/day)	VACUUM ROI
MW-11	SVE step-1	30	10.8	-	0.59	362.8	-	-	-	-	-	-	-	-	-	-	33
	SVE step-2	60	14.5	-	1.37	479.3	-	-	-	-	-	-	-	-	-	-	40
	SVE step-3	73	15.5	-	2.50	381.4	ND	0.29	68.1	3,630	586	0.00	0.00	0.3	9	3	42
	SVE step-4	190	92.2	-	6.87	379.6	0.0137	0.20	43.5	1,860	341	0.00	0.01	1.3	28	12	43
	GW Extraction	-	-	0.2	-8.08	-	-	-	-	-	-	-	-	-	-	-	-
	VEGE step-1	71	40.7	0.2	-9.39	327.6	0.0109	0.209	36.4	1,530	281	0.00	0.00	0.5	10	4	33
	VEGE step-2	190	93.0	0.5	-9.14	338.7	0.0150	0.426	38.1	1,400	276	0.00	0.01	1.2	21	10	48
MW-2	SVE step-1	67	18.1	-	1.53	52.4	-	-	-	-	-	-	-	-	-	-	<36
	SVE step-2	284	65.4	-	8.08	54.6	-	-	-	-	-	-	-	-	-	-	35
	TPE	285	78.3	0.4	-35.00*	80.1	0.401	0.077	18.3	22.9	28.2	0.02	0.00	0.5	0.3	0.8	38

Notes:
Vacuum and flow data presented coincides with time sample was collected. See detailed field data sheets for all vacuum and flow steps.

SVE - soil vapor extraction
GW - groundwater
VEGE - vacuum enhanced groundwater extraction
BTEX - benzene, ethylbenzene, toluene and xylenes
MtBE - methyl tert-butyl ether
i.w. - inches of water
scfm - standard cubic feet per minute
gpm - gallons per minute
ppm - parts per million
ppmv - parts per million by volume
lb/day - pounds per day
ROI - radius-of-influence
PID - photoionization detector
TPE - total phase extraction
NA - Not available
ND - Not Detected
recovery (lb/day) = conc. (mg/m^3) x flow (scfm) x 1 lb/454,000 mg x 0.0283 m^3/ft^3 x 1440 min/day
conc as mg/m^3 = (conc as ppmv x molecular weight) / 24.05 L/mol
assume BTEX mol wt. = 100
assume average C1- C4 mol wt. = 44
assume average C5-C10 mol wt. = 100
MtBE mol wt = 88.2
PCE mol wt = 165.9
negative diff. in water table = drawdown
positive diff. in water table = upwelling
*- Difference in water table elevation during TPE was assumed to be -35.00 ft which was the straw depth.

TABLE 2

Feasibility Test Groundwater Analytical Results

Exxon Station #2-6140
9901 Georgetown Pike
Great Falls, Virginia

Parameter (units)	MW-11 Influent (pre-treatment)	MW-2 Influent (pre-treatment)
Benzene (µg/L)	ND (100)	ND (25)
Toluene (µg/L)	ND (100)	ND (25)
Ethylbenzene (µg/L)	ND (100)	ND (25)
Xylenes (µg/L)	ND (100)	40.9
BTEX (µg/L)	ND (400)	40.9
MTBE (µg/l)	99,100	15,000
1,2-Dibromoethane (µg/l)	ND (200)	ND (50)
TPH-GRO (mg/L)	101	9.53
TPH-DRO (mg/L)	0.850	0.81
Oil & Grease (mg/L)	<5.0	<5.2
TSS (mg/L)	4,170	-
TDS (mg/L)	40.0	-
Total Calcium (mg/L)	20.7	-
Total Iron (mg/L)	63.9	-
Total Lead (mg/L)	0.0905	-
Total Magnesium (mg/L)	28.7	-
Total Manganese (mg/L)	3.24	-
Dissolved Calcium (mg/L)	20.9	-
Dissolved Iron (mg/L)	23.5	-
Dissolved Lead (mg/L)	0.0527	-
Dissolved Magnesium (mg/L)	17.5	-
Dissolved Manganese (mg/L)	2.87	-
pH	4.95	-

ND= Not detected (laboratory detection limit in parentheses)
TSS= Total Suspended Solids
TPH-GRO= Total petroleum hydrocarbons as gasoline range organics
TPH-DRO= Total petroleum hydrocarbons as diesel range organics
µg/l= micrograms per liter
mg/l= milligrams per liter
BTEX= Sum of benzene, toluene, ethylbenzene and total xylenes
MTBE= methyl tert butyl ether

APPENDIX A

GROUNDWATER AND VAPOR ANALYTICAL DATA AND CHAIN OF CUSTODY

Technical Report for

ExxonMobil Corporation

GESPA: 9901 Georgetown Pike, Great Falls, VA

Accutest Job Number: JA35642

Sampling Date: 12/16/09

Report to:

Groundwater & Environmental Services
440 Creamery Way
Suite 500
Exton, PA 19341

ATTN: Heather Nelson

Total number of pages in report: 19

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

David N. Speis
VP Ops, Laboratory Director

Client Service contact: Tony Esposito 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, PA, RI, SC, TN, VA, WV

Test results relate only to samples analyzed.

Sections: 1 2 3

Table of Contents

Sample Summary

ExxonMobil Corporation

GESPA: 9901 Georgetown Pike, Great Falls, VA

Job No: JA35642

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JA35642-1	12/16/09	10:30	HN	12/17/09	AIR	Air	MW-11 SVE LOW
JA35642-2	12/16/09	11:16	HN	12/17/09	AIR	Air	MW-11 AIR VAC
JA35642-3	12/16/09	14:10	HN	12/17/09	AIR	Air	MW-11 VEGE LOW
JA35642-4	12/16/09	14:28	HN	12/17/09	AIR	Air	MW-11 VEGE HIGH
JA35642-5	12/16/09	17:15	HN	12/17/09	AIR	Air	MW-2 TPE
JA35642-6	12/16/09	17:30	HN	12/17/09	AIR	Air	EFFLUENT

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11 SVE LOW		
Lab Sample ID:	JA35642-1	**Date Sampled:**	12/16/09
Matrix:	AIR - Air Summa ID: TBAG,A427	**Date Received:**	12/17/09
Method:	TO-15	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W24014.D	100	12/24/09	YMH	n/a	n/a	VW1003
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA Special List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	80	11	ppbv		ND	320	ug/m3
127-18-4	165.8	Tetrachloroethylene	ND	16	8.3	ppbv		ND	110	ug/m3
79-01-6	131.4	Trichloroethylene	ND	16	7.4	ppbv		ND	86	ug/m3
75-01-4	62.5	Vinyl chloride	ND	80	9.2	ppbv		ND	200	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		65-128%

(a) Sample analyzed by modified Method TO-15 - Tedlar bag sample containers substituted for passivated stainless steel canisters. Sample dilution required due to high concentrations of non-target compounds.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11 SVE LOW		
Lab Sample ID:	JA35642-1	**Date Sampled:**	12/16/09
Matrix:	AIR - Air	**Date Received:**	12/17/09
Method:	EPA TO-3	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR80900.D	1	12/17/09	TCH	n/a	n/a	GQR3694
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	ND	0.050	0.017	ppmv		ND	0.16	mg/m3
108-88-3	92.14	Toluene	0.18	0.050	0.023	ppmv		0.68	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	ND	0.050	0.021	ppmv		ND	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	0.11	0.10	0.024	ppmv		0.48	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	68.1	0.10	0.016	ppmv		246	0.36	mg/m3
	16	TPH (C1-C4) as Methane	3630	5.0	0.51	ppmv		2380	3.3	mg/m3
	72	TPH (C5-C10) as Pentane	586	5.0	0.11	ppmv		1730	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	96%		75-120%
460-00-4	4-Bromofluorobenzene	98%		75-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11 AIR VAC		
Lab Sample ID:	JA35642-2	**Date Sampled:**	12/16/09
Matrix:	AIR - Air Summa ID: TBAG,A504	**Date Received:**	12/17/09
Method:	TO-15	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W24015.D	50	12/25/09	YMH	n/a	n/a	VW1003
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA Special List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	40	5.7	ppbv		ND	160	ug/m3
127-18-4	165.8	Tetrachloroethylene	13.7	8.0	4.2	ppbv		92.9	54	ug/m3
79-01-6	131.4	Trichloroethylene	ND	8.0	3.7	ppbv		ND	43	ug/m3
75-01-4	62.5	Vinyl chloride	ND	40	4.6	ppbv		ND	100	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		65-128%

(a) Sample analyzed by modified Method TO-15 - Tedlar bag sample containers substituted for passivated stainless steel canisters. Sample dilution required due to high concentrations of non-target compounds.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11 AIR VAC		
Lab Sample ID:	JA35642-2	**Date Sampled:**	12/16/09
Matrix:	AIR - Air	**Date Received:**	12/17/09
Method:	EPA TO-3	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR80901.D	1	12/17/09	TCH	n/a	n/a	GQR3694
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	ND	0.050	0.017	ppmv		ND	0.16	mg/m3
108-88-3	92.14	Toluene	0.10	0.050	0.023	ppmv		0.38	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	ND	0.050	0.021	ppmv		ND	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	0.10	0.10	0.024	ppmv		0.43	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	43.5	0.10	0.016	ppmv		157	0.36	mg/m3
	16	TPH (C1-C4) as Methane	1860	5.0	0.51	ppmv		1220	3.3	mg/m3
	72	TPH (C5-C10) as Pentane	341	5.0	0.11	ppmv		1000	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	96%		75-120%
460-00-4	4-Bromofluorobenzene	99%		75-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11 VEGE LOW		
Lab Sample ID:	JA35642-3	**Date Sampled:**	12/16/09
Matrix:	AIR - Air Summa ID: TBAG,A419	**Date Received:**	12/17/09
Method:	TO-15	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W24016.D	50	12/25/09	YMH	n/a	n/a	VW1003
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA Special List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	40	5.7	ppbv		ND	160	ug/m3
127-18-4	165.8	Tetrachloroethylene	10.9	8.0	4.2	ppbv		73.9	54	ug/m3
79-01-6	131.4	Trichloroethylene	ND	8.0	3.7	ppbv		ND	43	ug/m3
75-01-4	62.5	Vinyl chloride	ND	40	4.6	ppbv		ND	100	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		65-128%

(a) Sample analyzed by modified Method TO-15 - Tedlar bag sample containers substituted for passivated stainless steel canisters. Sample dilution required due to high concentrations of non-target compounds.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11 VEGE LOW		
Lab Sample ID:	JA35642-3	**Date Sampled:**	12/16/09
Matrix:	AIR - Air	**Date Received:**	12/17/09
Method:	EPA TO-3	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR80902.D	1	12/18/09	TCH	n/a	n/a	GQR3694
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	ND	0.050	0.017	ppmv		ND	0.16	mg/m3
108-88-3	92.14	Toluene	0.099	0.050	0.023	ppmv		0.37	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	ND	0.050	0.021	ppmv		ND	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	0.11	0.10	0.024	ppmv		0.48	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	36.4	0.10	0.016	ppmv		131	0.36	mg/m3
	16	TPH (C1-C4) as Methane	1530	5.0	0.51	ppmv		1000	3.3	mg/m3
	72	TPH (C5-C10) as Pentane	281	5.0	0.11	ppmv		827	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	96%		75-120%
460-00-4	4-Bromofluorobenzene	100%		75-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11 VEGE HIGH		
Lab Sample ID:	JA35642-4	**Date Sampled:**	12/16/09
Matrix:	AIR - Air Summa ID: TBAG,A412	**Date Received:**	12/17/09
Method:	TO-15	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W24017.D	50	12/25/09	YMH	n/a	n/a	VW1003
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA Special List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	40	5.7	ppbv		ND	160	ug/m3
127-18-4	165.8	Tetrachloroethylene	15.0	8.0	4.2	ppbv		102	54	ug/m3
79-01-6	131.4	Trichloroethylene	ND	8.0	3.7	ppbv		ND	43	ug/m3
75-01-4	62.5	Vinyl chloride	ND	40	4.6	ppbv		ND	100	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		65-128%

(a) Sample analyzed by modified Method TO-15 - Tedlar bag sample containers substituted for passivated stainless steel canisters. Sample dilution required due to high concentrations of non-target compounds.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11 VEGE HIGH		
Lab Sample ID:	JA35642-4	**Date Sampled:**	12/16/09
Matrix:	AIR - Air	**Date Received:**	12/17/09
Method:	EPA TO-3	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR80907.D	1	12/18/09	TCH	n/a	n/a	GQR3695
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	ND	0.050	0.017	ppmv		ND	0.16	mg/m3
108-88-3	92.14	Toluene	0.086	0.050	0.023	ppmv		0.32	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	0.060	0.050	0.021	ppmv		0.26	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	0.28	0.10	0.024	ppmv		1.2	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	38.1	0.10	0.016	ppmv		137	0.36	mg/m3
	16	TPH (C1-C4) as Methane	1400	5.0	0.51	ppmv		916	3.3	mg/m3
	72	TPH (C5-C10) as Pentane	276	5.0	0.11	ppmv		813	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		75-120%
460-00-4	4-Bromofluorobenzene	100%		75-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-2 TPE		
Lab Sample ID:	JA35642-5	**Date Sampled:**	12/16/09
Matrix:	AIR - Air Summa ID: TBAG,A715	**Date Received:**	12/17/09
Method:	TO-15	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W24018.D	20	12/25/09	YMH	n/a	n/a	VW1003
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA Special List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	16	2.3	ppbv		ND	63	ug/m3
127-18-4	165.8	Tetrachloroethylene	401	3.2	1.7	ppbv		2720	22	ug/m3
79-01-6	131.4	Trichloroethylene	3.7	3.2	1.5	ppbv		20	17	ug/m3
75-01-4	62.5	Vinyl chloride	ND	16	1.8	ppbv		ND	41	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		65-128%

(a) Sample analyzed by modified Method TO-15 - Tedlar bag sample containers substituted for passivated stainless steel canisters. Sample dilution required due to high concentrations of non-target compounds.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-2 TPE		
Lab Sample ID:	JA35642-5	**Date Sampled:**	12/16/09
Matrix:	AIR - Air	**Date Received:**	12/17/09
Method:	EPA TO-3	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR80908.D	1	12/18/09	TCH	n/a	n/a	GQR3695
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	ND	0.050	0.017	ppmv		ND	0.16	mg/m3
108-88-3	92.14	Toluene	0.077	0.050	0.023	ppmv		0.29	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	ND	0.050	0.021	ppmv		ND	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	ND	0.10	0.024	ppmv		ND	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	18.3	0.10	0.016	ppmv		66.0	0.36	mg/m3
	16	TPH (C1-C4) as Methane	22.9	5.0	0.51	ppmv		15.0	3.3	mg/m3
	72	TPH (C5-C10) as Pentane	28.2	5.0	0.11	ppmv		83.0	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	103%		75-120%
460-00-4	4-Bromofluorobenzene	105%		75-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	EFFLUENT		
Lab Sample ID:	JA35642-6	**Date Sampled:**	12/16/09
Matrix:	AIR - Air Summa ID: TBAG	**Date Received:**	12/17/09
Method:	TO-15	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W24019.D	1	12/25/09	YMH	n/a	n/a	VW1003
Run #2							

	Initial Volume
Run #1	100 ml
Run #2	

VOA Special List

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
156-59-2	96.94	cis-1,2-Dichloroethylene	ND	0.80	0.11	ppbv		ND	3.2	ug/m3
127-18-4	165.8	Tetrachloroethylene	0.27	0.16	0.083	ppbv		1.8	1.1	ug/m3
79-01-6	131.4	Trichloroethylene	ND	0.16	0.074	ppbv		ND	0.86	ug/m3
75-01-4	62.5	Vinyl chloride	ND	0.80	0.092	ppbv		ND	2.0	ug/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		65-128%

(a) Sample analyzed by modified Method TO-15 - Tedlar bag sample containers substituted for passivated stainless steel canisters. Sample dilution required due to high concentrations of non-target compounds.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	EFFLUENT		
Lab Sample ID:	JA35642-6	**Date Sampled:**	12/16/09
Matrix:	AIR - Air	**Date Received:**	12/17/09
Method:	EPA TO-3	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	QR80909.D	1	12/18/09	TCH	n/a	n/a	GQR3695
Run #2							

	Initial Volume
Run #1	0.50 ml
Run #2	

Purgeable Aromatics

CAS No.	MW	Compound	Result	RL	MDL	Units	Q	Result	RL	Units
71-43-2	78.11	Benzene	ND	0.050	0.017	ppmv		ND	0.16	mg/m3
108-88-3	92.14	Toluene	ND	0.050	0.023	ppmv		ND	0.19	mg/m3
100-41-4	106.2	Ethylbenzene	ND	0.050	0.021	ppmv		ND	0.22	mg/m3
1330-20-7	106.2	Xylenes (total)	ND	0.10	0.024	ppmv		ND	0.43	mg/m3
1634-04-4	88.15	Methyl Tert Butyl Ether	ND	0.10	0.016	ppmv		ND	0.36	mg/m3
	16	TPH (C1-C4) as Methane	14.1	5.0	0.51	ppmv		9.23	3.3	mg/m3
	72	TPH (C5-C10) as Pentane	ND	5.0	0.11	ppmv		ND	15	mg/m3

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	102%		75-120%
460-00-4	4-Bromofluorobenzene	105%		75-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

ACCUTEST Laboratories

CHAIN OF CUSTODY- ExxonMobil Projects

PAGE ___ OF ___ JA35642

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking # | Bottle Order Control #

Accutest Quote # | Accutest Job # JA35642

Client / Reporting Information

Company Name: GE3
Street Address: 440 Creamery Way
City: Exton State: PA Zip: 19341
Project Contact: Heather Nelson E-mail: heather.nelson@ge.com
Phone #: 610-458-1077 Fax #: 610-458-3300
Sampler(s) Name(s): Heather Nelson Phone #:

ExxonMobil Environmental Services Company

Project Name and Location Number: XOM Great Falls, VA
Street: 9901 Georgetown Pk
City: Great Falls State: VA
ExxonMobil Manager:
ExxonMobil Manager Phone #:
ExxonMobil Purchase Order #:

If Project is Direct Bill to Consultant

Company Name:
Street Address:
City State Zip:
Attention: PO#

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB- Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	BTEX, MTBE C1-C4 (8260)	PCE, TCE if possible (8103)	LAB USE ONLY
-1	MW-11 SVE low	~~Teflon~~	12/16/09	10:30	HN	Air	2					X				X	X	
-2	MW-11 Hi Vac		12/16/09	11:16	HN	Air	2					X				X	X	
-3	MW-11 VEGE low		12/16/09	2:10	HN	Air	2					X				X	X	
-4	MW-11 VEGE High		12/16/09	2:28	HN	Air	2					X				X	X	
-5	MW-2 TPE		12/16/09	5:15	HN	Air	2					X				X	X	
-6	Effluent		12/16/09	5:30	HN	Air	2					X				X	X	

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Labtink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

TEDLAR

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Heather Nelson	12/16/09 10:00 PM	1	1	12/17/09 745	2
3			3	3		4
5			5	Custody Seal #	Intact / Not Intact	Preserved where applicable / On Ice / Cooler Temp.

XB TA

JA35642: Chain of Custody
Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JA35642 **Client:** **Immediate Client Services Action Required:** No

Date / Time Received: 12/17/2009 **Delivery Method:** **Client Service Action Required at Login:** No

Project: **No. Coolers:** 0 **Airbill #'s:**

Cooler Security	Y or N		Y or N
1. Custody Seals Present:	☑ ☐	3. COC Present:	☑ ☐
2. Custody Seals Intact:	☑ ☐	4. Smpl Dates/Time OK	☑ ☐

Cooler Temperature	Y or N
1. Temp criteria achieved:	☑ ☐
2. Cooler temp verification:	Infared gun
3. Cooler media:	Ice (bag)

Quality Control Preservatio	Y or N	N/A
1. Trip Blank present / cooler:	☐ ☐	☑
2. Trip Blank listed on COC:	☐ ☐	☑
3. Samples preserved properly:	☑ ☐	
4. VOCs headspace free:	☐ ☐	☑

Sample Integrity - Documentation	Y or N
1. Sample labels present on bottles:	☑ ☐
2. Container labeling complete:	☑ ☐
3. Sample container label / COC agree:	☑ ☐

Sample Integrity - Condition	Y or N
1. Sample recvd within HT:	☑ ☐
2. All containers accounted for:	☑ ☐
3. Condition of sample:	Intact

Sample Integrity - Instructions	Y or N	N/A
1. Analysis requested is clear:	☑ ☐	
2. Bottles received for unspecified tests	☐ ☑	
3. Sufficient volume recvd for analysis:	☑ ☐	
4. Compositing instructions clear:	☐ ☐	☑
5. Filtering instructions clear:	☐ ☐	☑

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

JA35642: Chain of Custody
Page 2 of 2

New Jersey ACCUTEST Laboratories

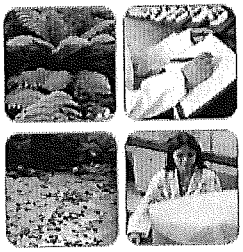
IT'S ALL IN THE CHEMISTRY

12/31/09

Technical Report for

ExxonMobil Corporation

GESPA: 9901 Georgetown Pike, Great Falls, VA



Accutest Job Number: JA35646

Sampling Date: 12/16/09

Report to:

Groundwater & Environmental Services
440 Creamery Way
Suite 500
Exton, PA 19341

ATTN: Heather Nelson

Total number of pages in report: 17

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

David N. Speis
VP Ops, Laboratory Director

ACCUTEST LABORATORIES 50 YEARS 1956-2006

Client Service contact: Tony Esposito 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, PA, RI, SC, TN, VA, WV

Test results relate only to samples analyzed.

Sections: 1 2 3

Table of Contents

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Accutest Laboratories

Sample Summary

ExxonMobil Corporation

Job No: JA35646

GESPA: 9901 Georgetown Pike, Great Falls, VA

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
JA35646-1	12/16/09	12:40	HN	12/17/09	AQ	Ground Water	MW-11
JA35646-1F	12/16/09	12:40	HN	12/17/09	AQ	Groundwater Filtered	MW-11
JA35646-2	12/16/09	17:45	HN	12/17/09	AQ	Ground Water	MW-2
JA35646-3	12/16/09	17:45	HN	12/17/09	AQ	Trip Blank Water	TRIP BLANK

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11		
Lab Sample ID:	JA35646-1	**Date Sampled:**	12/16/09
Matrix:	AQ - Ground Water	**Date Received:**	12/17/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C142471.D	100	12/29/09	JRL	n/a	n/a	VC5035
Run #2	C142472.D	1000	12/29/09	JRL	n/a	n/a	VC5035

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	100	23	ug/l	
108-88-3	Toluene	ND	100	30	ug/l	
100-41-4	Ethylbenzene	ND	100	27	ug/l	
1330-20-7	Xylene (total)	ND	100	25	ug/l	
1634-04-4	Methyl Tert Butyl Ether	99100 [a]	1000	230	ug/l	
106-93-4	1,2-Dibromoethane	ND	200	39	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%	114%	76-120%
17060-07-0	1,2-Dichloroethane-D4	103%	106%	64-135%
2037-26-5	Toluene-D8	108%	108%	76-117%
460-00-4	4-Bromofluorobenzene	102%	101%	72-122%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11		
Lab Sample ID:	JA35646-1	**Date Sampled:**	12/16/09
Matrix:	AQ - Ground Water	**Date Received:**	12/17/09
Method:	SW846 8015B	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	UV77893.D	20	12/21/09	AVM	n/a	n/a	GUV3098
Run #2 [a]	UV77872.D	1	12/18/09	AVM	n/a	n/a	GUV3097

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	101	4.0	0.64	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	90%	88%	68-114%

(a) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11		
Lab Sample ID:	JA35646-1	**Date Sampled:**	12/16/09
Matrix:	AQ - Ground Water	**Date Received:**	12/17/09
Method:	SW846-8015 SW846 3510C	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Z20109.D	1	12/24/09	DNM	12/21/09	OP41517	G3Z613
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	0.850	0.10	0.039	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	102%		34-139%
16416-32-3	Tetracosane-d50	89%		34-141%
438-22-2	5a-Androstane	88%		26-140%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11		
Lab Sample ID:	JA35646-1	**Date Sampled:**	12/16/09
Matrix:	AQ - Ground Water	**Date Received:**	12/17/09
		Percent Solids:	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	20700	5000	ug/l	1	12/22/09	12/23/09	VC	SW846 6010B [1]	SW846 3010A [3]
Iron	63900	100	ug/l	1	12/22/09	12/23/09	VC	SW846 6010B [2]	SW846 3010A [3]
Lead [a]	90.5	6.0	ug/l	2	12/22/09	12/23/09	VC	SW846 6010B [2]	SW846 3010A [3]
Magnesium	28700	5000	ug/l	1	12/22/09	12/23/09	VC	SW846 6010B [1]	SW846 3010A [3]
Manganese	3240	15	ug/l	1	12/22/09	12/23/09	VC	SW846 6010B [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA23644
(2) Instrument QC Batch: MA23652
(3) Prep QC Batch: MP51073

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11		
Lab Sample ID:	JA35646-1	**Date Sampled:**	12/16/09
Matrix:	AQ - Ground Water	**Date Received:**	12/17/09
		Percent Solids:	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
HEM Oil and Grease	< 5.0	5.0	mg/l	1	12/24/09	MG	EPA 1664A
Solids, Total Dissolved	40.0	10	mg/l	1	12/22/09	KD	SM20 2540C
Solids, Total Suspended	4170	4.0	mg/l	1	12/22/09	KD	SM20 2540D
pH [a]	4.95		su	1	12/17/09 14:55	TH	SM20 4500H B

(a) Sample received out of holding time for pH analysis.

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-11		
Lab Sample ID:	JA35646-1F	**Date Sampled:**	12/16/09
Matrix:	AQ - Groundwater Filtered	**Date Received:**	12/17/09
		Percent Solids:	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	20900	5000	ug/l	1	12/22/09	12/23/09	VC	SW846 6010B [1]	SW846 3010A [3]
Iron	23500	100	ug/l	1	12/22/09	12/23/09	VC	SW846 6010B [2]	SW846 3010A [3]
Lead	52.7	3.0	ug/l	1	12/22/09	12/23/09	VC	SW846 6010B [1]	SW846 3010A [3]
Magnesium	17500	5000	ug/l	1	12/22/09	12/23/09	VC	SW846 6010B [1]	SW846 3010A [3]
Manganese	2870	15	ug/l	1	12/22/09	12/23/09	VC	SW846 6010B [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA23644
(2) Instrument QC Batch: MA23652
(3) Prep QC Batch: MP51073

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-2		
Lab Sample ID:	JA35646-2	**Date Sampled:**	12/16/09
Matrix:	AQ - Ground Water	**Date Received:**	12/17/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C142465.D	25	12/29/09	JRL	n/a	n/a	VC5035
Run #2	C142469.D	250	12/29/09	JRL	n/a	n/a	VC5035

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	25	5.9	ug/l	
108-88-3	Toluene	ND	25	7.5	ug/l	
100-41-4	Ethylbenzene	ND	25	6.7	ug/l	
1330-20-7	Xylene (total)	40.9	25	6.3	ug/l	
1634-04-4	Methyl Tert Butyl Ether	15000 [a]	250	58	ug/l	
106-93-4	1,2-Dibromoethane	ND	50	9.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%	110%	76-120%
17060-07-0	1,2-Dichloroethane-D4	104%	104%	64-135%
2037-26-5	Toluene-D8	107%	109%	76-117%
460-00-4	4-Bromofluorobenzene	105%	102%	72-122%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-2		
Lab Sample ID:	JA35646-2	**Date Sampled:**	12/16/09
Matrix:	AQ - Ground Water	**Date Received:**	12/17/09
Method:	SW846 8015B	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	UV77892.D	1	12/21/09	AVM	n/a	n/a	GUV3098
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	9.53	0.20	0.032	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	89%		68-114%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-2		
Lab Sample ID:	JA35646-2	**Date Sampled:**	12/16/09
Matrix:	AQ - Ground Water	**Date Received:**	12/17/09
Method:	SW846-8015 SW846 3510C	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Z20110.D	1	12/24/09	DNM	12/21/09	OP41517	G3Z613
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	0.810	0.10	0.039	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		34-139%
16416-32-3	Tetracosane-d50	77%		34-141%
438-22-2	5a-Androstane	77%		26-140%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JA35646-3	**Date Sampled:**	12/16/09
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/17/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GESPA: 9901 Georgetown Pike, Great Falls, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C142470.D	1	12/29/09	JRL	n/a	n/a	VC5035
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, MTBE

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.23	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.27	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.25	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.23	ug/l	
106-93-4	1,2-Dibromoethane	ND	2.0	0.39	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		76-120%
17060-07-0	1,2-Dichloroethane-D4	106%		64-135%
2037-26-5	Toluene-D8	109%		76-117%
460-00-4	4-Bromofluorobenzene	102%		72-122%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY- ExxonMobil Projects

PAGE ___ OF ___

ACCUTEST Laboratories

GW WTB

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking #: | Bottle Order Control #:

Accutest Quote #: | Accutest Job #: JA35646

Client / Reporting Information

Company Name: GES
Street Address: 440 Creamery Way
City: Exton State: PA Zip: 19341
Project Contact: Heather Nelson E-mail: hnelson@gesonline.com
Phone #: 610-458-7077 Fax #: 610-458-2300
Sampler(s) Name(s): Heather Nelson Phone #:

ExxonMobil Environmental Services Company

Project Name and Location Number: XOM Great Falls
Street: 9901 Georgetown Pike
City: Great Falls State: VA
ExxonMobil Manager:
ExxonMobil Manager Phone #:
ExxonMobil Purchase Order #:

If Project is Direct Bill to Consultant

Company Name:
Street Address:
City: State: Zip:
Attention: PO#

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB- Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	BTEX MTBE TPH-GRO	EDB	O&G	TPH 1664	Metals	Dissolved Metals	TDS, TSS, pH	pH	LAB USE ONLY
-1	MW-11		12/16/09	12:40	HW	Water	15	12		X						X	X	X	X	X	X	X	4.95	EX 83
-2	MW-2		12/16/09	5:45	HW	Water	10	6								X	X		X					HC 15
																								WC 32
																								AMRT 2
																								~~2196~~
																								2197
-3	Trip Blank						4									X	X							Hold Analy

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- ☐ Std. 10 Business Days
- ☐ 10 Day RUSH
- ☐ 5 Day RUSH
- ☐ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ FULLT1 (Level 3+4)
- ☐ NJ Reduced
- ☐ Commercial "C"
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ State Forms
- ☐ EDD Format
- ☐ Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		12/16/09 8:30				
2					12-17-09 745	
3		12/17/09 1300				
4						
5						

Custody Seal # N/A ☐ Intact ☐ Not intact

Preserved where applicable: On Ice: Cooler Temp: 4.0 4.0

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JA35646 **Client:** _____ **Immediate Client Services Action Required:** No

Date / Time Received: 12/17/2009 **Delivery Method:** _____ **Client Service Action Required at Login:** No

Project: _____ **No. Coolers:** 1 **Airbill #'s:** _____

Cooler Security	Y or N		Y or N
1. Custody Seals Present:	☑ ☐	3. COC Present:	☑ ☐
2. Custody Seals Intact:	☑ ☐	4. Smpl Dates/Time OK	☑ ☐

Cooler Temperature	Y or N
1. Temp criteria achieved:	☑ ☐
2. Cooler temp verification:	Infared gun
3. Cooler media:	Ice (bag)

Quality Control Preservatio	Y or N	N/A
1. Trip Blank present / cooler:	☑ ☐	☑
2. Trip Blank listed on COC:	☑ ☐	☑
3. Samples preserved properly:	☑ ☐	
4. VOCs headspace free:	☐ ☐	☑

Sample Integrity - Documentation	Y or N
1. Sample labels present on bottles:	☑ ☐
2. Container labeling complete:	☑ ☐
3. Sample container label / COC agree:	☑ ☐

Sample Integrity - Condition	Y or N
1. Sample recvd within HT:	☑ ☐
2. All containers accounted for:	☑ ☐
3. Condition of sample:	Intact

Sample Integrity - Instructions	Y or N	N/A
1. Analysis requested is clear:	☑ ☐	
2. Bottles received for unspecified tests	☐ ☑	
3. Sufficient volume recvd for analysis:	☑ ☐	
4. Compositing instructions clear:	☐ ☐	☑
5. Filtering instructions clear:	☐ ☐	☑

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

JA35646: Chain of Custody
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APPENDIX B

SUMMARY OF REMEDIAL FEASIBILITY TESTING FIELD NOTES

Appendix B

Summary of Remedial Feasibility Testing Field Notes
Exxon Station #2-6140
9901 Georgetown Pike
Great Falls, Virginia

	SVE (9:40 - 11:40)			
Extraction Well: MW-11 **Initial DTW: 29.76' bgs** **Screen Interval: 10'-40' bgs** **Initial screen interval available: 19.76'**	**Time: 9:58** **Date: 12-16-09** C_5-C_{10} conc. (ppmv): NM PID conc (ppm): 362.8 LEL (%): 5 O2 (%): 12.0 Vapor flow (scfm): 10.8 Vac. applied on well (i.w.): 30 Vac.at well ("Hg): 2.04 Upwelling (feet): 0.59	**Time: 10:14** **Date: 12-16-09** C_5-C_{10} conc. (ppmv): NM PID conc (ppm): 479.3 LEL (%): 9 O2 (%): 5.7 Vapor flow (scfm): 14.5 Vac. applied on well (i.w.): 60 Vac.at well ("Hg): 4.48 Upwelling (feet): 1.37	**Time: 10:39** **Date: 12-16-09** C_5-C_{10} conc. (ppmv): 586 PID conc (ppm): 381.4 LEL (%): 3 O2 (%): 8.0 Vapor flow (scfm): 15.5 Vac. applied on well (i.w.): 73 Vac.at well ("Hg): 5.17 Upwelling (feet): 2.50	**Time: 11:32** **Date: 12-16-09** C_5-C_{10} conc. (ppmv): 341 PID conc (ppm): 379.6 LEL (%): 4 O2 (%): 8.0 Vapor flow (scfm): 92.2 Vac. applied on well (i.w.): 190 Vac.at well ("Hg): 14.16 Upwelling (feet): 6.87

Well ID	Radial distance from MW-11 (feet)	Screen interval range (feet)	Initial depth to water (feet)	Residual soil pressure (i.w.)	Influence vacuum/ pressure reading (i.w.)	Water table upwelling/ drawdown (feet)	Influence vacuum/ pressure reading (i.w.)	Water table upwelling/ drawdown (feet)	Influence vacuum/ pressure reading (i.w.)	Water table upwelling/ drawdown (feet)	Influence vacuum/ pressure reading (i.w.)	Water table upwelling/ drawdown (feet)
MW-1	18	20-35	30.53	0.00	-3.16	0.09	-6.40	0.15	-7.20	0.21	-18.00	0.57
MW-2	77	25-40	33.25	0.00	-0.01	-0.01	0.00	-0.02	0.00	-0.02	0.00	-0.04
MW-7	35	15-40	29.91	0.00	-0.08	0.02	-0.24	-0.01	-0.30	-0.05	-1.29	-0.06
MW-8	50	25-45	32.82	0.00	-0.02	-0.01	-0.03	-0.02	-0.02	-0.02	-0.02	-0.03
TF-1	19	NA	Dry	0.00	0.01	NM	0.00	NM	-0.01	NM	-0.01	NM
MW-6S	108	20-35	21.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NOTES:

NA- not available
NM - not measured
VEGE - vacuum-enhanced groundwater extraction
SVE- soil vapor extraction
AS - air sparge
scfm - standard cubic feet per minute
ppm - parts per million
i.w. - inches of water
gpm - gallons per minute
DTW - depth to water
DTP- depth to product

*Groundwater drawdown is indicated with negative values, and groundwater upwelling is indicated with positive values.

Appendix B

Summary of Remedial Feasibility Testing Field Notes
Exxon Station #2-6140
9901 Georgetown Pike
Great Falls, Virginia

					GWE (12:18 - 13:55)		**VEGE** (13:55 - 14:40)			
Extraction Well: MW-11 **Initial DTW: 29.76' bgs** **Screen Interval: 10'-40' bgs** **Initial screen interval available: 19.76'**					**Time: 13:54** **Date: 12-16-09** GW flow (gpm): 0.2 Totalizer (gal): 19 Drawdown (feet): -8.08		**Time: 14:15** **Date: 12-16-09** C_5-C_{10} conc. (ppmv): 281 PID conc (ppm) : 327.6 LEL (%): 4 O2 (%): 11.5 Vapor flow (scfm): 40.7 GW flow (gpm): 0.2 Totalizer (gal): 24 Vac. applied on well (i.w.): 71 Vac.at well ("Hg): 4.71 Drawdown (feet): -9.39		**Time: 14:38** **Date: 12-16-09** C_5-C_{10} conc. (ppmv): 276 PID conc (ppm): 338.7 LEL (%): 4 O2 (%): 11.3 Vapor flow (scfm): 93.0 GW flow (gpm): 0.5 Totalizer (gal): 34 Vac. applied on well (i.w.): 190 Vac.at well ("Hg): 13.65 Drawdown (feet): -9.14	
Well ID	**Radial distance from MW-4 (feet)**	**Screen interval range (feet)**	**Initial depth to water (feet)**	**Residual soil pressure (i.w.)**	**Influence vacuum reading (i.w.)**	**Water table drawdown (feet)**	**Influence vacuum reading (i.w.)**	**Water table drawdown (feet)**	**Influence vacuum reading (i.w.)**	**Water table drawdown (feet)**
MW-1	18	20-35	30.53	0.00	-0.02	-0.27	-8.27	-0.09	-10.06	0.11
MW-2	77	25-40	33.25	0.00	-0.01	-0.01	0.00	-0.01	0.01	0.00
MW-7	35	15-40	29.91	0.00	-0.04	0.05	-0.06	0.02	-1.39	0.01
MW-8	50	25-45	32.82	0.00	-0.06	0.00	-0.06	0.02	-0.09	-0.02
TF-1	19	NA	Dry	0.00	-0.01	NM	0.02	NM	-0.02	NM
MW-6S	108	20-35	21.87	0.00	NM	0.00	0.00	0.00	0.00	0.00

NOTES:
NA- not available
NM - not measured
VEGE - vacuum-enhanced groundwater extraction
SVE- soil vapor extraction
AS - air sparge
scfm - standard cubic feet per minute
ppm - parts per million
i.w. - inches of water
gpm - gallons per minute
DTW - depth to water
DTP- depth to product

Appendix B

Summary of Remedial Feasibility Testing Field Notes
Exxon Station #2-6140
9901 Georgetown Pike
Great Falls, Virginia

					SVE (15:50- 16:25)				**TPE** (16:50- 17:38)	
Extraction Well: MW-2 **Initial DTW: 33.25' bgs** **Screen Interval: 25'-40' bgs** **Initial screen interval available: 11.25'**					**Time: 16:13** **Date: 12-16-09** C_5-C_{10} conc. (ppmv): NM PID conc (ppm): 52.4 LEL (%): 0 O2 (%): 19.7 Vapor flow (scfm): 18.1 Vac. applied on well (i.w.): 67 Vac.at well ("Hg): 4.87 Drawdown/Upwelling (feet): 1.53		**Time: 16:24** **Date: 12-16-09** C_5-C_{10} conc. (ppmv): NM PID conc (ppm): 54.6 LEL (%): 0 O2 (%): 18.2 Vapor flow (scfm): 65.4 Vac. applied on well (i.w.): 284 Vac.at well ("Hg): 20.06 Drawdown/Upwelling (feet): 8.08		**Time: 17:15** **Date: 12-16-09** C_5-C_{10} conc. (ppmv): 28.2 PID conc (ppm): 80.1 LEL (%): 0 O2 (%): 20.9 Vapor flow (scfm): 78.3 Vac. applied on well (i.w.): 285 Vac. at well ("Hg): 13.10 GW flow (gpm): 0.4 Drop-tube Depth (ft bgs): 35	
Well ID	**Radial distance from MW-14 (feet)**	**Screen interval range (feet)**	**Initial depth to water (feet)**	**Residual soil pressure (i.w.)**	**Influence vacuum/ pressure reading (i.w.)**	**Water table drawdown (feet)**	**Influence vacuum/ pressure reading (i.w.)**	**Water table drawdown (feet)**	**Influence vacuum/ pressure reading (i.w.)**	**Water table drawdown (feet)**
MW-1	79	20-35	30.53	0.00	-0.02	0.04	0.01	0.05	-0.01	0.05
MW-9	54	25-45	34.41	0.00	0.00	0.00	-0.01	0.00	-0.07	0.00
MW-8	36	25-45	42.78	0.00	-0.01	-0.01	-0.09	0.00	-0.11	-0.03
TF-1	66	NA	Dry	0.00	-0.01	NM	0.00	NM	0.00	NM
TF-2	25	NA	Dry	0.00	0.00	NM	0.00	NM	0.00	NM

NOTES:

NA- not available	VEGE - vacuum-enhanced groundwater extraction	scfm - standard cubic feet per minute	scfm - standard cubic feet per minute	gpm - gallons per minute
NM - not measured	SVE- soil vapor extraction	ppm - parts per million	ppm - parts per million	DTW - depth to water
	AS - air sparge	i.w. - inches of water	i.w. - inches of water	DTP- depth to product

*Groundwater drawdown is indicated with negative values, and groundwater upwelling is indicated with positive values.

APPENDIX C

FEASIBILITY TEST VAPOR EXTRACTION FLOW RATES VERSUS VACUUM RESULTS

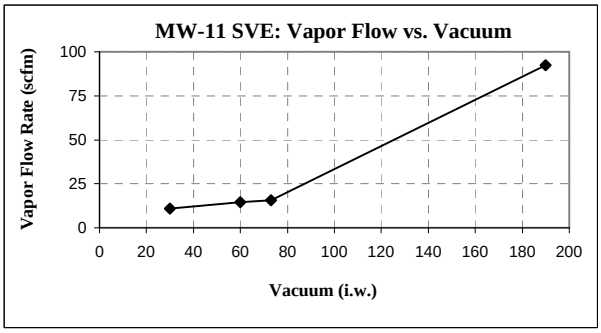
APPENDIX C

Feasibility Test Vapor Extraction Flow Rates Versus Vacuum Results

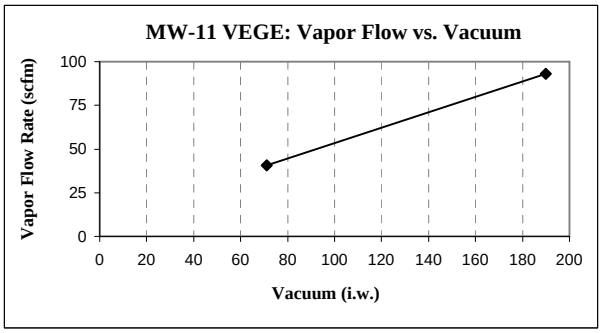
Exxon Station #2-6140
9901 Georgetown Pike
Great Falls, Virginia

12/16/09

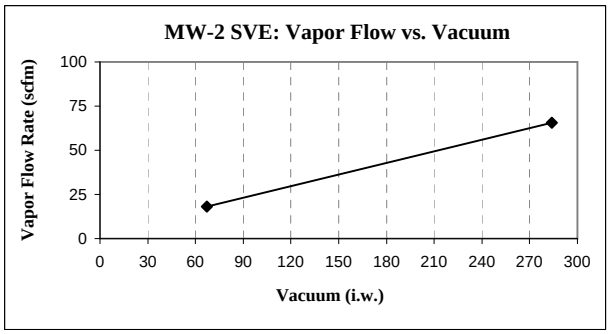
SVE Well: MW-11 **Initial DTW: 29.76' bgs** **Initial screen interval available: 19.76'** **PID reading @ maximum vacuum (ppmv): 379.6**	Vacuum on well (i.w.)	Vapor Flow (scfm)
	30	10.8
	60	14.5
	73	15.5
	190	92.2



VEGE Well: MW-11 **Initial DTW: 29.76' bgs** **Initial screen interval available: 19.76'** **PID reading @ maximum vacuum (ppmv): 379.6**	Vacuum on well (i.w.)	Vapor Flow (scfm)
	71	40.7
	190	93.0



SVE Well: MW-2 **Initial DTW: 33.25' bgs** **Initial screen interval available: 11.25'** **PID reading @ maximum vacuum (ppmv): 54.6**	Vacuum on well (i.w.)	Vapor Flow (scfm)
	67	18.1
	284	65.4



NOTES:

bgs - below grade surface
DTW - depth to water
PID - photoionization detector
ppmv - parts per million by volume
VEGE - vacuum enhanced groundwater extraction
SVE - soil vapor extraction
scfm - standard cubic feet per minute
i.w. - inches of water

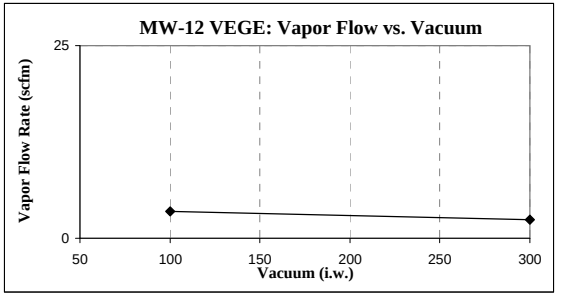
APPENDIX C

Feasibility Test Vapor Extraction Flow Rates Versus Vacuum Results

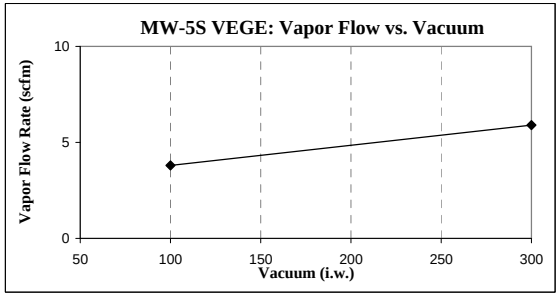
Exxon Station #2-6140
9901 Georgetown Pike
Great Falls, Virginia

16-Dec-09

VEGE Well: MW-12 **Initial DTW: 26.22' bgs**	Vacuum on well (i.w.)	Vapor Flow (scfm)
Initial screen interval available: 15'-85' bgs	100	3.5
PID reading @ maximum vacuum (ppmv): 9.1	300	2.4



SVE Well: MW-5S **Initial DTW: 27.12' bgs**	Vacuum on well (i.w.)	Vapor Flow (scfm)
Initial screen interval available: 60'-80' bgs	100	3.8
PID reading @ maximum vacuum (ppmv): 9.8	300	5.9



NOTES:

bgs - below grade surface
DTW - depth to water
PID - photoionization detector
ppmv - parts per million by volume
VEGE - vacuum enhanced groundwater extraction
SVE - soil vapor extraction
scfm - standard cubic feet per minute
i.w. - inches of water

APPENDIX D

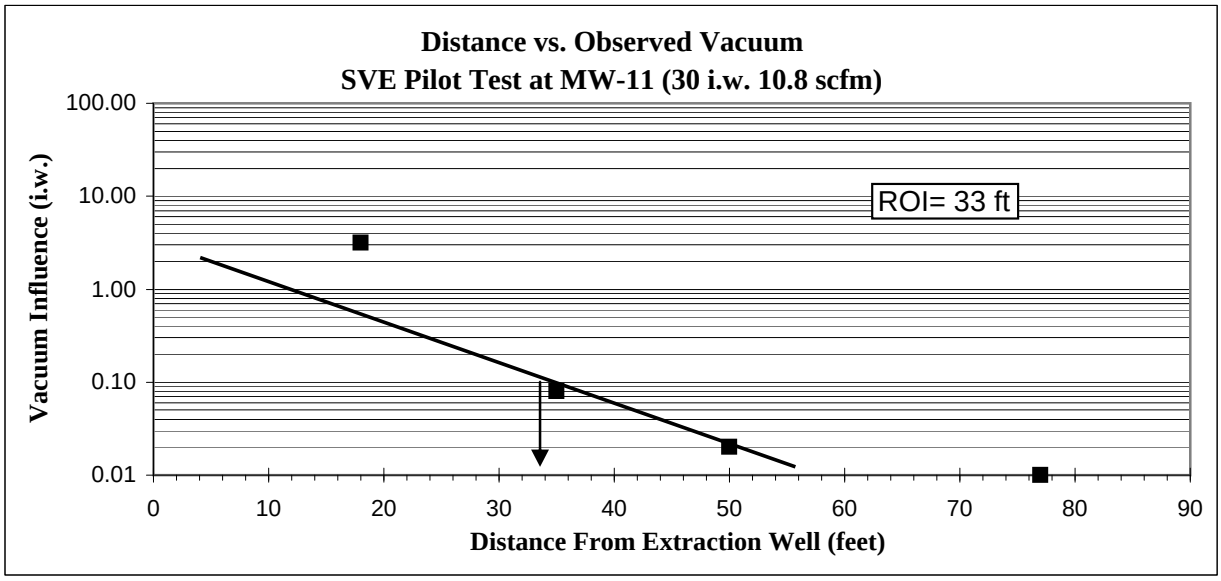
FEASIBILITY TEST VACUUM EXTRACTION ESTIMATED RADIUS-OF-INFLUENCE GRAPHS

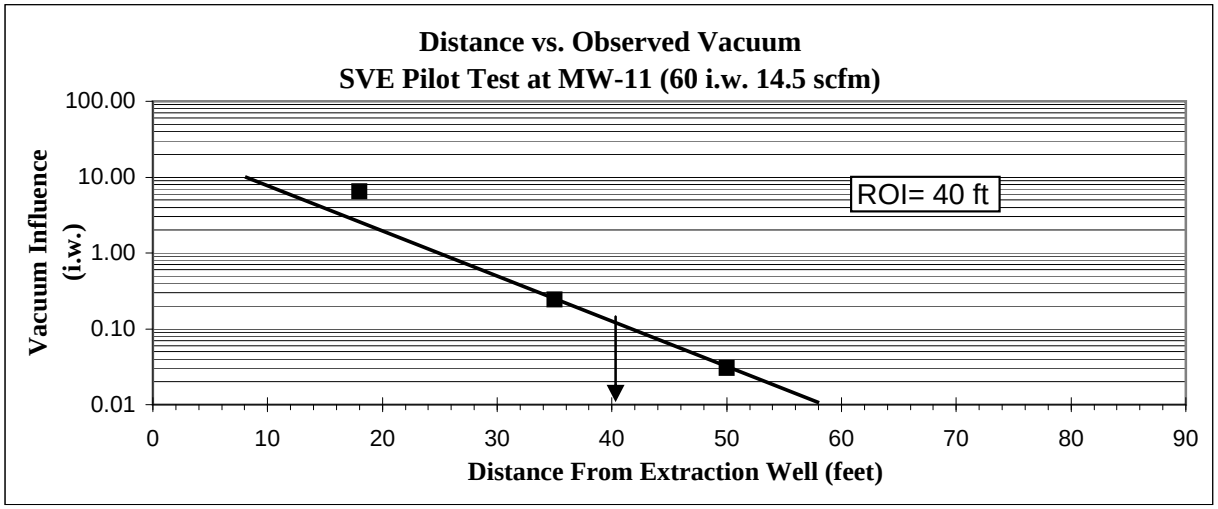
APPENDIX D

Feasibility Test Vacuum Extraction Estimated Radius-of-Influence Graphs

Exxon Station #2-6140
9901 Georgetown Pike
Great Falls, Virginia

12/16/09





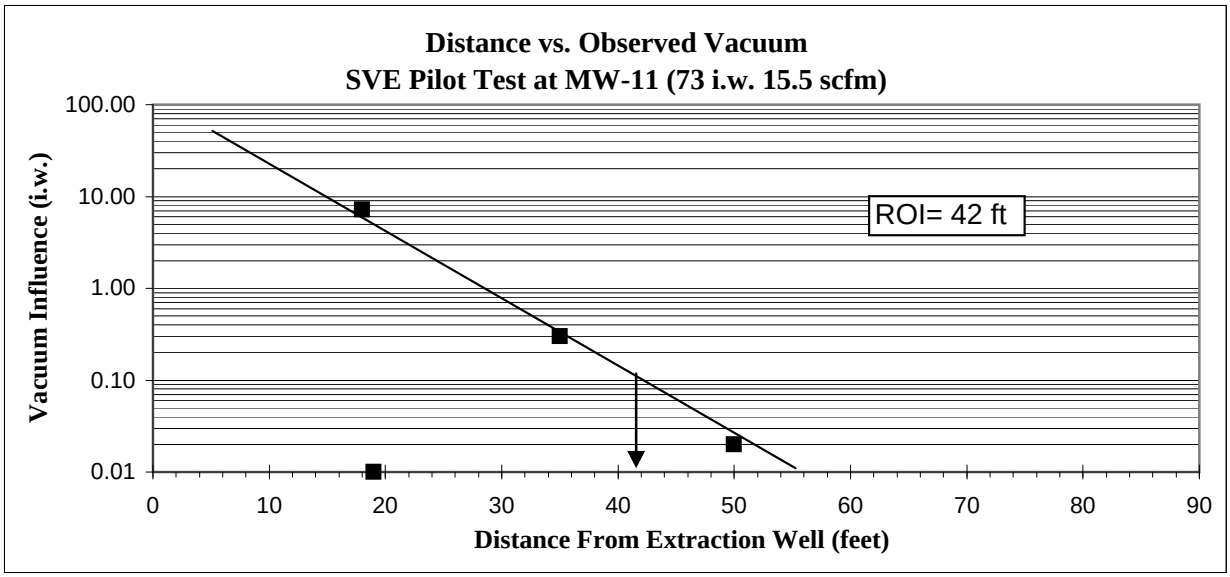
NOTE:
ROI estimated based on assuming 0.10 i.w. is the minimal effective vacuum influence.

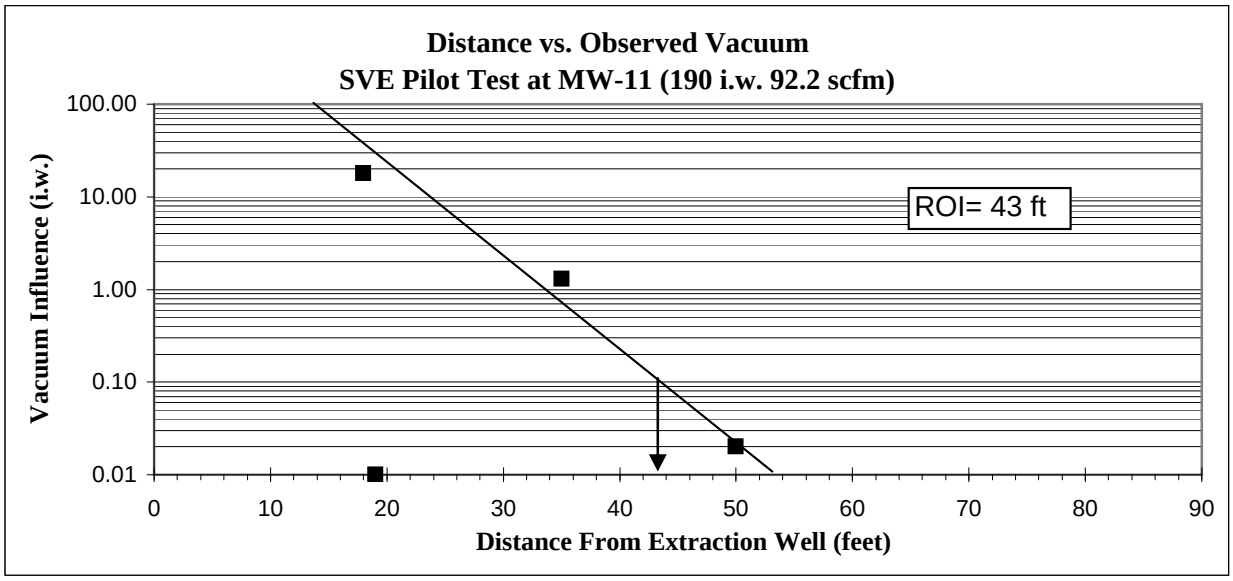
APPENDIX D

Feasibility Test Vacuum Extraction Estimated Radius-of-Influence Graphs

Exxon Station #2-6140
9901 Georgetown Pike
Great Falls, Virginia

12/16/09





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APPENDIX D

Feasibility Test Vacuum Extraction Estimated Radius-of-Influence Graphs

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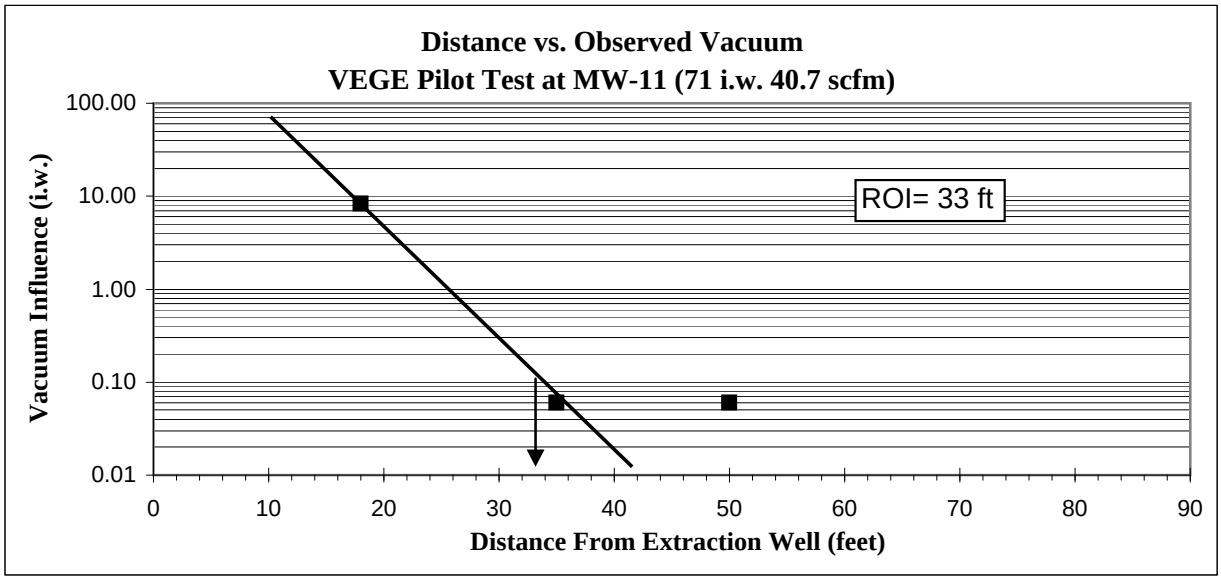

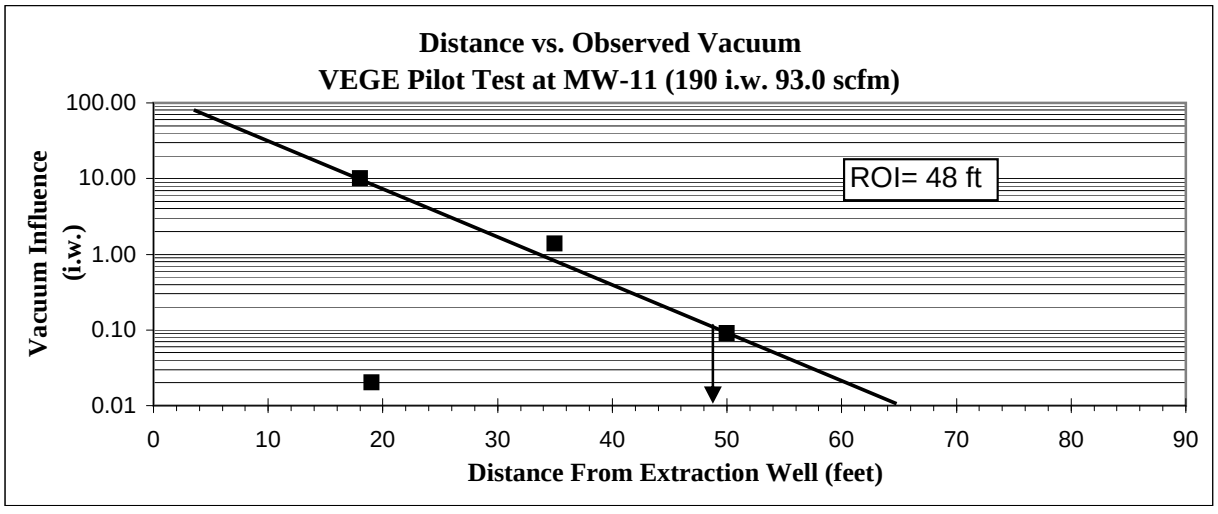

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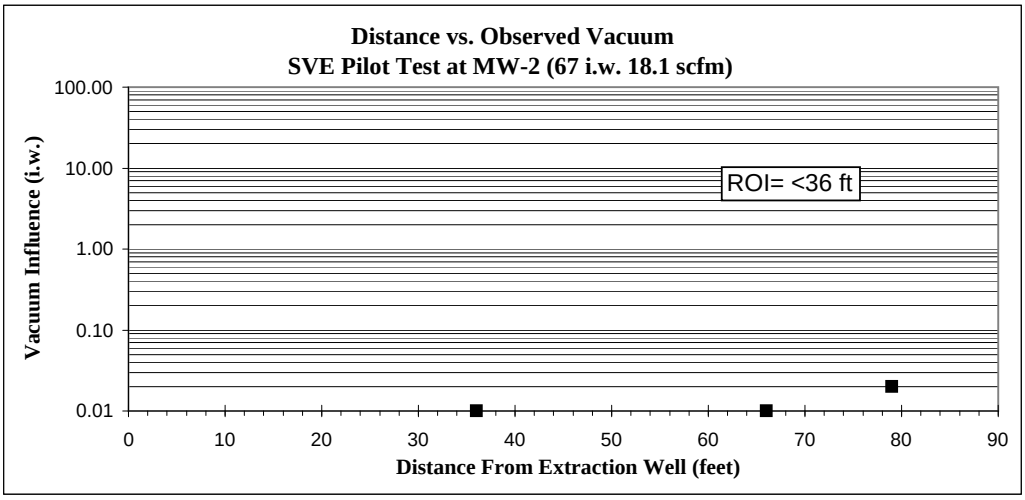

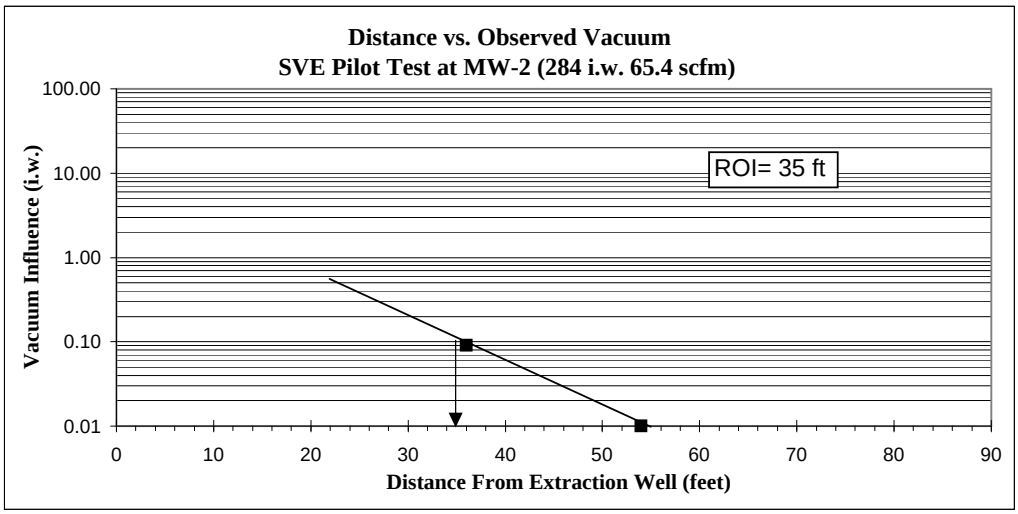

NOTE:
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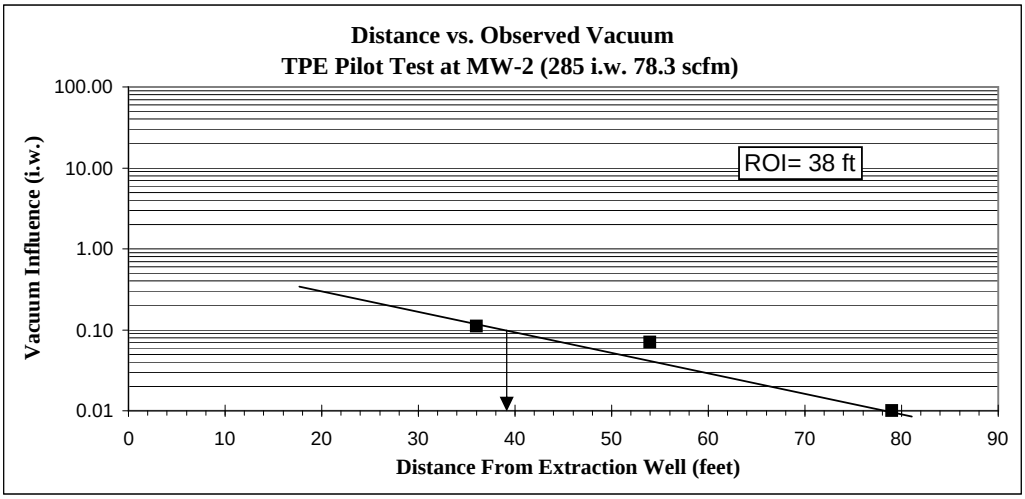

NOTE:
ROI estimated based on assuming 0.10 i.w. is the minimal effective vacuum influence.