August 1, 2017

Mr. Thomas Beeks
GLAM Commercial Properties I, LLC
6947 Coal Creek Pkwy SE, Suite 212
Newcastle, WA 98059

Re: Smokey Point Retail Center
Annual Compliance Reporting—Year 1
Project No. 150294

Dear Mr. Beeks:

This letter report was prepared on behalf of GLAM Commercial Properties I, LLC, and presents the results of annual compliance monitoring completed by Aspect Consulting, LLC (Aspect) at the Smokey Point Retail Center (the Property) in Marysville, Washington, between April 2016 and January 2017 (Year 1). The purpose of the annual compliance monitoring was to verify that concentrations of constituents of concern (COCs) in groundwater are stable or decreasing on the Property, which is required by the Property's Environmental Covenant (Ecology, 2015). Annual compliance monitoring was conducted according to Sound Earth Strategies, Inc. (Sound Earth) *Compliance Monitoring Plan* (Sound Earth, 2015a), which is included in the Environmental Covenant.

Pursuant to our scope of work for Year 1, we completed the following work elements:

- Observed protective cap conditions;
- Collected quarterly groundwater samples;
- Performed plume stability analyses for benzene and gasoline;
- Evaluated indoor air compliance based on groundwater data; and
- Prepared this report for submittal to Washington State Department of Ecology's (Ecology) Voluntary Cleanup Program (VCP).

This report provides a brief description of the Property and its history, describes sampling events, and discusses our monitoring results and conclusions.

Property Description and History

The Property is located at 2707 171st Place NE in the City of Marysville, Washington, as shown on Figure 1. The Property is located in a general commercial area, and is developed with two retail buildings and a parking lot.

Based on previous explorations completed by GeoScience Management, Inc., soil on the Property generally consists of gravelly, silty sand to at least 15 feet deep (Sound Earth, 2015b).

The north-adjacent property was developed as a retail gas station in the late 1970s, and contains petroleum-impacted soil and groundwater due to a past release from underground storage tanks (USTs). The Property contains petroleum-impacted groundwater due to groundwater flow from this north-adjacent source property.

The Property was enrolled in the VCP and underwent an investigation and cleanup by Sound Earth. The cleanup action included injection of oxidizer into groundwater and installation of engineering controls, including a vapor barrier beneath both buildings on the Property to mitigate potential soil vapor concerns and a 4-inch-thick asphalt cap covering most of the Property to mitigate the potential for direct contact with contaminated material (Sound Earth, 2015b).

Sound Earth presented this information to Ecology in a Cleanup Action Report, and the Property was issued a Property-specific No Further Action (NFA) with Environmental Covenant from Ecology.

Protective Cap Condition

The condition of the asphalt cap and concrete slabs was monitored in October 2016, and consisted of walking the Property to look for evidence of cracking, erosion, animal burrows, ponded water, sloughing, seepage, or other potentially damaging conditions. During the October 2016 monitoring, the condition of the cap appeared intact on all areas within the Property boundary. However, temporary ponded water has been noted in areas with permeable asphalt. In February 2017, Aspect investigated the ponding water by assessing the functionality of the permeable asphalt areas. The permeable asphalt appeared to be plugged in areas with ponded water, indicating the ponded water is stormwater runoff. Based on this assessment, the protective cap is still mitigating direct contact with impacted groundwater below the surface.

Groundwater Monitoring

Groundwater samples were collected from three existing monitoring wells located within the plume area (MW-112, MW-113, and MW-114) and two existing monitoring wells near the downgradient (south) property line (MW-116 and MW-119) (Figure 2). Groundwater sample collection and analysis methods, and analytical results are presented below.

Groundwater Sample Collection and Analysis Methods

Groundwater samples were collected by low-flow sampling techniques using a peristaltic pump and disposable polyethylene tubing. We measured the static water level in each well prior to well purging and sample collection. The field parameters temperature, pH, electrical conductance (specific conductance), dissolved oxygen, and redox potential were monitored during purging. Purging continued until the field parameters stabilized, defined as three successive readings where the parameters varied by less than 10 percent, or by less than 0.5 milligrams per liter (mg/L) dissolved oxygen if the readings were below 5 mg/L.

Once purging was complete, groundwater samples were collected by directly filling laboratory-supplied containers from the pump discharge tubing. Groundwater samples were placed in an iced

cooler and delivered to Friedman & Bruya, Inc., in Seattle, Washington, under proper chain-of-custody procedures. Samples from all wells were analyzed for the following:

- Gasoline-range total petroleum hydrocarbons (TPH-G) by Method NWTPH-Gx; and
- Benzene, toluene, ethyl-benzene, and xylene (BTEX) compounds by U.S. Environmental Protection Agency (EPA) Method 8260.

The results are presented in Tables 1 and 2, and laboratory certificates of analysis are included in Attachment A.

Groundwater Elevations and Flow Direction

Groundwater elevations during Year 1 ranged from 93.80 to 96.51 relative to the Property-specific datum. Elevations were generally lowest in July and highest in April (Table 1). Groundwater flow direction during Year 1 ranged from south-southwest to south, which is consistent with historical measurements.

Groundwater Analytical Results

Year 1 groundwater quality results show continued evidence of natural attenuation and a trend toward Property-wide Model Toxics Control Act (MTCA) Method A Cleanup Level compliance. Groundwater quality results are shown in Table 2, and summarized below.

Constituents and areas in compliance with MCTA Method A Cleanup Levels:

- TPH-G was either not detected or was detected at concentrations below the MTCA Method A Cleanup Level of 800 micrograms per liter (µg/L) for the plume wells (MW-112, MW-113, and MW-114), except for MW-114 in October 2016 (1,400 µg/L).

- Benzene was either not detected or was detected at concentrations below the MTCA Method A cleanup level of 5 µg/L for MW-113.

- Toluene, ethylbenzene, and xylenes were either not detected, or were detected at concentrations below MTCA Method A cleanup levels in plume wells during Year 1 monitoring.

- TPH-G and BTEX at downgradient sentinel wells MW-116 and MW-119 were either not detected, or were detected at concentrations below MTCA Method A cleanup levels during Year 1 monitoring.

Results trending towards compliance with MCTA Method A Cleanup Levels:

- The October 2016 result for TPH-G in MW-114 appears to be an anomaly, as this was the only historical result above the MTCA Method A cleanup level for this well. Subsequent sampling results were below the MTCA Method A cleanup level.

- Benzene was detected above the MTCA Method A cleanup level of 5 µg/L for all four quarters of Year 1 monitoring in MW-114, which is consistent with historical results.

- Benzene was detected above MTCA Method A cleanup level in MW-112 in January 2017 (17µg/L), but was either not detected or detected below MTCA Method A cleanup level for the other three sampling events of Year 1.

Plume Stability Analyses

Per the *Compliance Monitoring Plan* (Sound Earth, 2015a), plume stability analyses were performed to evaluate TPH-G and benzene trends in the groundwater plume. A linear regression analysis was used to determine if each plume was expanding, shrinking, or stable. If the linear regression indicated the plume was stable, the stability of the plume was confirmed using a nonparametric statistical analysis (Mann-Kendall Trend Test [MKTT]). These analyses were performed using Ecology's *Natural Attenuation Analysis Tool Package for Petroleum-Contaminated Groundwater* (Ecology, 2007). Module 2 of this tool package is the linear regression, and module 1 of this tool package is the MKTT. Data inputs and analysis outputs for the TPH-G and benzene plumes are included in Attachments B and C, respectively. The results of these analyses are discussed below.

TPH-G Plume

Linear regression analysis of the plume at wells MW-113 and MW-114 indicated the plume is stable. The nonparametric MKTT analysis confirmed the plume is stable at MW-113 and MW-114. The TPH-G plume analysis was conducted using groundwater results for samples collected between May 2014 and January 2017. The October 2016 result for MW-114 (discussed above) was considered an outlier and was not included in the analysis[1]. Linear regression analysis of the plume at well MW-112 indicated the plume is shrinking; therefore, the nonparametric MKTT analysis was not necessary.

Benzene Plume

Linear regression analysis of the plume at well MW-114 indicated the plume is stable. The nonparametric MKTT analysis confirmed the plume is stable at MW-114.The Benzene plume analysis was conducted using groundwater results for samples collected between May 2014 and January 2017. Linear regression analysis of the plume at wells MW-112 and MW-113 indicated the plume is shrinking; therefore, the nonparametric MKTT analysis was not necessary.

Indoor Air Compliance Evaluation

Per the *Compliance Monitoring Plan* (Sound Earth, 2015a), indoor air compliance is based on the concentrations of TPH-G and benzene at wells MW-113 and MW-114. Section 5.2 of the *Compliance Monitoring Plan* states "If the concentrations […] are greater than two times the historical maximum concentrations for two consecutive sampling events, this will trigger an indoor air sampling event at Building 1." Year 1 results for MW-113 and MW-114 did not have results meeting this criterion; therefore, an indoor air sampling event was not necessary, and the Property is considered to be in compliance.

[1] When the test was performed including the outlier, the result came back "undetermined."

Conclusions and Recommendations

Quarterly monitoring results collected during Year 1 indicate that the residual TPH-G and BTEX concentrations in groundwater on the Property are consistent with historical results, and the groundwater plumes are either stable or shrinking.

Aspect recommends continuing monitoring in accordance with the *Compliance Monitoring Plan* in the Environmental Covenant. Year 2 monitoring will consist of:

- Observing protective cap conditions;
- Collecting one round of groundwater samples;
- Performing plume stability analyses for benzene and gasoline;
- Evaluating indoor air compliance based on groundwater data; and
- Preparing a Year 2 Annual Compliance Report for submittal to Ecology's Voluntary Cleanup Program (VCP).

References

Sound Earth Strategies, Inc. (Sound Earth), 2015a, Compliance Monitoring Plan, Smokey Point Retail Center, November 11, 2015.

Sound Earth Strategies, Inc. (Sound Earth), 2015b, Cleanup Action Report, Smokey Point Retail Center, June 12, 2015.

Washington State Department of Ecology (Ecology), 2007, Natural Attenuation Analysis Tool Package for Petroleum-Contaminated Groundwater, July 2005, updated for Excel version 2007.

Washington State Department of Ecology (Ecology), 2015, Environmental Covenant, 2707 171st Place NE, Marysville, WA, December 4, 2015.

Limitations

Work for this project was performed and this letter prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of GLAM Commercial Properties I, LLC for specific application to the referenced property. This letter does not represent a legal opinion. No other warranty, expressed or implied, is made.

Sincerely,

Aspect consulting, LLC

Amy Tice, LG
Project Geologist
atice@aspectconsulting.com

Eric Marhofer, PE
Senior Environmental Engineer
emarhofer@aspectconsulting.com

Doug Hillman, LHG
Principal Hydrogeologist
dhillman@aspectconsulting.com

Attachments

Table 1 Groundwater Elevation Data
Table 2 Groundwater Quality Data
Figure 1 Vicinity Map
Figure 2 Site Plan
Attachment A Laboratory Certificates of Analysis
Attachment B Gasoline Plume Stability Analysis
Attachment C Benzene Plume Stability Analysis

V:\150294 Smokey Point\Deliverables\Year 1 Monitoring Report\Annual Report_Year 1.docx

TABLES

Table 1 - Groundwater Elevation Data

Project No.150294, Smokey Point Retail Center
Marysville, Washington

Well ID	TOC Elevation (feet)	Sample Date	Sampled By	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-111	100.78	9/27/2006	GeoScience	7.69	93.09
		12/6/2008	GeoScience	5.46	95.32
		9/27/2009	GeoScience	7.29	93.49
		4/11/2011	GeoScience	3.50	97.28
		9/14/2012	SoundEarth	4.83	95.95
		4/5/2013	SoundEarth	5.15	95.63
		1/16/2014	SoundEarth	4.19	96.59
		5/20/2015	SoundEarth	6.05	94.73
		4/13/2016	Aspect	--	--
		7/22/2016	Aspect	6.25	94.53
		10/18/2019	Aspect	6.28	94.50
		1/16/2017	Aspect	4.27	96.51
MW-112	99.50	12/6/2008	GeoScience	4.21	95.29
		9/27/2009	GeoScience	6.11	93.39
		4/11/2011	GeoScience	2.51	96.99
		9/14/2012	SoundEarth	5.39	94.11
		4/5/2013	SoundEarth	4.02	95.48
		1/16/2014	SoundEarth	3.00	96.50
		5/30/2014	SoundEarth	4.04	95.46
		7/1/2014	SoundEarth	5.00	94.50
		8/7/2014	SoundEarth	5.30	94.20
		5/20/2015	SoundEarth	4.86	94.64
		4/13/2016	Aspect	3.54	95.96
		7/22/2016	Aspect	5.06	94.44
		10/18/2016	Aspect	5.03	94.47
		1/16/2017	Aspect	4.00	95.50
MW-113	100.03	12/6/2008	GeoScience	4.86	95.17
		9/27/2009	GeoScience	6.73	93.30
		4/11/2011	GeoScience	3.18	96.85
		9/14/2012	SoundEarth	5.99	94.04
		4/5/2013	SoundEarth	4.71	95.32
		1/16/2014	SoundEarth	3.58	96.45
		5/30/2014	SoundEarth	4.59	95.44
		8/7/2014	SoundEarth	5.97	94.06
		5/20/2015	SoundEarth	5.46	94.57
		4/13/2016	Aspect	4.12	95.91
		7/22/2016	Aspect	5.68	94.35
		10/18/2016	Aspect	5.65	94.38
		1/16/2017	Aspect	4.61	95.42
MW-114	99.62	12/6/2008	GeoScience	4.71	94.91
		9/27/2009	GeoScience	6.55	93.07
		4/11/2011	GeoScience	3.07	96.55
		9/14/2012	SoundEarth	5.92	93.70
		4/5/2013	SoundEarth	4.65	94.97
		1/16/2014	SoundEarth	3.49	96.13
		5/30/2014	SoundEarth	4.47	95.15
		8/7/2014	SoundEarth	5.83	93.79
		5/20/2015	SoundEarth	5.33	94.29
		4/13/2016	Aspect	4.05	95.57
		7/22/2016	Aspect	5.59	94.03
		10/18/2016	Aspect	5.49	94.13
		1/16/2017	Aspect	4.53	95.09
MW-115	99.9	12/6/2008	GeoScience	4.93	94.97
		9/27/2009	GeoScience	6.49	93.41
		4/11/2011	GeoScience	3.15	96.75
		9/14/2012	SoundEarth	6.08	93.82
		4/5/2013	SoundEarth	4.85	95.05
		1/16/2014	SoundEarth	3.67	96.23
		5/30/2014	SoundEarth	4.65	95.25
		8/7/2014	SoundEarth	6.03	93.87
		5/20/2015	SoundEarth	5.52	94.38
		4/13/2016	Aspect	--	--
		7/22/2016	Aspect	5.79	94.11
		10/18/2016	Aspect	5.70	94.20
		1/16/2017	Aspect	4.74	95.16
MW-116	100.17	12/6/2008	GeoScience	5.30	94.87
		9/27/2009	GeoScience	7.17	93.00
		4/11/2011	GeoScience	3.75	96.42
		9/14/2012	SoundEarth	6.53	93.64
		4/5/2013	SoundEarth	5.28	94.89
		1/16/2014	SoundEarth	4.06	96.11
		5/30/2014	SoundEarth	5.02	95.15
		8/7/2014	SoundEarth	6.42	93.75
		5/20/2015	SoundEarth	5.90	94.27
		4/13/2016	Aspect	4.63	95.54
		7/22/2016	Aspect	6.19	93.98
		10/18/2019	Aspect	6.03	94.14
		1/16/2017	Aspect	5.15	95.02

Table 1 - Groundwater Elevation Data

Project No.150294, Smokey Point Retail Center
Marysville, Washington

Well ID	TOC Elevation (feet)	Sample Date	Sampled By	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-117	100.65	12/6/2008	GeoScience	5.59	95.06
		9/27/2009	GeoScience	7.45	93.20
		4/11/2011	GeoScience	3.78	96.87
		9/14/2012	SoundEarth	6.78	93.87
		4/5/2013	SoundEarth	5.50	95.15
		1/16/2014	SoundEarth	4.30	96.35
		5/30/2014	SoundEarth	5.27	95.38
		8/7/2014	SoundEarth	6.69	93.96
		5/20/2015	SoundEarth	6.16	94.49
		4/13/2016	Aspect	--	--
		7/22/2016	Aspect	6.44	94.21
		10/18/2016	Aspect	6.36	94.29
		1/16/2017	Aspect	5.39	95.26
MW-118	100.2	12/6/2008	GeoScience	4.91	95.29
		9/27/2009	GeoScience	6.78	93.42
		4/11/2011	GeoScience	3.19	97.01
		9/14/2012	SoundEarth	6.00	94.20
		4/5/2013	SoundEarth	4.74	95.46
		1/16/2014	SoundEarth	3.61	96.59
		5/30/2014	SoundEarth	4.62	95.58
		8/7/2014	SoundEarth	6.00	94.20
		5/20/2015	SoundEarth	5.50	94.70
		4/13/2016	Aspect	--	--
		7/22/2016	Aspect	5.73	94.47
		10/18/2016	Aspect	5.72	94.48
		1/16/2017	Aspect	4.65	95.55
MW-119	98.76	5/20/2015	SoundEarth	4.67	94.09
		4/13/2016	Aspect	3.46	95.30
		7/22/2016	Aspect	4.96	93.80
		10/18/2016	Aspect	4.82	93.94
		1/16/2017	Aspect	3.93	94.83

Notes

Elevations are relative to an arbitrarily chosen site datum.

Definitions:

BTOC = Below top of casing

-- = Not measured

TOC = Top of casing

Table 2 - Groundwater Quality Data

Project No.150294, Smokey Point Retail Center
Marysville, Washington

Well ID	Sample Date	Sampled by	TPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
MTCA Method A Groundwater Cleanup Level (µg/L)			800 (1)	5	1,000	700	1,000
MW-111	9/27/2006	GeoScience	ND	ND	ND	ND	ND
	12/6/2008	GeoScience	ND	ND	ND	ND	ND
	9/27/2009	GeoScience	ND	1	1	ND	ND
	4/11/2011	GeoScience	**4,500**	**6.9**	45	220	130
	9/14/2012	SoundEarth	ND	ND	ND	ND	ND
	4/5/2013	SoundEarth	ND	ND	ND	ND	ND
MW-112	12/6/2008	GeoScience	ND	1.5	1.2	ND	ND
	9/27/2009	GeoScience	ND	ND	ND	ND	ND
	4/11/2011	GeoScience	700	**140**	54	35	67
	9/14/2012	SoundEarth	180	**21**	1.6	3.4	5.6
	4/5/2013	SoundEarth	63	**25.6**	ND	ND	3
	1/16/2014	SoundEarth	ND	ND	ND	ND	ND
	5/30/2014	SoundEarth	**4,100**	**570**	280	270	260
	7/1/2014	SoundEarth	**1,300**	**56**	22	30	120
	8/7/2014	SoundEarth	**5,800**	**140**	97	190	1,000
	5/20/2015	SoundEarth	**990**	**24**	10	92	110
	4/13/2016	Aspect	630	2.2	ND	7.1	2.7
	7/22/2016	Aspect	ND	0.79	ND	ND	ND
	10/18/2016	Aspect	ND	ND	ND	ND	ND
	1/16/2017	Aspect	240	**17**	ND	ND	ND
MW-113	12/6/2008	GeoScience	250	**50**	1.8	6.9	ND
	9/27/2009	GeoScience	130	**29**	4.7	5.6	7.2
	4/11/2011	GeoScience	**4,000**	**70**	110	110	260
	9/14/2012	SoundEarth	180	**17**	20	3.7	17
	4/5/2013	SoundEarth	**4,510**	**118**	209	147	792
	1/16/2014	SoundEarth	140	1.9	2.3	4.8	14
	5/30/2014	SoundEarth	ND	1.8	6.5	2.2	5.1
	8/7/2014	SoundEarth	380	**16**	13	18	48
	5/20/2015	SoundEarth	210	**11**	16	7	32
	4/13/2016	Aspect	340	**3**	1.2	ND	22.3
	7/22/2016	Aspect	ND	ND	ND	ND	ND
	10/18/2016	Aspect	160	1.6	ND	2.6	ND
	1/16/2017	Aspect	ND	0.44	ND	ND	ND
MW-114	12/6/2008	GeoScience	250	**28**	ND	ND	ND
	9/27/2009	GeoScience	160	**15**	1.9	1.3	ND
	4/11/2011	GeoScience	ND	**9.2**	ND	4.5	8.3
	9/14/2012	SoundEarth	120	**21**	1.1	4.1	ND
	4/5/2013	SoundEarth	288	**59**	ND	13	2.5
	1/16/2014	SoundEarth	100	1.8	2.4	6.6	6.9
	5/30/2014	SoundEarth	190	**25**	2.2	7	ND
	8/7/2014	SoundEarth	300	**43**	2.6	23	ND
	5/20/2015	SoundEarth	ND	**5.4**	2	ND	ND
	4/13/2016	Aspect	ND	**12**	ND	ND	ND
	7/22/2016	Aspect	170	**10**	ND	ND	ND
	10/18/2016	Aspect	**1,400**	**37**	9.5	71	41.5
	1/16/2017	Aspect	140	**11**	ND	4.5	ND
MW-115	12/6/2008	GeoScience	540	**120**	1.1	14	ND
	9/27/2009	GeoScience	ND	**180**	ND	10	ND
	4/11/2011	GeoScience	ND	ND	ND	ND	ND
	9/14/2012	SoundEarth	ND	**5.2**	1.3	ND	ND
	4/5/2013	SoundEarth	ND	**5.75**	ND	5.34	ND
	1/16/2014	SoundEarth	390	**18**	5.6	10	16
	5/30/2014	SoundEarth	ND	ND	ND	ND	ND
	8/7/2014	SoundEarth	ND	1.8	ND	ND	ND
	5/20/2015	SoundEarth	ND	1.3	ND	ND	ND
MW-116	12/6/2008	GeoScience	380	**49**	ND	ND	ND
	9/27/2009	GeoScience	ND	**32**	ND	1.2	ND
	4/11/2011	GeoScience	ND	ND	ND	ND	ND
	9/14/2012	SoundEarth	ND	1.1	ND	ND	ND
	4/5/2013	SoundEarth	ND	ND	ND	ND	ND
	1/16/2014	SoundEarth	ND	ND	ND	ND	ND
	5/30/2014	SoundEarth	ND	ND	ND	ND	ND
	8/7/2014	SoundEarth	ND	ND	ND	ND	ND
	5/20/2015	SoundEarth	ND	ND	ND	ND	ND
	4/13/2016	Aspect	ND	ND	ND	ND	ND
	7/22/2016	Aspect	ND	0.44	ND	ND	ND
	10/18/2016	Aspect	ND	1	ND	ND	ND
	1/16/2017	Aspect	ND	ND	ND	ND	ND
MW-117	12/6/2008	GeoScience	100	12	1.6	ND	ND
	9/27/2009	GeoScience	ND	1.4	1	ND	ND
	4/11/2011	GeoScience	ND	ND	ND	ND	ND
	9/14/2012	SoundEarth	ND	ND	ND	ND	ND
	4/5/2013	SoundEarth	ND	ND	ND	ND	ND
	8/7/2014	SoundEarth	ND	ND	ND	ND	ND
MW-118	12/6/2008	GeoScience	**2,400**	**290**	3	20	5.1
	9/27/2009	GeoScience	ND	4.1	21	2	14
	4/11/2011	GeoScience	ND	1.1	3.1	1.9	5.8
	9/14/2012	SoundEarth	ND	ND	ND	ND	ND
	4/5/2013	SoundEarth	ND	ND	ND	ND	ND
	5/30/2014	SoundEarth	ND	ND	ND	ND	ND
MW-119	5/20/2015	SoundEarth	ND	ND	1.1	ND	ND
	4/13/2016	Aspect	ND	ND	ND	ND	ND
	7/22/2016	Aspect	310	1.7	ND	ND	ND
	10/18/2016	Aspect	140	ND	ND	ND	ND
	1/16/2017	Aspect	110	1.7	ND	ND	ND

Notes
Bold values exceed MTCA Method A Groundwater Cleanup Levels for Unrestricted Land Use.
(1) Cleanup level for gasoline with benzene present.
ND = Not detected above laboratory reporting limit.
NS = Not sampled.
TPH = Total petroleum hydrocarbons

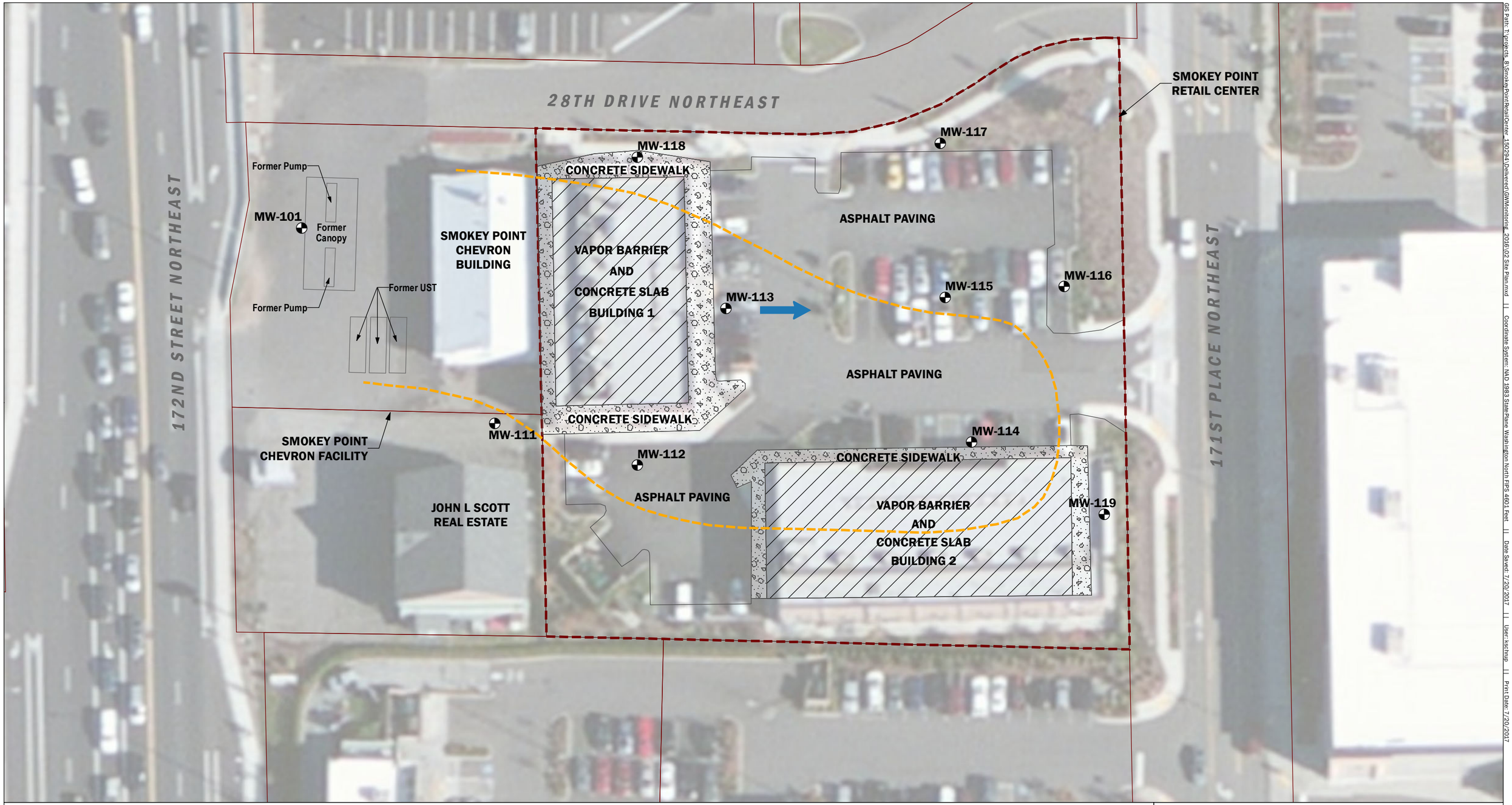
FIGURES

Vicinity Map

Groundwater Monitoring Report
Smokey Point Retail Center
Marysville, Washington

Aspect CONSULTING	MAR-2017	BY: AET / RAP	FIGURE NO. 1
	PROJECT NO. 150294	REVISED BY: EAC	

GIS Path: T:\projects_8\Smokey Point Retail Center_150294\Delivered\GW Monitoring_2016\01 Vicinity Map.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 3/3/2017 || User: ecrumbaker || Print Date: 3/3/2017



Monitoring Well

Groundwater Flow Direction (August 7, 2014)

Extent of Petroleum Benzene Contaminated Groundwater Plume Based on 5µg/L MTCA Method A Groundwater Cleanup Level.

Vapor Barrier

Property Boundary

King County Parcels

N

0 40 80

Feet

Site Plan

Groundwater Monitoring Report
Smokey Point Retail Center
Marysville, Washington

Aspect CONSULTING	JUL-2017	BY: AET / EAC	FIGURE NO. 2
	PROJECT NO. 150294	REVISED BY: AET/ KES	

Basemap Layer Credits || Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

GIS Path: T:\projects_8\SmokeyPointRetailCenter_150294\Deliverables\GWMonitoring_2016\02 Site Plan.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 7/20/2017 || User: kschrup || Print Date: 7/20/2017

ATTACHMENT A

Laboratory Certificates of Analysis

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

April 21, 2016

Amy Tice, Project Manager
Aspect Consulting, LLC
401 2nd Ave S, Suite 201
Seattle, WA 98104

Dear Ms. Tice:

Included are the results from the testing of material submitted on April 14, 2016 from the Smokey Point, 150294, F&BI 604257 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: data@aspectconsulting.com
ASP0421R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on April 14, 2016 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Smokey Point, 150294, F&BI 604257 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
604257 -01	MW-112-041316
604257 -02	MW-113-041316
604257 -03	MW-114-041316
604257 -04	MW-116-041316
604257 -05	MW-119-041316

All quality control requirements were acceptable.

Date of Report: 04/21/16
Date Received: 04/14/16
Project: Smokey Point, 150294, F&BI 604257
Date Extracted: 04/14/16
Date Analyzed: 04/14/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
MW-112-041316 604257-01	630	106
MW-113-041316 604257-02	340	99
MW-114-041316 604257-03	<100	94
MW-116-041316 604257-04	<100	98
MW-119-041316 604257-05	<100	97
Method Blank 06-734 MB	<100	96

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-112-041316	Client:	Aspect Consulting, LLC
Date Received:	04/14/16	Project:	Smokey Point, 150294, F&BI 604257
Date Extracted:	04/15/16	Lab ID:	604257-01
Date Analyzed:	04/15/16	Data File:	041536.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	104	63	127
4-Bromofluorobenzene	97	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	2.2
Toluene	<1
Ethylbenzene	7.1
m,p-Xylene	<2
o-Xylene	1.7

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-113-041316	Client:	Aspect Consulting, LLC
Date Received:	04/14/16	Project:	Smokey Point, 150294, F&BI 604257
Date Extracted:	04/15/16	Lab ID:	604257-02
Date Analyzed:	04/15/16	Data File:	041537.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	3.0
Toluene	1.2
Ethylbenzene	<1
m,p-Xylene	3.3
o-Xylene	19

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-114-041316	Client:	Aspect Consulting, LLC
Date Received:	04/14/16	Project:	Smokey Point, 150294, F&BI 604257
Date Extracted:	04/15/16	Lab ID:	604257-03
Date Analyzed:	04/16/16	Data File:	041538.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	12
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-116-041316	Client:	Aspect Consulting, LLC
Date Received:	04/14/16	Project:	Smokey Point, 150294, F&BI 604257
Date Extracted:	04/15/16	Lab ID:	604257-04
Date Analyzed:	04/16/16	Data File:	041539.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	104	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-119-041316 cf	Client:	Aspect Consulting, LLC
Date Received:	04/14/16	Project:	Smokey Point, 150294, F&BI 604257
Date Extracted:	04/15/16	Lab ID:	604257-05
Date Analyzed:	04/16/16	Data File:	041540.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Smokey Point, 150294, F&BI 604257
Date Extracted:	04/15/16	Lab ID:	06-0722 mb
Date Analyzed:	04/15/16	Data File:	041505.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Date of Report: 04/21/16
Date Received: 04/14/16
Project: Smokey Point, 150294, F&BI 604257

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 604210-02 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	104	69-134

Date of Report: 04/21/16
Date Received: 04/14/16
Project: Smokey Point, 150294, F&BI 604257

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 604266-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Benzene	ug/L (ppb)	50	<0.35	99	76-125
Toluene	ug/L (ppb)	50	<1	92	76-122
Ethylbenzene	ug/L (ppb)	50	<1	95	69-135
m,p-Xylene	ug/L (ppb)	100	<2	95	69-135
o-Xylene	ug/L (ppb)	50	<1	96	60-140

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	50	97	98	69-134	1
Toluene	ug/L (ppb)	50	90	93	72-122	3
Ethylbenzene	ug/L (ppb)	50	94	96	77-124	2
m,p-Xylene	ug/L (ppb)	100	93	96	83-125	3
o-Xylene	ug/L (ppb)	50	94	97	81-121	3

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

604257

SAMPLE CHAIN OF CUSTODY

ME 04-14-16 V2

Page # 1 of 1

Send Report To Amy Tice
Company Aspect Consulting
Address 401 2nd Ave. S, Ste 201
City, State, ZIP Seattle, WA 98104
Phone # 206.838.6585 Fax # ______

SAMPLERS (signature) [signature]

PROJECT NAME/NO. Smokey Point
PO# 150294

REMARKS
-Thanks-

TURNAROUND TIME
☒ Standard (2 Weeks)
☐ RUSH ______
Rush charges authorized by ______

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	BTEX by 8260						Notes
MW-112-041316	01 A-D	4/13/16	1010	Water	4		X					X						
MW-113-041316	02	↓	1100	↓	4		X					X						
MW-114-041316	03	↓	1155	↓	4		X					X						
MW-116-041316	04	↓	1335	↓	4		X					X						
MW-119-041316	05	↓	1425	↓	4		X					X						

Samples received at 2 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	E. Knoedler	Aspect	4/14/16	
Received by: [signature]	Rick Vogrich	FedEx	4-14-16	10:30a
Relinquished by:				
Received by: [signature]	Nhan Phan	Fe BI	4/14/16	11:00

FORMS\COC\COC.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 1, 2016

Amy Tice, Project Manager
Aspect Consulting, LLC
401 2nd Ave S, Suite 201
Seattle, WA 98104

Dear Ms Tice:

Included are the results from the testing of material submitted on July 22, 2016 from the Smokey Point, PO 150294, F&BI 607410 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: data@aspectconsulting.com
ASP0801R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 22, 2016 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Smokey Point, PO 150294, F&BI 607410 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
607410 -01	MW-112-072216
607410 -02	MW-113-072216
607410 -03	MW-114-072216
607410 -04	MW-116-072216
607410 -05	MW-119-072216

All quality control requirements were acceptable.

Date of Report: 08/01/16
Date Received: 07/22/16
Project: Smokey Point, PO 150294, F&BI 607410
Date Extracted: 07/25/16
Date Analyzed: 07/25/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
MW-112-072216 607410-01	<100	95
MW-113-072216 607410-02	<100	94
MW-114-072216 607410-03	170	95
MW-116-072216 607410-04	<100	95
MW-119-072216 607410-05	310	108
Method Blank 06-1472 MB	<100	94

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-112-072216	Client:	Aspect Consulting, LLC
Date Received:	07/22/16	Project:	Smokey Point, PO 150294, F&BI 607410
Date Extracted:	07/25/16	Lab ID:	607410-01
Date Analyzed:	07/25/16	Data File:	072525.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	0.79
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-113-072216	Client:	Aspect Consulting, LLC
Date Received:	07/22/16	Project:	Smokey Point, PO 150294, F&BI 607410
Date Extracted:	07/25/16	Lab ID:	607410-02
Date Analyzed:	07/25/16	Data File:	072526.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-114-072216	Client:	Aspect Consulting, LLC
Date Received:	07/22/16	Project:	Smokey Point, PO 150294, F&BI 607410
Date Extracted:	07/25/16	Lab ID:	607410-03
Date Analyzed:	07/25/16	Data File:	072529.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	10
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-116-072216	Client:	Aspect Consulting, LLC
Date Received:	07/22/16	Project:	Smokey Point, PO 150294, F&BI 607410
Date Extracted:	07/25/16	Lab ID:	607410-04
Date Analyzed:	07/25/16	Data File:	072530.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	0.44
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-119-072216	Client:	Aspect Consulting, LLC
Date Received:	07/22/16	Project:	Smokey Point, PO 150294, F&BI 607410
Date Extracted:	07/25/16	Lab ID:	607410-05
Date Analyzed:	07/25/16	Data File:	072531.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	1.7
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Smokey Point, PO 150294, F&BI 607410
Date Extracted:	07/25/16	Lab ID:	06-1486 mb
Date Analyzed:	07/25/16	Data File:	072506.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Date of Report: 08/01/16
Date Received: 07/22/16
Project: Smokey Point, PO 150294, F&BI 607410

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 607410-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	95	69-134

Date of Report: 08/01/16
Date Received: 07/22/16
Project: Smokey Point, PO 150294, F&BI 607410

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 607393-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Benzene	ug/L (ppb)	50	<0.35	94	78-108
Toluene	ug/L (ppb)	50	<1	94	73-117
Ethylbenzene	ug/L (ppb)	50	<1	92	71-120
m,p-Xylene	ug/L (ppb)	100	<2	94	63-128
o-Xylene	ug/L (ppb)	50	<1	94	64-129

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	50	90	93	81-108	3
Toluene	ug/L (ppb)	50	93	95	83-108	2
Ethylbenzene	ug/L (ppb)	50	92	93	83-111	1
m,p-Xylene	ug/L (ppb)	100	93	94	84-112	1
o-Xylene	ug/L (ppb)	50	94	95	81-117	1

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

60740

SAMPLE CHAIN OF CUSTODY

ME 07/22/16 V3

Page # 1 of 1

Send Report To Amy Tice

Company Aspect Consulting

Address 401 2nd Ave. S, Ste 201

City, State, ZIP Seattle, WA 98104

Phone #206.838.6585 Fax #

SAMPLERS (signature)

PROJECT NAME/NO.: Smokey Point

PO#: 150294

REMARKS: -Thanks- atice@aspectconsulting.com

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
- Rush charges authorized by

SAMPLE DISPOSAL
- [ ] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS	BTEX by 8260						Notes
MW-112-072216	01	7/22/16	1030	Water	4		X					X						
MW-113-072216	02		1115		4		X					X						
MW-114-072216	03		1220		4		X					X						
MW-116-072216	04		1340		4		X					X						
MW-119-072216	05		1425		4		X					X						
																		Samples received at 5 °C

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	E. Knudsen	Aspect	7/22/16	16:55
Received by:	Jon Shinman	FB&I	"	"
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

October 26, 2016

Amy Tice, Project Manager
Aspect Consulting, LLC
401 2nd Ave S, Suite 201
Seattle, WA 98104

Dear Ms Tice:

Included are the results from the testing of material submitted on October 19, 2016 from the Smokey Point, PO 150294, F&BI 610273 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: data@aspectconsulting.com
ASP1026R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 19, 2016 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Smokey Point, PO 150294, F&BI 610273 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
610273 -01	MW-112-101816
610273 -02	MW-113-101816
610273 -03	MW-114-101816
610273 -04	MW-116-101816
610273 -05	MW-119-101816

All quality control requirements were acceptable.

Date of Report: 10/26/16
Date Received: 10/19/16
Project: Smokey Point, PO 150294, F&BI 610273
Date Extracted: 10/20/16
Date Analyzed: 10/20/16 and 10/21/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
MW-112-101816 610273-01	<100	95
MW-113-101816 610273-02	160	100
MW-114-101816 610273-03	1,400	89
MW-116-101816 610273-04	<100	95
MW-119-101816 610273-05	140	96
Method Blank 06-2082 MB	<100	99

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-112-101816	Client:	Aspect Consulting, LLC
Date Received:	10/19/16	Project:	Smokey Point, PO 150294
Date Extracted:	10/19/16	Lab ID:	610273-01
Date Analyzed:	10/19/16	Data File:	101916.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-113-101816	Client:	Aspect Consulting, LLC
Date Received:	10/19/16	Project:	Smokey Point, PO 150294
Date Extracted:	10/19/16	Lab ID:	610273-02
Date Analyzed:	10/19/16	Data File:	101917.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	1.6
Toluene	<1
Ethylbenzene	2.6
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-114-101816	Client:	Aspect Consulting, LLC
Date Received:	10/19/16	Project:	Smokey Point, PO 150294
Date Extracted:	10/19/16	Lab ID:	610273-03
Date Analyzed:	10/19/16	Data File:	101918.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	37
Toluene	9.5
Ethylbenzene	71
m,p-Xylene	32
o-Xylene	9.5

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-116-101816	Client:	Aspect Consulting, LLC
Date Received:	10/19/16	Project:	Smokey Point, PO 150294
Date Extracted:	10/19/16	Lab ID:	610273-04
Date Analyzed:	10/19/16	Data File:	101919.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	1.0
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-119-101816	Client:	Aspect Consulting, LLC
Date Received:	10/19/16	Project:	Smokey Point, PO 150294
Date Extracted:	10/19/16	Lab ID:	610273-05
Date Analyzed:	10/19/16	Data File:	101920.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Smokey Point, PO 150294
Date Extracted:	10/19/16	Lab ID:	06-2150 mb2
Date Analyzed:	10/19/16	Data File:	101915.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Date of Report: 10/26/16
Date Received: 10/19/16
Project: Smokey Point, PO 150294, F&BI 610273

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 610273-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	94	69-134

Date of Report: 10/26/16
Date Received: 10/19/16
Project: Smokey Point, PO 150294, F&BI 610273

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 610233-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Benzene	ug/L (ppb)	50	<0.35	92	76-125
Toluene	ug/L (ppb)	50	<1	94	76-122
Ethylbenzene	ug/L (ppb)	50	<1	93	69-135
m,p-Xylene	ug/L (ppb)	100	<2	91	69-135
o-Xylene	ug/L (ppb)	50	<1	90	60-140

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	50	92	92	69-134	0
Toluene	ug/L (ppb)	50	94	94	72-122	0
Ethylbenzene	ug/L (ppb)	50	92	92	77-124	0
m,p-Xylene	ug/L (ppb)	100	89	90	83-125	1
o-Xylene	ug/L (ppb)	50	88	90	81-121	2

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

610273

SAMPLE CHAIN OF CUSTODY

ME 10/19/16 V3

Page # 1 of 1

Report To Amy Tice

Company Aspect Consulting

Address 401 2nd Ave. S, Ste 201

City, State, ZIP Seattle, WA 98104

Phone 206.838.0585 Email

SAMPLERS (signature)

PROJECT NAME: Smokey Point

PO #: 150294

REMARKS: -Thanks- ATICE@ASPECTCONSULTING.COM

INVOICE TO

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	BTEX by 8260				Notes
						ANALYSES REQUESTED											
MW-112-101816	01 A-D	10/18/16	1125	Water	4			X					X				
MW-113-101816	02		1230		4			X					X				
MW-114-101816	03		1310		4			X					X				
MW-116-101816	04		1345		4			X					X				
MW-119-101816	05		1435		4			X					X				
													Samples received at 3 °C				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	E. Knoedler	Aspect	10/19/16	
Received by:	M Herring	FedEx	10/19/16	9:12 am
Relinquished by:				
Received by:	Nham Pham	FEBT	10/19/16	10:05

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 24, 2017

Amy Tice, Project Manager
Aspect Consulting, LLC
401 2nd Ave S, Suite 201
Seattle, WA 98104

Dear Ms Tice:

Included are the results from the testing of material submitted on January 17, 2017 from the Smokey Point, PO 150294, F&BI 701175 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: data@aspectconsulting.com, Eric Marhofer
ASP0124R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 17, 2017 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Smokey Point, PO 150294, F&BI 701175 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
701175 -01	MW-112-011617
701175 -02	MW-116-011617
701175 -03	MW-119-011617
701175 -04	MW-114-011617
701175 -05	MW-113-011617

All quality control requirements were acceptable.

Date of Report: 01/24/17
Date Received: 01/17/17
Project: Smokey Point, PO 150294, F&BI 701175
Date Extracted: 01/20/17
Date Analyzed: 01/20/17

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 51-134)
MW-112-011617 701175-01	240	83
MW-116-011617 701175-02	<100	80
MW-119-011617 701175-03	110	82
MW-114-011617 701175-04	140	81
MW-113-011617 701175-05	<100	78
Method Blank 07-016 MB	<100	86

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-112-011617	Client:	Aspect Consulting, LLC
Date Received:	01/17/17	Project:	Smokey Point, PO 150294
Date Extracted:	01/18/17	Lab ID:	701175-01
Date Analyzed:	01/18/17	Data File:	011826.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	17
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-116-011617	Client:	Aspect Consulting, LLC
Date Received:	01/17/17	Project:	Smokey Point, PO 150294
Date Extracted:	01/18/17	Lab ID:	701175-02
Date Analyzed:	01/18/17	Data File:	011827.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-119-011617	Client:	Aspect Consulting, LLC
Date Received:	01/17/17	Project:	Smokey Point, PO 150294
Date Extracted:	01/18/17	Lab ID:	701175-03
Date Analyzed:	01/18/17	Data File:	011828.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	1.7
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-114-011617	Client:	Aspect Consulting, LLC
Date Received:	01/17/17	Project:	Smokey Point, PO 150294
Date Extracted:	01/18/17	Lab ID:	701175-04
Date Analyzed:	01/18/17	Data File:	011829.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	11
Toluene	<1
Ethylbenzene	4.5
m,p-Xylene	<2
o-Xylene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-113-011617	Client:	Aspect Consulting, LLC
Date Received:	01/17/17	Project:	Smokey Point, PO 150294
Date Extracted:	01/18/17	Lab ID:	701175-05
Date Analyzed:	01/18/17	Data File:	011830.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	0.44
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Smokey Point, PO 150294
Date Extracted:	01/18/17	Lab ID:	07-078 mb
Date Analyzed:	01/18/17	Data File:	011823.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	57	121
Toluene-d8	104	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Date of Report: 01/24/17
Date Received: 01/17/17
Project: Smokey Point, PO 150294, F&BI 701175

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 701164-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	780	820	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	96	69-134

Date of Report: 01/24/17
Date Received: 01/17/17
Project: Smokey Point, PO 150294, F&BI 701175

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	50	101	97	69-134	4
Toluene	ug/L (ppb)	50	98	94	72-122	4
Ethylbenzene	ug/L (ppb)	50	99	95	77-124	4
m,p-Xylene	ug/L (ppb)	100	99	94	83-125	5
o-Xylene	ug/L (ppb)	50	100	96	81-121	4

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

701175

SAMPLE CHAIN OF CUSTODY

ME 01/17/17 UCW

Page # 1 of 1

Report To Amy Tice & Eric Marhofer

Company Aspect Consulting

Address 401 2nd Ave S, Ste 201

City, State, ZIP Seattle, WA 98104

Phone 206.838.6585 Email E.MARHOFER@ASPECTCONSULTING.COM ATICE@ASPECTCONSULTING.COM

SAMPLERS (signature)

PROJECT NAME: Smokey Point

PO #: 150294

REMARKS

INVOICE TO

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	BTEX by 8260				Notes
MW-112-011617	01 A-C	1/16/17	1125	WATER	3			X					X				
MW-116-011617	02		1200		3			X					X				
MW-119-011617	03		1255		3			X					X				
MW-114-011617	04		1325		3			X					X				
MW-113-011617	05		1400		3			X					X				
													Samples received at 3 °C				

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	E. Knoedler	Aspect	1/17/17	
Received by:	D Sams	Fed Ex	1/17	10:22
Relinquished by:				
Received by:	Nhan Phan	FEBT	1/17/17	1120

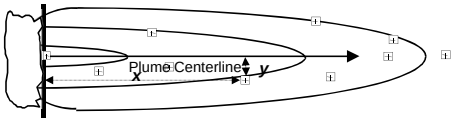
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

ATTACHMENT B

Gasoline Plume Stability Analysis

Module 2: Inputs: Enter Historical Ground Water Data

Site Name:	*Smokey Point Retail Center*
Site Address:	*Marysville, WA*
Additional Description:	
Hazardous Substance	*Gasoline-range petroleum hydrocarbons*



1. Monitoring Well information: Contaminant Concentration at a well: Note: relationship of "y/x ≤ 0.33" is preferred

Well Location:		Unit		MW112	MW113	MW114													
Dist from source, x-direction		ft																	
Off-centerline dist, y-direction		ft																	
Sampling Event	Date sampled	day	Unit of concentration is ug/L																
#1	5/30/14	0		4100	100	190													
#2	8/7/14	69		5800	380	300													
#3	5/20/15	355		990	210	100													
#4	4/13/16	684		630	340	100													
#5	7/22/16	784		100	100	170													
#6	1/16/17	962		240	100	140													
#7																			
#8																			
#9																			
#10																			
#11																			
#12																			
#13																			
#14																			
#15																			
#16																			
#17																			
#18																			
#19																			
#20																			
Average Concentration			na	1976.7	205.0	166.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Concentration			NA	5800	380	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Minimum Concentration			NA	100	100	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

2. Groundwater Elevation:

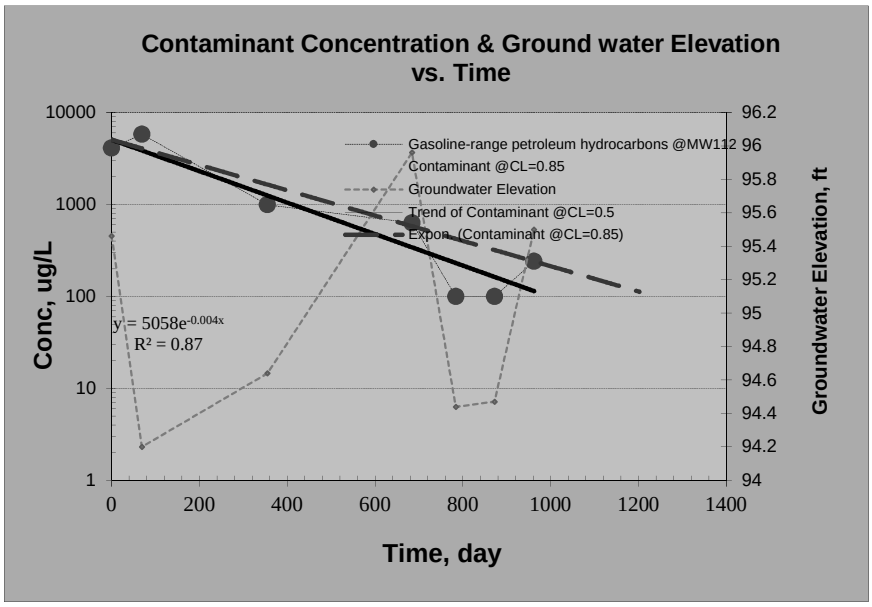
Well Location:																			
Sampling Event	Date sampled	Day																	
#1	5/30/14	0		95.46	95.44	95.15													
#2	8/7/14	69		94.2	94.06	93.79													
#3	5/20/15	355		94.64	94.57	94.29													
#4	4/13/16	684		95.96	95.91	95.57													
#5	7/22/16	784		94.44	94.35	94.03													
#6	1/16/17	962		95.5	95.42	95.09													
#7																			
#8																			
#9																			
#10																			
#11																			
#12																			
#13																			
#14																			
#15																			
#16																			
#17																			
#18																			
#19																			
#20																			

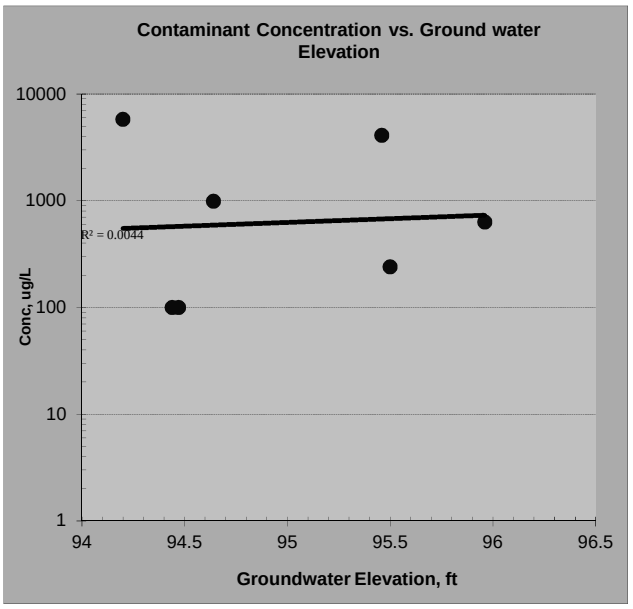
Module 2: Graphical Presentation of Historical Ground Water Data: (Well to Well Analysis)

Site Name: *Smokey Point Retail Center*
Site Address: *Marysville, WA*
Additional Description: *0*
Hazardous Substance *Gasoline-range petroleum hydrocarbons*

1. Temporal Trend at a Well (Concentration vs. Time & Groundwater Elevation : well-to-well analysis)

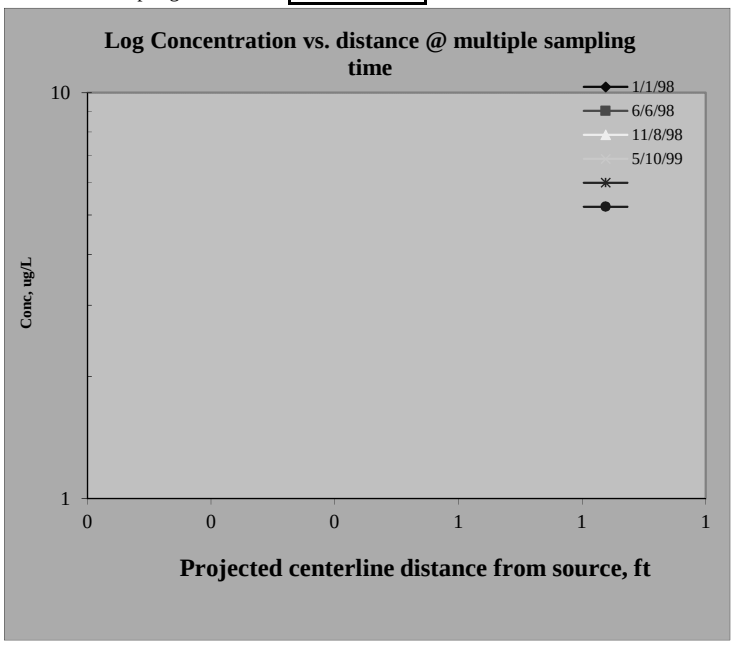
Name of Sampling Well?	**MW112**	Confidence Level (Decision Criteria)?	85.0%
Confidence Level calculated with log-linear regression is?	*99.783%*		
Plume Stability?	Shrinking	; Decision Criteria is 85%.	
Slope: Point decay rate constant (k_{point}), yr^{-1}	*1.438* @50% C.L.;	*1.156* @85% C.L.	
Half Life for k_{point}, yr	*0.482* @50% C.L.;	*0.599* @85% C.L.	

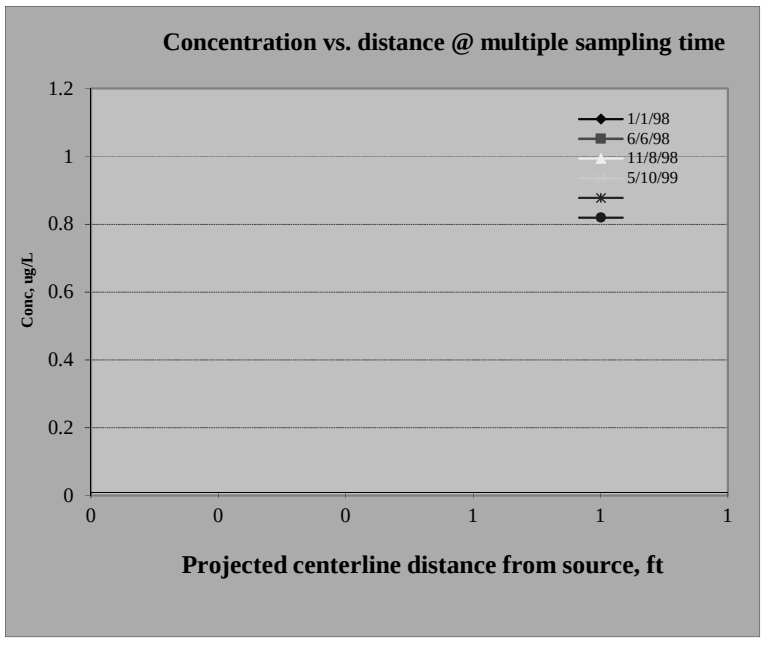




2. Spatial and Temporal Trend along Overall Plume Length for Multiple Wells:

Plot #1:	Sampling date #1	**1-Jan-98**
Plot #2:	Sampling date #2	**6-Jun-98**
Plot #3:	Sampling date #3	**8-Nov-98**
Plot #4:	Sampling date #4	**10-May-99**
Plot #5:	Sampling date #5	
Plot #6:	Sampling date #6	





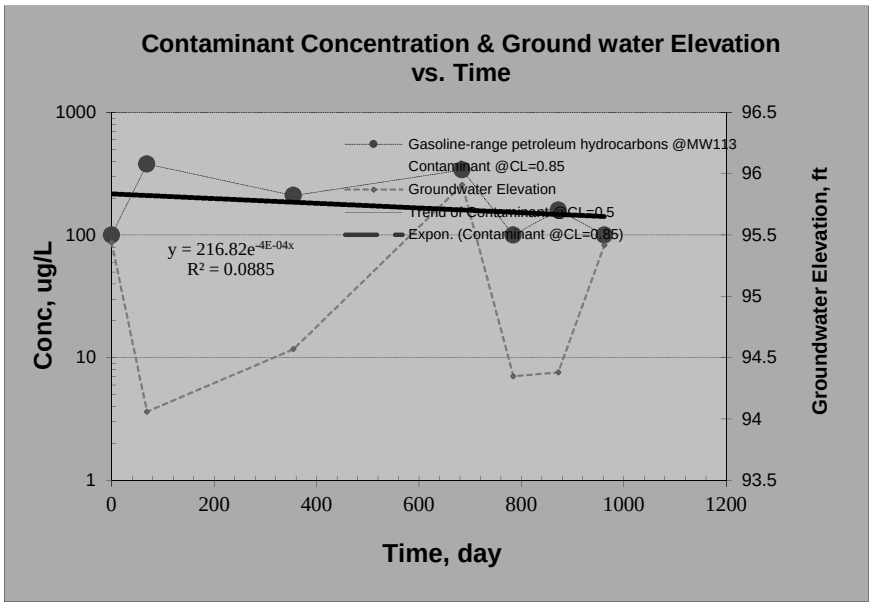
Module 2: Graphical Presentation of Historical Ground Water Data: (Well to Well Analysis)

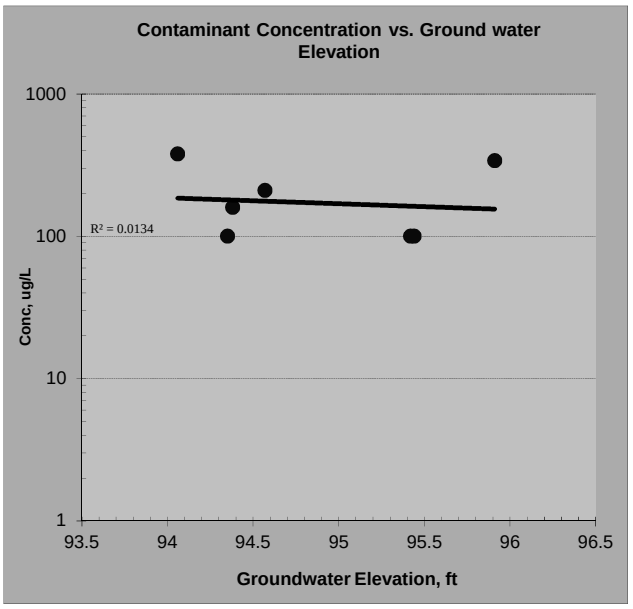
Site Name: *Smokey Point Retail Center*
Site Address: *Marysville, WA*
Additional Description: *0*
Hazardous Substance *Gasoline-range petroleum hydrocarbons*

1. Temporal Trend at a Well (Concentration vs. Time & Groundwater Elevation : well-to-well analysis)

Name of Sampling Well?	**MW113**	Confidence Level (Decision Criteria)?	85.0%

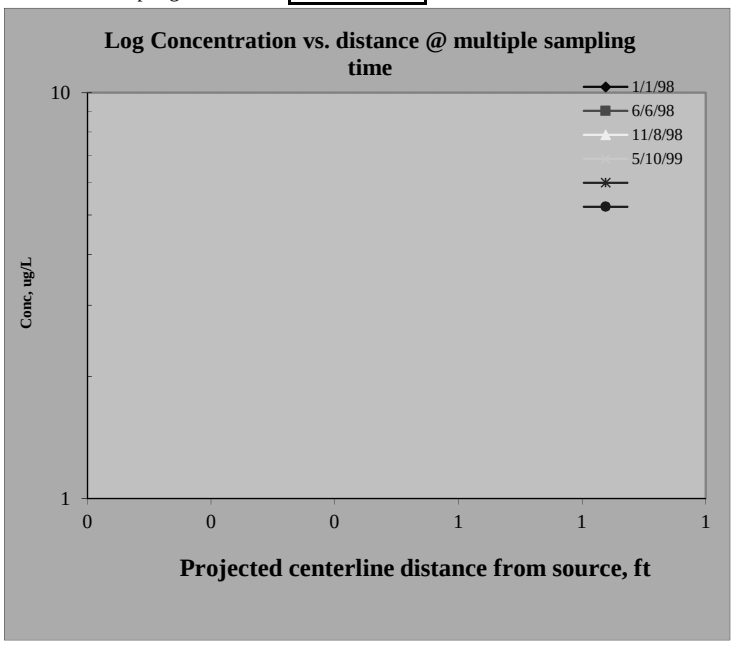
Confidence Level calculated with log-linear regression is?	*48.305%*		
Plume Stability?	Stable	; Decision Criteria is 85%.	
Slope: Point decay rate constant (k_{point}), yr^{-1}	*0.161* @50% C.L.;	*NA* @85% C.L.	
Half Life for k_{point}, yr	*4.298* @50% C.L.;	*NA* @85% C.L.	

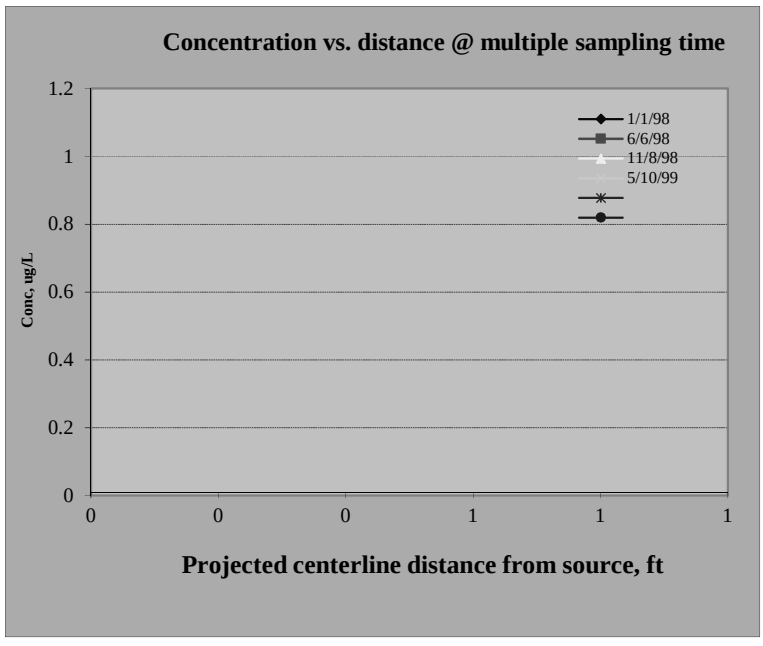




2. Spatial and Temporal Trend along Overall Plume Length for Multiple Wells:

Plot #1:	Sampling date #1	**1-Jan-98**
Plot #2:	Sampling date #2	**6-Jun-98**
Plot #3:	Sampling date #3	**8-Nov-98**
Plot #4:	Sampling date #4	**10-May-99**
Plot #5:	Sampling date #5	
Plot #6:	Sampling date #6	



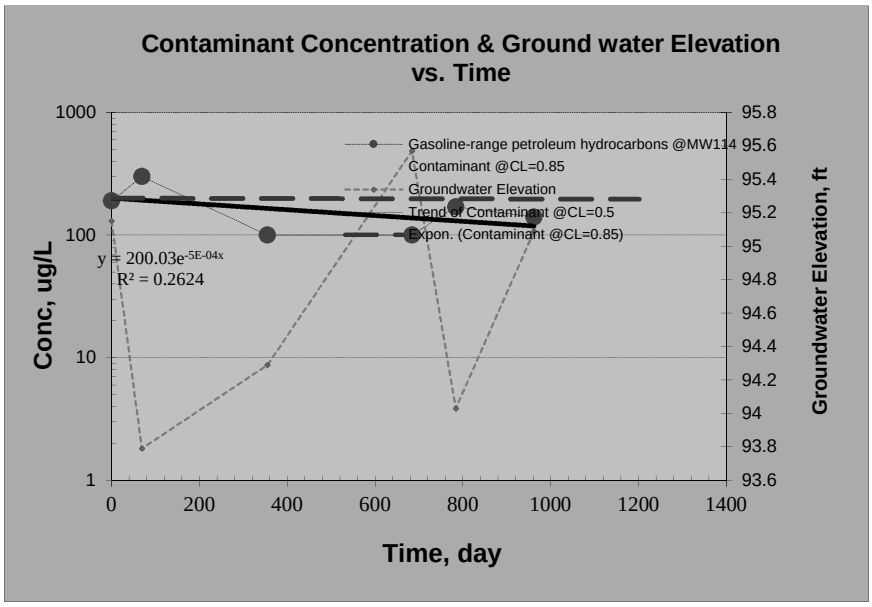


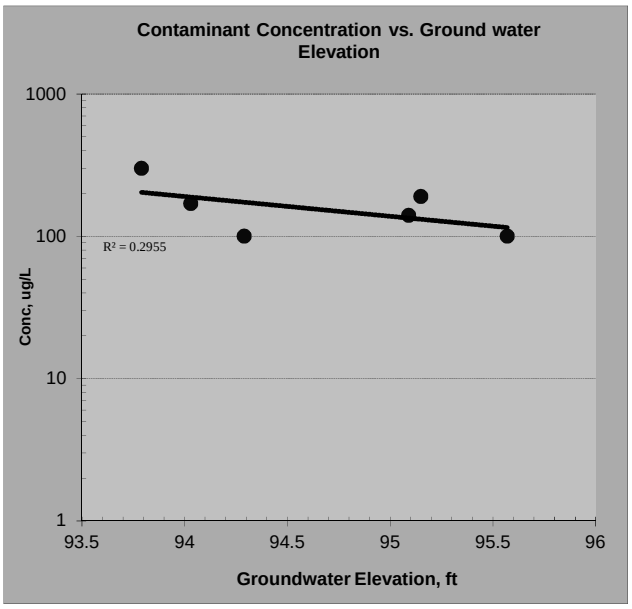
Module 2: Graphical Presentation of Historical Ground Water Data: (Well to Well Analysis)

Site Name: *Smokey Point Retail Center*
Site Address: *Marysville, WA*
Additional Description: *0*
Hazardous Substance *Gasoline-range petroleum hydrocarbons*

1. Temporal Trend at a Well (Concentration vs. Time & Groundwater Elevation : well-to-well analysis)

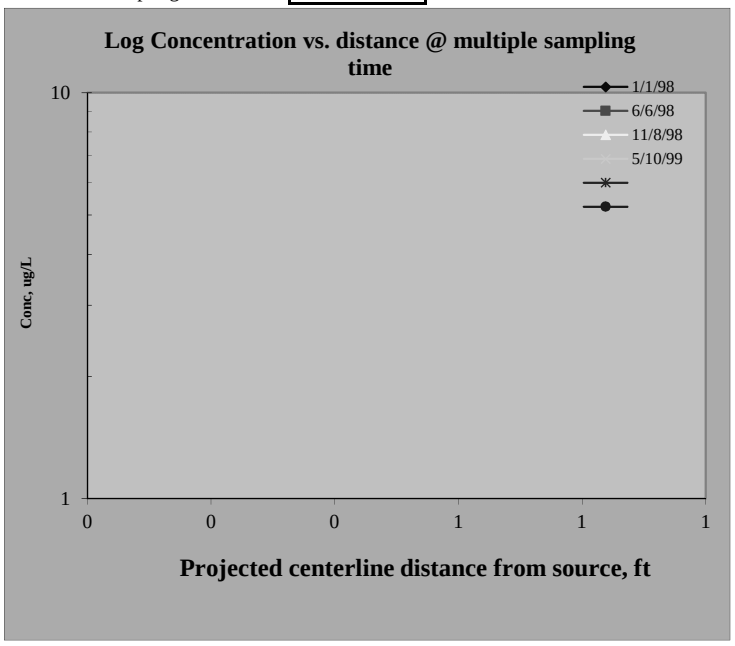
Name of Sampling Well?	**MW114**	Confidence Level (Decision Criteria)?	85.0%
Confidence Level calculated with log-linear regression is?	*70.116%*		
Plume Stability?	Stable	; Decision Criteria is 85%.	
Slope: Point decay rate constant (k_{point}), yr^{-1}	*0.198* @50% C.L.;	*0.006* @85% C.L.	
Half Life for k_{point}, yr	*3.492* @50% C.L.;	*112.236* @85% C.L.	

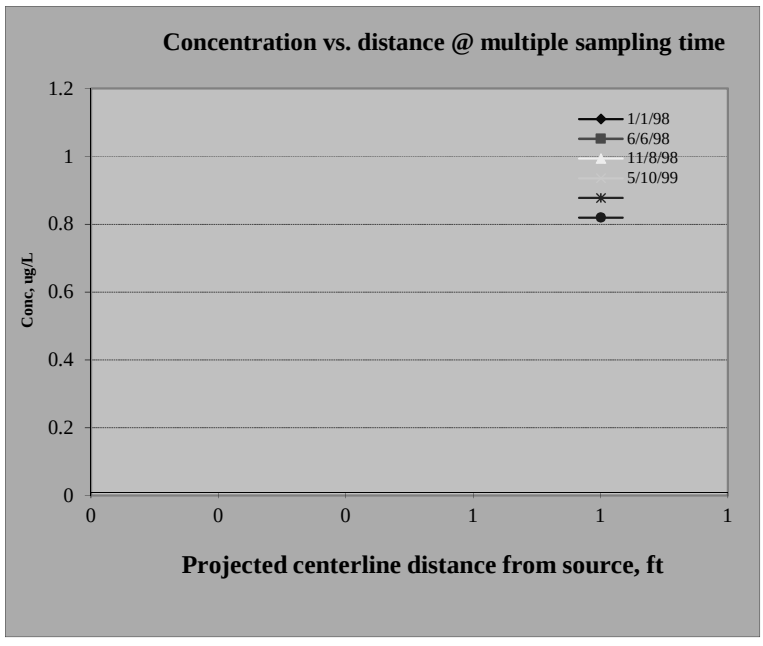




2. Spatial and Temporal Trend along Overall Plume Length for Multiple Wells:

Plot #1:	Sampling date #1	**1-Jan-98**
Plot #2:	Sampling date #2	**6-Jun-98**
Plot #3:	Sampling date #3	**8-Nov-98**
Plot #4:	Sampling date #4	**10-May-99**
Plot #5:	Sampling date #5	
Plot #6:	Sampling date #6	





Module1: Mann-Kendall Trend Test for Plume Stability (Non-parametric Statistical Test)

Site Name:	*Smokey Point Retail Center*
Site Address:	*Marysville, WA*
Additional Description:	

Well (Sampling) Location?	**MW113**
Level of Confidence (Decision Criteria)?	**85%**

1. Monitoring Well Information: Contaminant Concentration at a well: Quarterly sampling recommended.

		Hazardous Substances (unit is ug/L)					
Sampling Event	Date Sampled	Gas					
#1	5/30/2014	100					
#2	8/7/2014	380					
#3	5/20/2015	210					
#4	4/13/2016	340					
#5	7/22/2016	100					
#6	10/18/2016	160					
#7	1/16/2017	100					
#8							
#9							
#10							
#11							
#12							
#13							
#14							
#15							
#16							

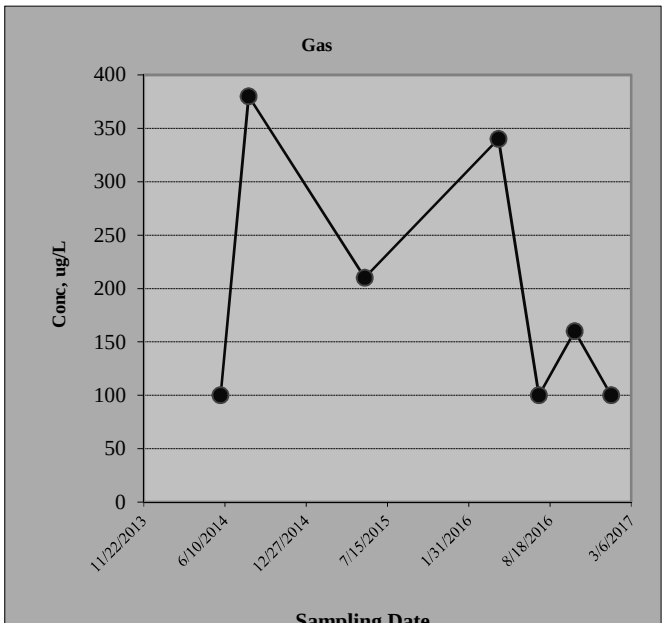
2. Mann-Kendall Non-parametric Statistical Test Results

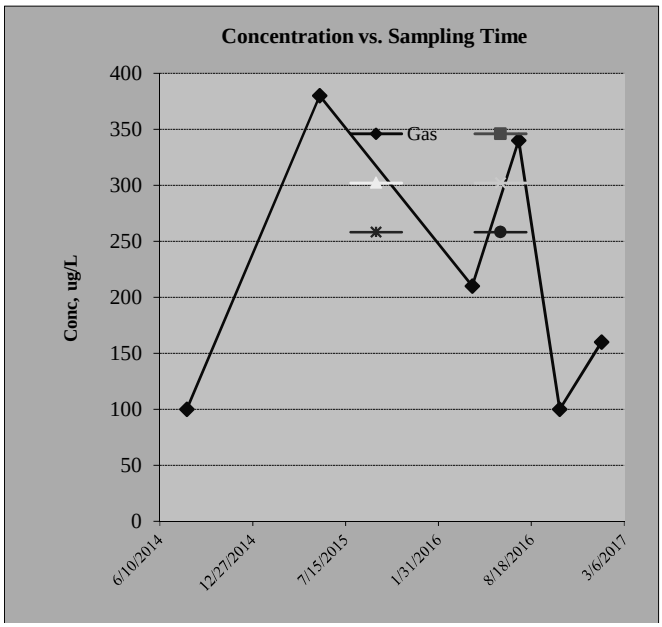
Hazardous Substance?	**Gas**					
Confidence Level Calculated?	71.90%	NA	NA	NA	NA	NA
Plume Stability?	Stable	NA	NA	NA	NA	NA
Coefficient of Variation?	CV <= 1	n<4	n<4	n<4	n<4	n<4
Mann-Kendall Statistic "S" value?	-6	0	0	0	0	0
Number of Sampling Rounds?	7	0	0	0	0	0
Average Concentration?	198.57	NA	NA	NA	NA	NA
Standard Deviation?	118.10	NA	NA	NA	NA	NA
Coefficient of Variation?	0.59	NA	NA	NA	NA	NA
Blank if No Errors found		n<4	n<4	n<4	n<4	n<4

3. Temporal Trend: Plot of Concentration vs. Sampling Time

Hazardous substance? **Gas**

Plume Stability? **Stable**





Sampling Date

Sampling Date

Module1: Mann-Kendall Trend Test for Plume Stability (Non-parametric Statistical Test)

Site Name:	*Smokey Point Retail Center*
Site Address:	*Marysville, WA*
Additional Description:	

Well (Sampling) Location?	**MW114**
Level of Confidence (Decision Criteria)?	**85%**

1. Monitoring Well Information: Contaminant Concentration at a well: Quarterly sampling recommended.

		Hazardous Substances (unit is ug/L)					
Sampling Event	Date Sampled	Gas					
#1	5/30/2014	190					
#2	8/7/2014	300					
#3	5/20/2015	100					
#4	4/13/2016	100					
#5	7/22/2016	170					
#6	1/16/2017	140					
#7							
#8							
#9							
#10							
#11							
#12							
#13							
#14							
#15							
#16							

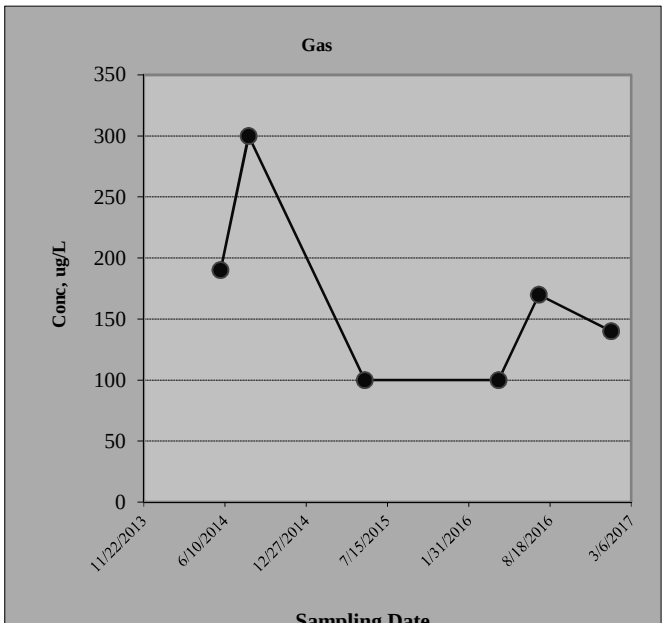
2. Mann-Kendall Non-parametric Statistical Test Results

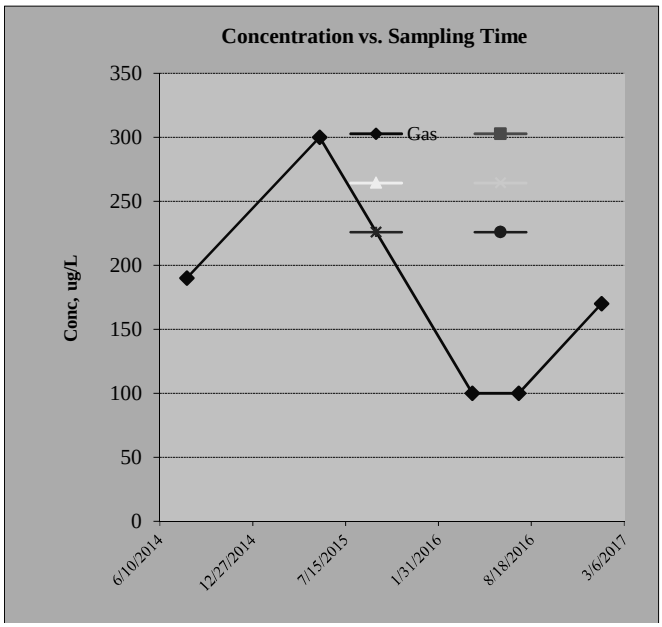
Hazardous Substance?	**Gas**					
Confidence Level Calculated?	64.00%	NA	NA	NA	NA	NA
Plume Stability?	Stable	NA	NA	NA	NA	NA
Coefficient of Variation?	CV <= 1	n<4	n<4	n<4	n<4	n<4
Mann-Kendall Statistic "S" value?	-4	0	0	0	0	0
Number of Sampling Rounds?	6	0	0	0	0	0
Average Concentration?	166.67	NA	NA	NA	NA	NA
Standard Deviation?	74.74	NA	NA	NA	NA	NA
Coefficient of Variation?	0.45	NA	NA	NA	NA	NA
Blank if No Errors found		n<4	n<4	n<4	n<4	n<4

3. Temporal Trend: Plot of Concentration vs. Sampling Time

Hazardous substance? **Gas**

Plume Stability? **Stable**





Sampling Date

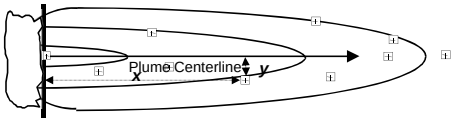
Sampling Date

ATTACHMENT C

Benzene Plume Stability Analysis

Module 2: Inputs: Enter Historical Ground Water Data

Site Name:	*Smokey Point Retail Center*
Site Address:	*Marysville, WA*
Additional Description:	
Hazardous Substance	*Benzene*



1. Monitoring Well information: Contaminant Concentration at a well: Note: relationship of "y/x ≤ 0.33" is preferred

Well Location:		Unit		MW112	MW113	MW114													
Dist from source, x-direction		ft																	
Off-centerline dist, y-direction		ft																	
Sampling Event	Date sampled	day	Unit of concentration is ug/L																
#1	5/30/14	0		570	1.8	25													
#2	8/7/14	69		140	16	43													
#3	5/20/15	355		24	11	5.4													
#4	4/13/16	684		2.2	3	12													
#5	7/22/16	784		0.79	0.35	10													
#6	10/18/16	872		0.35	1.6	37													
#7	1/16/17	962		17	0.44	11													
#8																			
#9																			
#10																			
#11																			
#12																			
#13																			
#14																			
#15																			
#16																			
#17																			
#18																			
#19																			
#20																			
Average Concentration			na	107.8	4.9	20.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maximum Concentration			NA	570	16	43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Minimum Concentration			NA	0.35	0.35	5.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

2. Groundwater Elevation:

Well Location:																			
Sampling Event	Date sampled	Day																	
#1	5/30/14	0		95.46	95.44	95.15													
#2	8/7/14	69		94.2	94.06	93.79													
#3	5/20/15	355		94.64	94.57	94.29													
#4	4/13/16	684		95.96	95.91	95.57													
#5	7/22/16	784		94.44	94.35	94.03													
#6	10/18/16	872		94.47	94.38	94.13													
#7	1/16/17	962		95.5	95.42	95.09													
#8																			
#9																			
#10																			
#11																			
#12																			
#13																			
#14																			
#15																			
#16																			
#17																			
#18																			
#19																			
#20																			

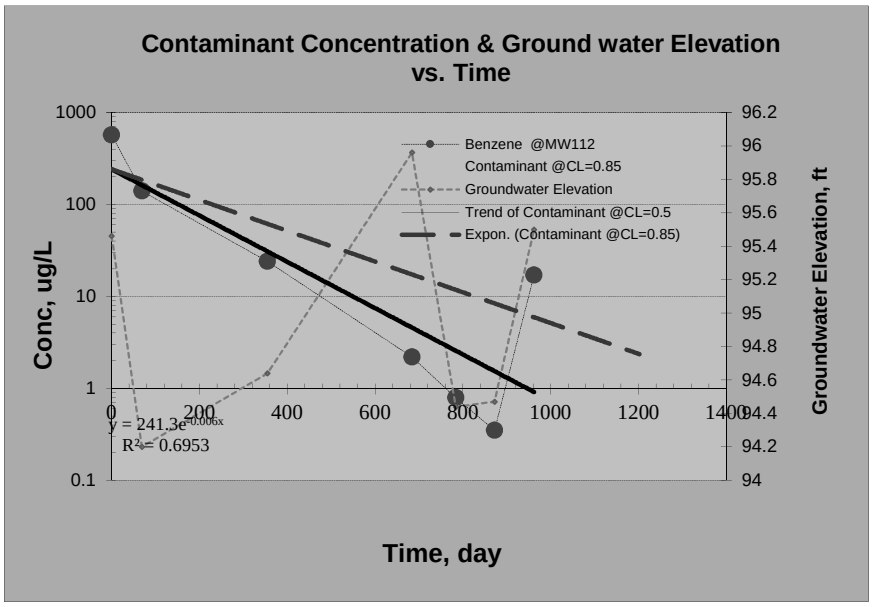
Module 2: Graphical Presentation of Historical Ground Water Data: (Well to Well Analysis)

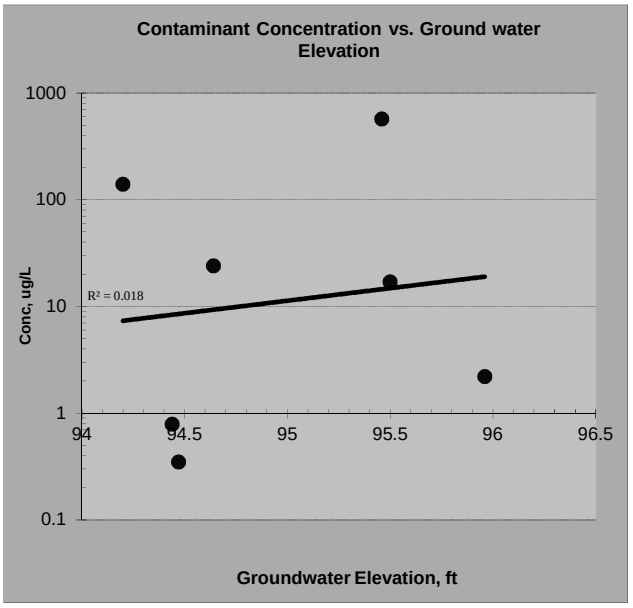
Site Name: *Smokey Point Retail Center*
Site Address: *Marysville, WA*
Additional Description: *0*
Hazardous Substance *Benzene*

1. Temporal Trend at a Well (Concentration vs. Time & Groundwater Elevation : well-to-well analysis)

Name of Sampling Well?	**MW112**	Confidence Level (Decision Criteria)?	85.0%

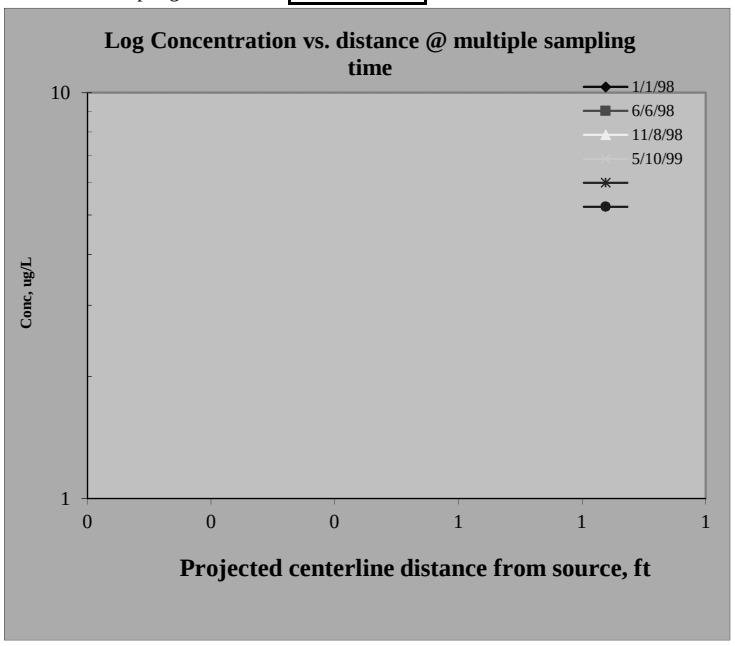
Confidence Level calculated with log-linear regression is?	*98.029%*		
Plume Stability?	Shrinking	; Decision Criteria is 85%.	
Slope: Point decay rate constant (k_{point}), yr^{-1}	*2.116* @50% C.L.;	*1.406*	@85% C.L.
Half Life for k_{point}, yr	*0.328* @50% C.L.;	*0.493*	@85% C.L.

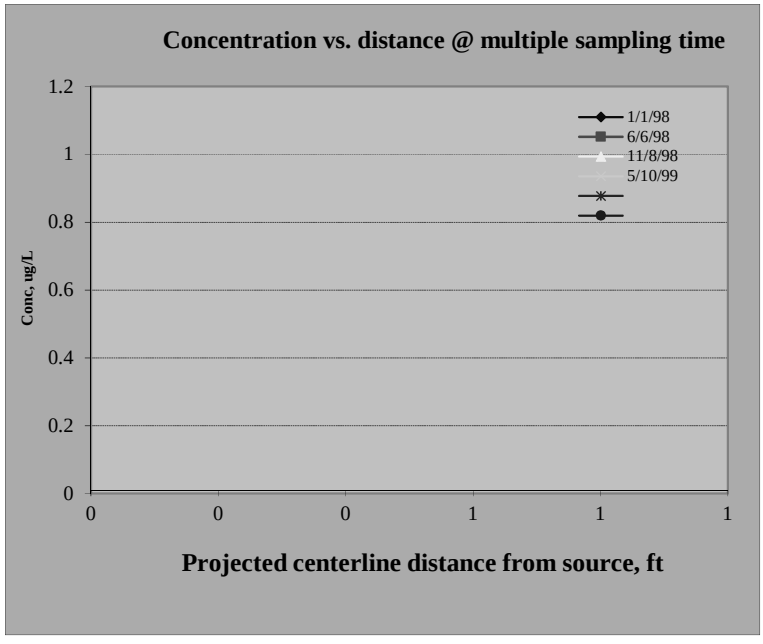




2. Spatial and Temporal Trend along Overall Plume Length for Multiple Wells:

Plot #1:	Sampling date #1	**1-Jan-98**
Plot #2:	Sampling date #2	**6-Jun-98**
Plot #3:	Sampling date #3	**8-Nov-98**
Plot #4:	Sampling date #4	**10-May-99**
Plot #5:	Sampling date #5	
Plot #6:	Sampling date #6	





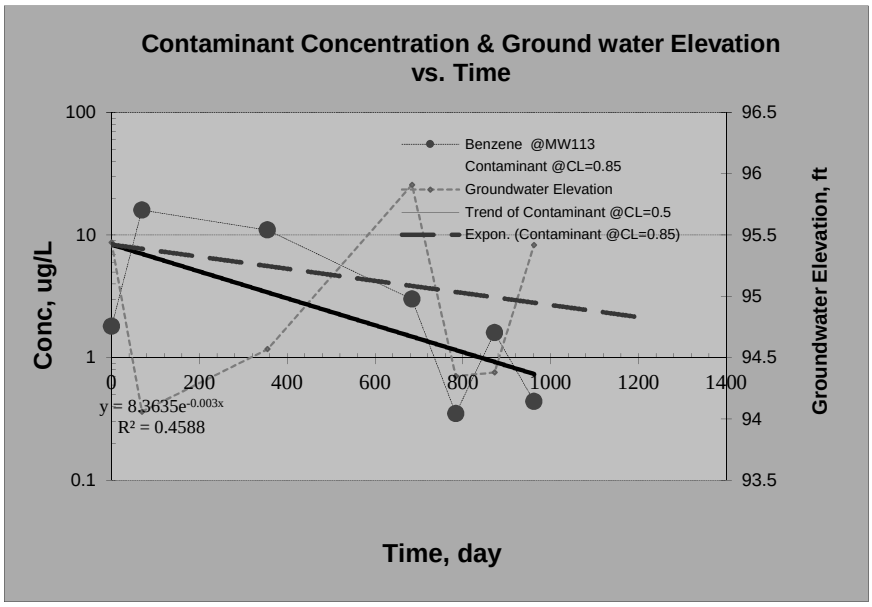
Module 2: Graphical Presentation of Historical Ground Water Data: (Well to Well Analysis)

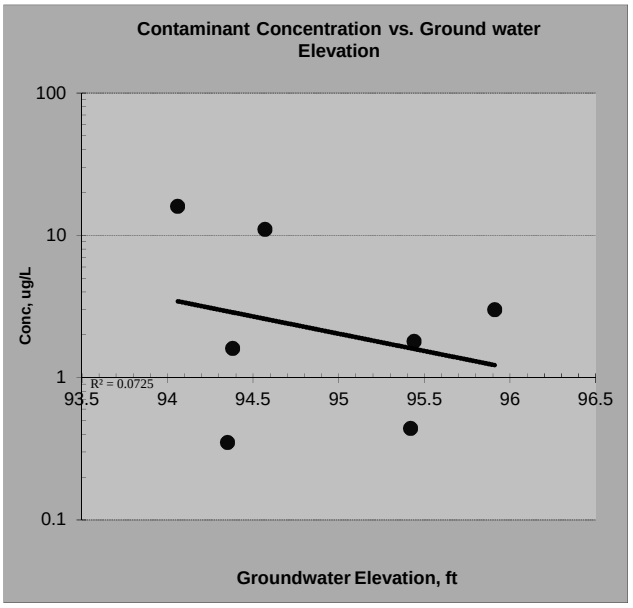
Site Name: *Smokey Point Retail Center*
Site Address: *Marysville, WA*
Additional Description: *0*
Hazardous Substance *Benzene*

1. Temporal Trend at a Well (Concentration vs. Time & Groundwater Elevation : well-to-well analysis)

Name of Sampling Well?	**MW113**	Confidence Level (Decision Criteria)?	85.0%

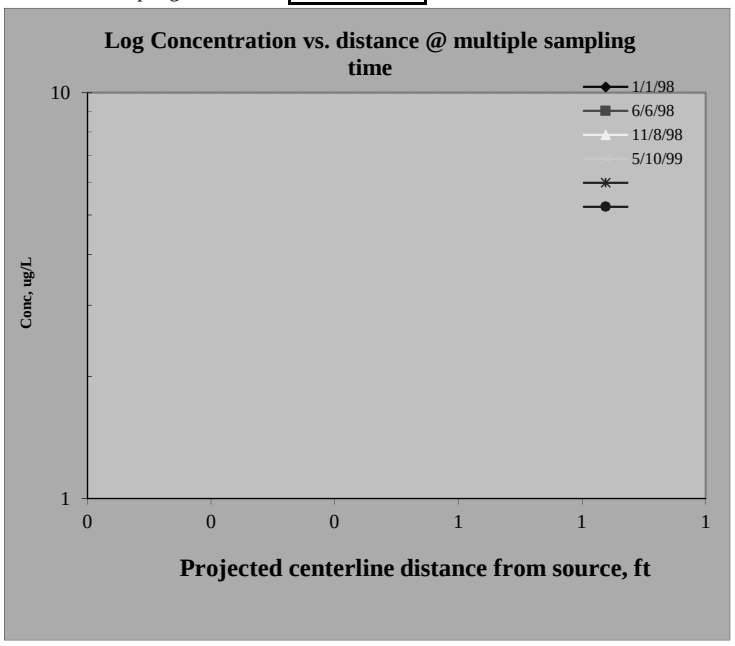
Confidence Level calculated with log-linear regression is?	*90.543%*		
Plume Stability?	Shrinking	; Decision Criteria is 85%.	
Slope: Point decay rate constant (k_{point}), yr^{-1}	*0.922* @50% C.L.;	*0.414*	@85% C.L.
Half Life for k_{point}, yr	*0.752* @50% C.L.;	*1.674*	@85% C.L.

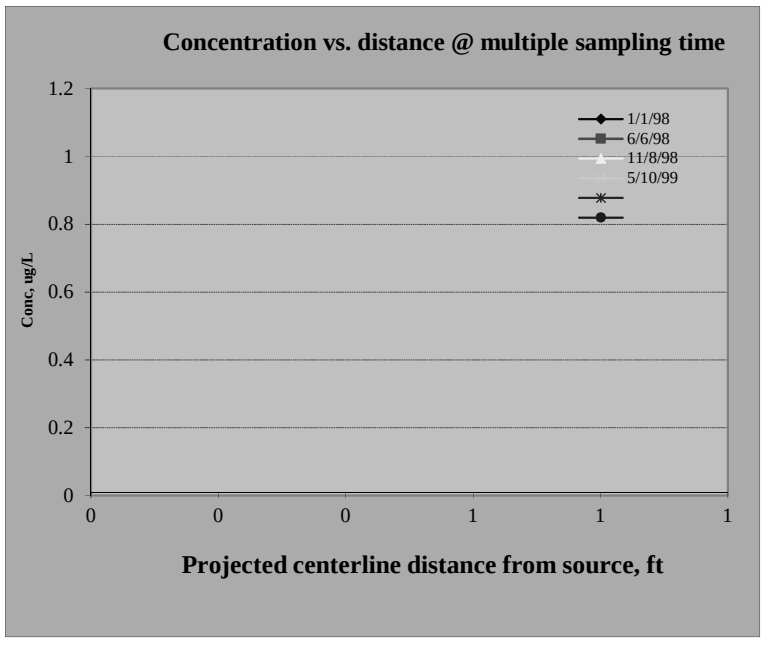




2. Spatial and Temporal Trend along Overall Plume Length for Multiple Wells:

Plot #1:	Sampling date #1	**1-Jan-98**
Plot #2:	Sampling date #2	**6-Jun-98**
Plot #3:	Sampling date #3	**8-Nov-98**
Plot #4:	Sampling date #4	**10-May-99**
Plot #5:	Sampling date #5	
Plot #6:	Sampling date #6	





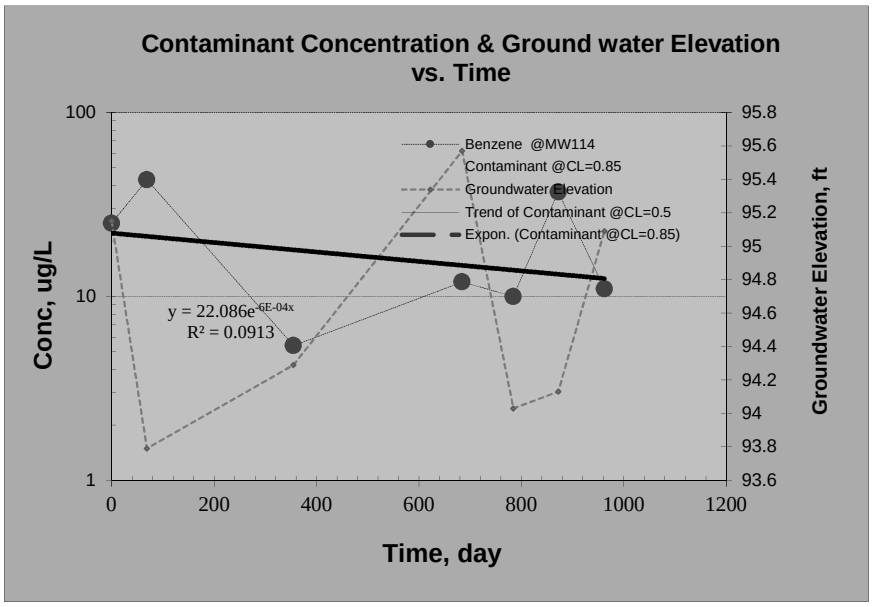
Module 2: Graphical Presentation of Historical Ground Water Data: (Well to Well Analysis)

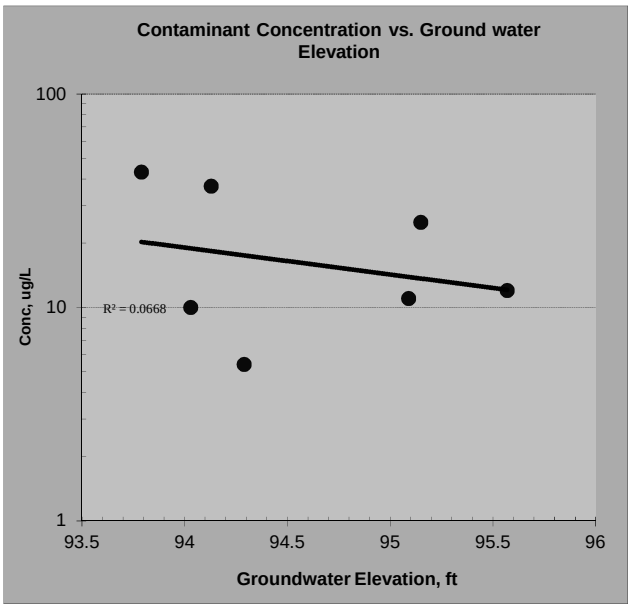
Site Name: *Smokey Point Retail Center*
Site Address: *Marysville, WA*
Additional Description: *0*
Hazardous Substance *Benzene*

1. Temporal Trend at a Well (Concentration vs. Time & Groundwater Elevation : well-to-well analysis)

Name of Sampling Well?	**MW114**	Confidence Level (Decision Criteria)?	85.0%

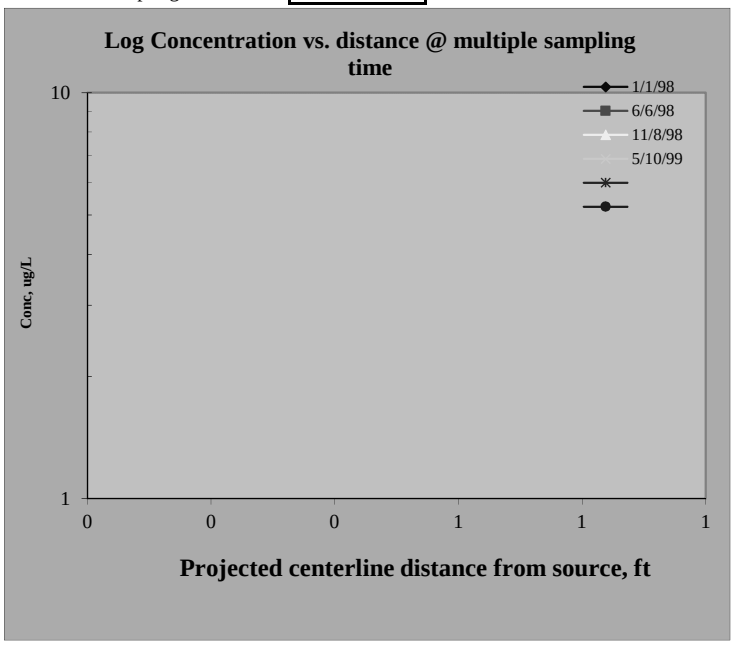
Confidence Level calculated with log-linear regression is?	*48.985%*		
Plume Stability?	Stable	; Decision Criteria is 85%.	
Slope: Point decay rate constant (k_{point}), yr^{-1}	*0.216* @50% C.L.;	*NA* @85% C.L.	
Half Life for k_{point}, yr	*3.214* @50% C.L.;	*NA* @85% C.L.	

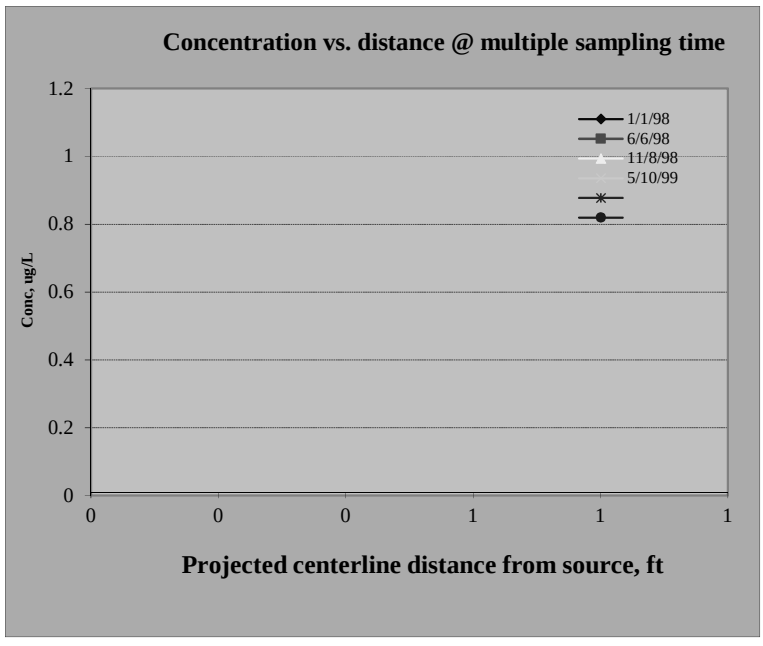




2. Spatial and Temporal Trend along Overall Plume Length for Multiple Wells:

Plot #1:	Sampling date #1	**1-Jan-98**
Plot #2:	Sampling date #2	**6-Jun-98**
Plot #3:	Sampling date #3	**8-Nov-98**
Plot #4:	Sampling date #4	**10-May-99**
Plot #5:	Sampling date #5	
Plot #6:	Sampling date #6	





Module1: Mann-Kendall Trend Test for Plume Stability (Non-parametric Statistical Test)

Site Name:	*Smokey Point Retail Center*
Site Address:	*Marysville, WA*
Additional Description:	

Well (Sampling) Location?	**MW114**
Level of Confidence (Decision Criteria)?	**85%**

1. Monitoring Well Information: Contaminant Concentration at a well: Quarterly sampling recommended.

		Hazardous Substances (unit is ug/L)					
Sampling Event	Date Sampled	Benzene					
#1	5/30/2014	25					
#2	8/7/2014	43					
#3	5/20/2015	5.4					
#4	4/13/2016	12					
#5	7/22/2016	10					
#6	10/18/2016	37					
#7	1/16/2017	11					
#8							
#9							
#10							
#11							
#12							
#13							
#14							
#15							
#16							

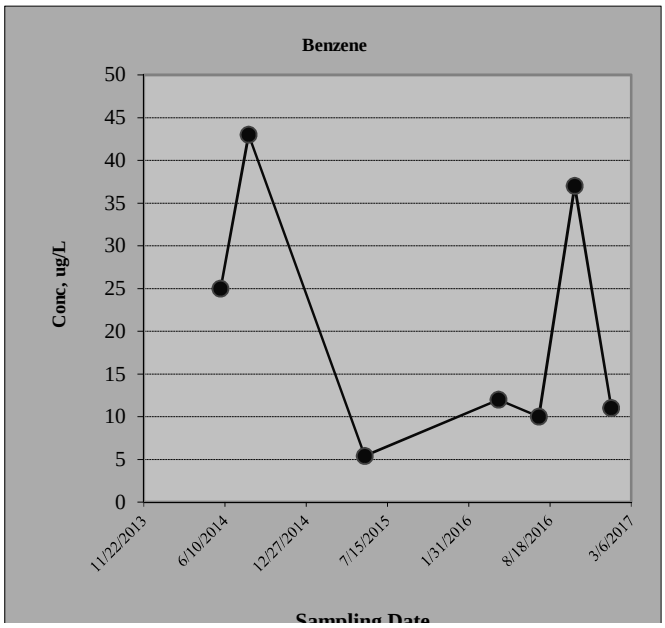
2. Mann-Kendall Non-parametric Statistical Test Results

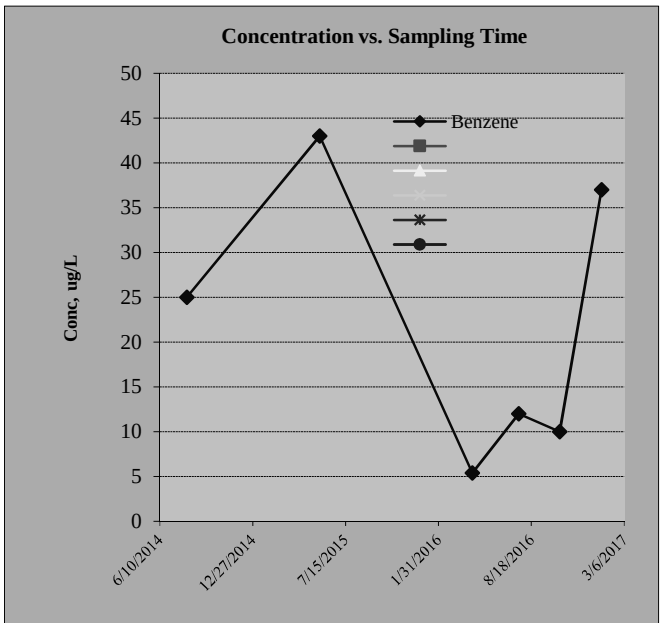
Hazardous Substance?	**Benzene**					
Confidence Level Calculated?	61.40%	NA	NA	NA	NA	NA
Plume Stability?	Stable	NA	NA	NA	NA	NA
Coefficient of Variation?	CV <= 1	n<4	n<4	n<4	n<4	n<4
Mann-Kendall Statistic "S" value?	-3	0	0	0	0	0
Number of Sampling Rounds?	7	0	0	0	0	0
Average Concentration?	20.49	NA	NA	NA	NA	NA
Standard Deviation?	14.72	NA	NA	NA	NA	NA
Coefficient of Variation?	0.72	NA	NA	NA	NA	NA
Blank if No Errors found		n<4	n<4	n<4	n<4	n<4

3. Temporal Trend: Plot of Concentration vs. Sampling Time

Hazardous substance? **Benzene**

Plume Stability? **Stable**





Sampling Date

Sampling Date