King County Department of Natural Resources and Parks

Solid Waste Division

Phase 1 – Vashon Landfill
CONTRACT NO. E00102E08
Task No. 310.1.6.4

Vashon Landfill – Influence Testing Summary Report

D310.1.6.4.2

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King County
Department of
Natural Resources and Parks
Solid Waste Division

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VASHON LANDFILL – INFLUENCE TESTING SUMMARY REPORT

Contract No. E00102E08

Prepared for: King County Solid Waste Division

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

Aspect Consulting, LLC (Aspect) has prepared this Influence Test Summary Report (Report) at the Vashon Island Closed Landfill (Landfill) for King County Solid Waste Division (KCSWD) under Contract Number: E00102E08 for Environmental Investigations, Monitoring, and Remediation Services for Closed Landfills. This Report describes activities for landfill gas (LFG) influence testing at the Landfill completed under Task 310.1.6.4 based on the *Landfill Gas Influence Testing Work Plan – Vashon Landfill* (Work Plan; Herrera, 2016). Specifically, this Report documents influence testing of a new LFG extraction well GW-9 to determine lateral and vertical effectiveness in controlling LFG migration at the south end of the Landfill. Further, we present recommendations for long-term LFG collection from GW-9 and for additional LFG collection system infrastructure. A site location map is provided in Figure 1.

2.0 BACKGROUND

This section provides a background on the preparation for LFG influence testing and expansion to the LFG collection system. A background discussion of historical LFG investigations whose results contributed to developing the basis of this influence test is described in the Work Plan (Herrera, 2016). The following subsections describe extraction well and temporary probe installation activities supporting the influence test.

2.1 LFG Collection System Expansion and Temporary Probe Installation

A vertical LFG extraction well (GW-9) was installed in August 2016 to enhance the control of LFG. In September 2016, King County Solid Waste Division (KCSWD) installed a lateral conveyance pipe connected to EF-1 in order to provide vacuum from the existing LFG extraction system to GW-9 (Figure 2). A 2-inch diameter gate valve and Flo-Wing monitoring assembly were installed at the downstream end of the lateral conveyance pipe near the connection point to EF-1.

Temporary probes (VTP-3S, VTP-3D, VTP-4S, and VTP-4D) were installed in August 2016 to supplement existing probes VTP-2S and VTP-2D, assess the extent of LFG migration, and monitor the performance of GW-9 at controlling LFG migration during the influence test. VTP-2S monitors conditions in the soil cover above the refuse. The new shallow probes and VTP-2D monitor conditions in refuse, whereas the new deep probes monitor conditions in the underlying native deposits. Installation details for the extraction well and temporary probe installations are described in *Vashon Landfill – Landfill Gas Extraction Well and Temporary Probe Installation Technical Memorandum* (Aspect, 2016). Table 1 lists the construction details for LFG extraction well GW-9 and temporary gas probes monitored during the influence test.

2.2 Additional Temporary Probe Installation

Two additional temporary probe pairs (VTP-5S, VTP-5D, VTP-6S, and VTP-6D) were installed during the influence test in January 2017 to further investigate the extent of refuse, assess the potential for methane migration, and support the determination of the radius of influence of GW-9. Installation details for the

additional probes are described in *Vashon Landfill – Temporary Landfill Gas Probe Installation Technical Memorandum* (Aspect, 2017). Table 1 lists the construction details for the additional temporary gas probes monitored during the influence test.

3.0 INFLUENCE TEST MONITORING

The LFG influence test was performed in general accordance with the Work Plan, incorporating additional monitoring at VTP-5S/D and VTP-6S/D. Influence test monitoring was performed at the extraction well GW-9 and at existing temporary gas probes VTP-2S/D and new temporary gas probes VTP-3S/D through VTP-6S/D to determine vacuum influence within refuse and in the native deposits below refuse.

Influence testing was conducted in three phases: baseline, startup, and optimization. Monitoring during the influence test included select probes for continuous LFG measurements using a GasClam or pressure sensors. In addition, periodic manual LFG measurements were collected using a GEM 2000 field instrument. Table 2 provides the instrumentation schedule summary for monitoring locations. All locations were periodically monitored manually during the influence test, as presented in Table 3. Daily field reports summarizing each influence test visit are included in Appendix A. The following sections describe operation and monitoring during each phase.

3.1 Baseline LFG Monitoring

Baseline LFG monitoring was conducted between August 24 and September 14, 2016. Baseline monitoring occurred during three separate weekly visits and included manual measurements with a GEM 2000 and automated measurements with six GasClam instruments.

Manual LFG measurements were collected at VTP-2D, VTP-3S/D, and VTP-4S/D using methods described in the Work Plan. Individual probe manual LFG measurements are included in Table 3.

Automated LFG measurements were collected during baseline monitoring using five GasClam units owned by KCSWD (see Table 2). Three units were deployed on August 24 (VTP-2D, VTP-3D, and VTP-4D) and two units were deployed on September 8 (VTP-3S and VTP-4S). A sixth GasClam was deployed at GW-9 but remained offline during baseline monitoring until the lateral to the extraction well was connected by KCSWD. Daily average automated LFG measurement data collected during baseline monitoring are summarized in Tables 4 through 9.

3.2 Startup Operations and Monitoring

Startup occurred on September 14, 2016. During startup, the valve at GW-9 was opened to induce approximately 10 standard cubic feet per minute (SCFM) flow rate. The flow rate was estimated by measuring the differential pressure[1] across a 2-inch Flo-Wing monitoring assembly.

Startup monitoring was conducted on a weekly basis for approximately one month between September 14 and October 12, 2016. Weekly startup monitoring events included the following tasks:

- Calibrate equipment and collect manual measurements of LFG concentrations at VTP-2D, VTP-3S/D, VTP-4S/D, and GW-9 using a GEM 2000 multigas meter.
- Download and review GasClam time-series data at VTP-2D, VTP-3S/D, VTP-4S/D, and GW-9. Verify oxygen (O_2) concentration and temperature at GW-9 are below thresholds described in the Work Plan.
- Measure induced vacuum and flow rate at GW-9. To maintain flow at 10 SCFM, minor adjustments were made via gate valve, as necessary.

During startup, minor maintenance to the lateral between GW-9 and EF-1 was required to alleviate trapped condensate at the downstream end of the conveyance pipe. Wellhead assemblies at probes with GasClams were modified to prevent leaks and provide more representative gas concentrations.

3.3 Optimization Operations and Monitoring

Optimization operations were conducted between October 12, 2016, and March 1, 2017. Optimization monitoring was conducted on a monthly basis during this approximate 5-month period. Monthly monitoring events included the following tasks:

- Calibrate equipment and collect manual measurements of LFG concentrations at VTP-2D, VTP-3S/D, VTP-4S/D, and GW-9 using a GEM 2000 multigas meter;
- Download and review GasClam time-series data at VTP-2D, VTP-3S/D, VTP-4S/D, and GW-9. Verify O_2 concentration and temperature at GW-9 are below thresholds described in the Work Plan;
- Replace batteries and moisture filters on GasClam instruments;
- Bump test and/or calibrate GasClam instruments as necessary; and
- Measure and maintain induced vacuum and flow rate at GW-9. Minor adjustments made via gate valve as necessary to maintain desired flow rate.

[1] Differential pressure is the difference between the pressures measured across the Flo-Wing monitoring assembly, and is used to calculate flow.

Following startup monitoring, GasClams at VTP-2D, VTP-4S, and VTP-4D were removed for service and/or alternative deployment (see Table 2). PT2X pressure transducers were installed at VTP-2D, VTP-4S, and VTP-4D to measure static pressure[2] induced by flow from GW-9. Additionally, a barometric pressure transducer was installed near GW-9 to measure barometric influence. A GasClam was re-installed at VTP-4S on November 18, 2016, following routine annual service. PT2X transducers were installed at VTP-5D and VTP-6D on February 9, 2017, for the remainder of the influence test.

The target flow rate at GW-9 was adjusted on December 12, 2016, from 10 SCFM to 15 SCFM. The flow rate was increased to provide more aggressive LFG migration control, consistent with objectives in the work plan (Aspect, 2016). This decision was based on elevated methane concentrations in several vapor probes, and reliable LFG collection at GW-9 with little to no oxygen.

During optimization monitoring, minor data losses occurred at the GasClam units due to freezing temperatures starting in early December and periodically throughout the remainder of the influence test. PT2X pressure transducers were not impacted by freezing temperatures. Data at VTP-3S was not collected between November 10 and December 11, 2016, due to equipment malfunction.

4.0 SUMMARY

Methane concentrations generally decreased over the duration of the influence test between baseline measurements and final measurements at GW-9, VTP-2D, VTP-3S/D, and VTP-4S/D. LFG concentrations at VTP-5S/D were elevated compared to other probe locations. Little to no LFG was observed at VTP-6S/D. Manual LFG measurement data are summarized in Table 3. Automated GasClam and PT2X data are included in Tables 4 through 11, and displayed on Figure 5. The following is a summary of observations at each monitoring location:

- **GW-9:** Methane concentration decreased from approximately 32% at the start of the influence test to approximately 3%. Carbon dioxide (CO_2) concentration decreased from approximately 28% to 17% during the influence test. Little O_2 has been observed during the influence test.
- **VTP-2D:** LFG measurements were highly variable during the baseline and startup portions of the influence test. GasClam monitoring was ceased after the startup portion of the test and a PT2X was installed to monitor static pressure in addition to manual LFG measurements during each visit. Fluctuating methane concentration greater than 39% were observed during baseline; however, after startup methane fluctuations were attenuated, and manual measurements did not show methane concentration greater than 11%. During the final half of the optimization phase, methane concentration remained below 1%.

[2] Static pressure measures the subsurface pressure, which is typically negative within the influence of an active LFG collection system.

- **VTP-3S**: Methane concentration decreased from approximately 9% at the start of the influence test to below 1%. CO_2 concentration remain elevated at approximately 22% for the duration of the influence test. Little O_2 has been observed during the influence test.
- **VTP-3D:** Methane concentration up to 21% were observed during baseline and at the start of the influence test. Concentration dropped below 1% over the course of influence testing. CO_2 concentration remained elevated at approximately 12% at the end of the influence test. Little O_2 was observed during the influence test.
- **VTP-4S:** Methane concentration up to 61% were observed during baseline and through the startup phase of the influence test. Methane concentration began to decline in November and dropped off in December, after the flow rate at GW-9 was increased. Concentration dropped below 1% over the remainder of influence testing. CO_2 concentration decreased significantly after increasing the flowrate at GW-9. O_2 concentration at this probe were highly variable for the duration of the influence test.
- **VTP-4D:** Methane concentration decreased from approximately 2% at the start of the influence test to below 1%. CO_2 concentration decreased from 14% to below 1% over the duration of the influence test. O_2 concentration at this probe were highly variable for the duration of the influence test.
- **VTP-5S:** Limited data available for this probe shows methane concentration above 50% and indicates that the probe is likely located outside of the GW-9 radius of influence. CO_2 concentration were above 20%.
- **VTP-5D:** Limited data available for this probe showed methane concentration below 2% and CO_2 concentration above 9%. Pairing of this probe with VTP-5S indicates that it is likely located outside of the GW-9 radius of influence.
- **VTP-6S:** Limited data available for this probe shows low level methane concentration of approximately 0.1%. O_2 is near ambient levels and CO_2 has not been measured.
- **VTP-6D:** Limited data available for this probe shows no measurable methane. CO_2, however, has been measured between 2% and 7%. O_2 is less than ambient levels.

The GW-9 radius of influence is inferred to extend approximately 100 feet laterally in the refuse and native soils based on the observed induced vacuums. Measured methane concentration within this inferred radius of influence (at VTP-2D, VTP-3S/D, and VTP-4S/D) have decreased to below 1% during the influence test. Figure 3 shows the comparison of methane concentration in the refuse (shallow probes) at startup and at the end of the influence test. Figure 4 shows the comparison of methane concentration below the refuse in native soils (deep probes) at startup and at the end of the influence test. A comparison of vacuum versus distance from GW-9 for each LFG probe is displayed on Figure 6.

5.0 CONCLUSION AND RECOMMENDATIONS

The influence test demonstrated that the effective radius of influence of GW-9 in the South Slope is approximately 100 feet. Operation of GW-9 successfully reduced methane concentration within the radius of influence in both the refuse (shallow zone) and underlying native soils (deep zone) to below 1%. These results indicate that operation of GW-9 potentially restricted the gas-to-groundwater transport pathway within the radius of influence.

Continued operation of GW-9 is recommended to mitigate a portion of LFG migration into the South Slope refuse. Additionally, continued monitoring at temporary gas probes is recommended to verify ongoing collection and to establish trends at VTP-5S/D and VTP-6S/D.

Additional extraction wells may be warranted to fully capture LFG migration in the South Slope refuse area. Up to two additional gas extraction wells are recommended at the estimated radius of influence, and approximate locations are shown on Figure 7. However, in order to effectively locate extraction wells to maximize LFG collection potential, additional characterization of the South Slope is recommended to understand the lateral boundaries of refuse and LFG on the South Slope and to identify preferential LFG migration pathways from the main landfill refuse area. Up to six borehole explorations are recommended to determine refuse depth and would be drilled and completed as gas probes in the following locations:

- Two gas probes located in the South Slope area to define refuse depth and LFG extent;
- Two relatively shallow gas probes completed within the gravel layer close to the south perimeter LFG collection lateral (EF-1), but outside the 2001 liner limits, for purpose of monitoring potential LFG migration from the main waste area into the South Slope area; and
- Two gas probes located in the Northwest Perimeter Road area. Previous gas probe exploration in the Northwest Perimeter Road area encountered glacial till. One of the two new probes will be completed in more permeable soils beneath the till.

Approximate locations for future gas probes are also shown on Figure 7, and actual locations will be contingent on the delineation of the extent of refuse and additional exploration work proposed in Amendment 10.

Once additional extraction well locations are chosen and extraction wells are installed, influence testing is recommended to optimize LFG control with the new extraction wells. Based on results of the GW-9 influence test, a shorter-duration influence test of 3 months is recommended to verify LFG control at the new extraction wells.

6.0 REFERENCES

Aspect Consulting, LLC (Aspect), 2016, Vashon Landfill – Landfill Gas Extraction Well and Temporary Gas Probe Installation Technical Memorandum, Contract No. E00102E08, Prepared for King County Solid Waste Division, July 8, 2016.

Aspect Consulting, LLC (Aspect), 2017, Vashon Landfill – Temporary Landfill Gas Probe Installation Technical Memorandum, Contract No. E00102E08, Prepared for King County Solid Waste Division, March 20, 2016.

Herrera Environmental Consultants, Inc. (Herrera), 2016, Landfill Gas Influence Testing Work Plan – Vashon Landfill, Contract No. E00102E08, Prepared for King County Solid Waste Division, September 9, 2016

Tables

Table 1 - Summary of LFG Extraction Well and Temporary Probe Construction Details

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Monitoring Location	Installation Date	Coordinates (Washington State Plane, North, feet)		Ground Surface Elevation (feet NAVD88)	Top of Casing Elevation (feet NAVD88)	Well Stickup (feet) [a]	Total Well Depth (feet bgs)	Screen Setting Depth (feet bgs) [b]	Screen Setting Elevation (feet NAVD 88)	Screen Length (feet)
		Northing	Easting							
GW-9	8/10/2016	162728.3	1227985.8	358.19	362.28	4.09	35	17-35	341.2-323.2	18
VTP-2S	12/1/2015	162657	1227925	353	356	3.00	10	7.5–10.0	345.5-343	2.5
VTP-2D	12/1/2015	162642	1227927	348	352	3.50	27.5	25.0–27.5	323-320.5	2.5
VTP-3S	8/5/2016	162716.8	1228041.8	362.15	365.90	3.75	27.5	25.0–27.5	337.2-334.7	2.5
VTP-3D	8/8/2016	162717.2	1228037.3	361.58	365.08	3.50	38.5	36.0–38.5	325.6-323.1	2.5
VTP-4S	8/4/2016	162740.6	1227926.9	358.58	362.58	4.00	25	22.5–25.0	336.1-333.6	2.5
VTP-4D	8/9/2016	162742.7	1227935.1	358.08	361.86	3.78	54	51.5–54.0	306.6-304.1	2.5
VTP-5S	1/9/2017	162777.8	1227865.0	360.01	363.38	3.37	19	15 - 17.5	343.5-341.0	2.5
VTP-5D	1/9/2017	162780.2	1227860.0	359.69	363.09	3.40	28	24 - 26.5	334.2-331.7	2.5
VTP-6S	1/10/2017	162560.1	1227891.8	324.51	328.25	3.74	10	6.5 - 9	317.0-314.5	2.5
VTP-6D	1/10/2017	162557.7	1227887.2	324.84	328.31	3.47	23	18.5 - 21	304.3-301.8	2.5

Notes

bgs - below ground surface

[a] Well stickup relative to ground surface.

[b] Screen settings based on construction logs.

Ground surface elevation for VTP-2D and VTP-2D are approximate and based off of King Co. LIDAR 2003 survey. All other probe and extraction well locations were surveyed by KCSWD survey.

Table 2 - Probe Instrumentation

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Monitoring Location	Baseline 8/24/2016 to 9/14/2016	Startup 9/14/2016 to 10/12/2016	Optimization 10/12/2016 to 2/28/2017
GW-9	Not instrumented	Gas Clam Installed 9/14/2016 to 2/28/2017	
VTP-2S	Not instrumented		
VTP-2D	Gas Clam installed 8/14/2016 to 10/12/2016		PT2X installed 10/12/2016 to 2/28/2017
VTP-3S	Gas Clam installed 9/8/2016 to 10/12/2016		Gas Clam installed 10/12/2016 to 2/28/2017
VTP-3D	Gas Clam installed 8/24/2016 to 2/28/2017		
VTP-4S	Gas Clam installed 8/24/2016 to 10/12/2016		PT2X installed 10/12/2016 to 11/18/2016 Gas Clam installed 11/18 to 2/28/2017
VTP-4D	Gas Clam installed 8/24/2016 to 10/12/2016		PT2X installed 10/12/2016 to 2/28/2017
VTP-5S	Probe installed 1/9/2017		PT2X installed 2/9/2017 to 2/28/2017
VTP-5D	Probe installed 1/9/2017		PT2X installed 2/9/2017 to 2/28/2017
VTP-6S	Probe installed 1/10/2017		Not Instrumented
VTP-6D	Probe installed 1/10/2017		PT2X installed 2/9/2017 to 2/28/2017

Table 3 - Manual LFG Measurement Summary

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Location	Date	CH4 (%vol)	CO2 (%vol)	O2 (%vol)	Static Pressure (inwc)	Barometric Pressure (inHg)
VTP-2D	8/24/2016	2.0	3.4	15.0	0.0	29.77
	9/8/2016	0.0	0.0	20.4	-0.1	29.79
	9/14/2016	0.4	1.2	19.5	0.0	29.53
	9/21/2016	0.0	0.0	20.7	-0.1	29.59
	9/28/2016	0.0	0.0	20.2	-0.1	29.63
	10/5/2016	0.1	0.0	20.6	-0.2	29.37
	10/12/2016	5.9	11.6	3.4	0.1	29.55
	11/9/2016	10.4	21.5	4.0	-0.3	29.8
	1/12/2017	0.0	0.0	21.2	-0.9	29.83
	2/9/2017	0.2	0.2	19.7	0.0	28.82
	3/1/2017	0.2	0.2	20.1	0.0	29.93
VTP-3S	8/24/2016	4.2	7.1	7.6	0.2	29.77
	9/8/2016	0.9	3.4	16.8	-0.6	29.79
	9/14/2016	9.5	16.4	4.3	-0.5	29.53
	9/21/2016	8.2	22.0	0.0	-0.4	29.59
	9/28/2016	3.0	21.3	0.0	-0.4	29.63
	10/5/2016	1.3	18.4	2.5	-0.5	29.37
	10/12/2016	2.0	20.5	0.0	0.3	29.55
	11/9/2016	1.0	10.8	7.5	-0.4	29.8
	12/12/2016	0.9	21.1	0.0	-3.0	29.72
	1/12/2017	0.7	18.6	0.0	-2.8	29.79
	2/9/2017	0.4	18.4	0.0	0.3	28.88
	3/2/2017	0.9	20.8	0.0	-3.5	29.97
VTP-3D	8/24/2016	12.0	10.8	5.4	-0.1	29.77
	9/8/2016	19.1	15.8	5.3	-0.7	29.79
	9/14/2016	21.2	21.8	1.3	-0.4	29.53
	9/21/2016	16.1	22.7	0.0	-0.4	29.59
	9/28/2016	11.6	22.5	0.0	-0.4	29.63
	10/5/2016	8.3	22.9	0.0	-0.6	29.37
	10/12/2016	7.3	21.5	0.0	0.4	29.55
	11/9/2016	3.0	17.7	0.0	-0.4	29.79
	12/12/2016	1.6	18.6	0.0	-2.4	29.72
	1/12/2017	0.6	13.7	0.0	-2.9	29.79
	2/9/2017	0.5	12.2	0.0	0.3	28.88
	3/2/2017	0.7	14.1	0.0	-3.2	29.97

Table 3 - Manual LFG Measurement Summary

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Location	Date	CH4 (%vol)	CO2 (%vol)	O2 (%vol)	Static Pressure (inwc)	Barometric Pressure (inHg)
VTP-4S	8/24/2016	58.4	37.0	0.1	0.2	29.77
	9/8/2016	29.5	25.0	6.8	-0.5	29.79
	9/14/2016	57.2	36.8	0.5	0.0	29.53
	9/21/2016	61.0	37.5	0.3	-1.0	29.59
	9/28/2016	48.2	32.3	3.2	-1.0	29.63
	10/5/2016	54.0	36.9	0.8	-0.8	29.39
	10/12/2016	56.0	37.0	0.0	0.3	29.55
	11/9/2016	27.3	22.4	8.6	-0.3	29.8
	12/12/2016	12.3	17.1	2.4	-0.1	29.69
	1/12/2017	0.0	0.0	20.4	-0.8	29.79
	2/9/2017	1.5	6.8	5.2	0.7	28.83
	3/1/2017	0.0	0.0	20.3	-1.4	29.93
VTP-4D	8/24/2016	1.3	13.9	0.5	0.2	29.77
	9/8/2016	0.7	4.9	13.1	-0.6	29.79
	9/14/2016	2.1	10.2	6.2	-0.4	29.53
	9/21/2016	0.5	14.1	1.9	-0.3	29.59
	9/28/2016	0.3	15.1	0.2	-0.4	29.63
	10/5/2016	0.3	12.9	2.9	-0.5	29.37
	10/12/2016	0.2	14.2	0.0	0.6	29.55
	11/9/2016	0.5	0.8	19.7	-0.3	29.8
	1/12/2017	0.0	0.2	20.3	-2.9	29.79
	2/9/2017	0.0	8.8	8.1	1.3	28.83
	3/1/2017	0.1	0.5	20.1	-3.1	29.93
VTP-5S	1/12/2017	0.0	0.0	19.9	0.0	29.8
	2/9/2017	56.8	27.3	1.1	0.0	28.83
	3/1/2017	30.6	22.0	6.3	-2.9	29.93
VTP-5D	1/12/2017	0.2	11.0	0.2	-2.7	29.8
	2/9/2017	1.6	11.7	0.0	1.5	28.82
	3/1/2017	0.2	9.8	4.6	-2.9	29.93
VTP-6S	1/12/2017	0.0	0.2	20.8	0.0	29.83
	2/9/2017	0.0	0.0	20.4	0.0	28.82
	3/1/2017	0.1	0.0	19.9	0.0	29.96
VTP-6D	1/12/2017	0.0	0.4	21.1	-0.8	29.83
	2/9/2017	0.0	6.7	11.9	0.8	28.82
	3/1/2017	0.0	2.3	18.4	-0.9	29.96

Table 3 - Manual LFG Measurement Summary

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Location	Date	CH4 (%vol)	CO2 (%vol)	O2 (%vol)	Static Pressure (inwc)	Barometric Pressure (inHg)
GW-9	9/14/2016	17.1	19.3	1.0	-2.8	29.53
	9/21/2016	21.5	25.5	0.3	-2.8	29.59
	9/28/2016	16.9	24.5	0.0	-2.5	29.63
	10/5/2016	15.7	25.0	0.0	-2.1	29.37
	10/12/2016	13.7	23.6	0.0	-1.3	29.55
	11/9/2016	8.0	21.2	0.0	-1.3	29.81
	12/12/2016	5.8	23.1	0.0	-4.7	29.72
	1/12/2017	4.0	18.9	0.1	-6.5	29.79
	2/9/2017	3.2	17.5	0.0	-3.8	28.89
	3/1/2017	3.2	18.5	0.0	-6.7	29.96

Table 4 - Automated Data Collection Summary - GW-9

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
Influence Test Startup - 9/14/16					
9/14/2016	-2.6	1005.9	26.8	23.9	5.0
9/15/2016	-2.9	1008.1	31.0	28.7	3.4
9/16/2016	-2.3	1004.4	28.8	28.3	3.4
9/17/2016	-2.4	1000.8	27.3	27.9	3.4
9/18/2016	-2.9	1004.7	25.9	27.9	3.4
9/19/2016	-2.9	1005.8	24.6	27.5	3.4
9/20/2016	-2.8	1007.0	23.8	27.3	3.4
9/21/2016	-2.3	1004.2	23.1	27.2	3.4
9/22/2016	-2.8	1003.8	22.4	27.0	3.4
9/23/2016	-2.8	1004.8	21.6	26.9	3.4
9/24/2016	-3.6	1014.3	20.6	27.0	3.4
9/25/2016	-2.6	1014.9	19.6	26.7	3.4
9/26/2016	-1.8	1006.5	19.8	26.4	3.4
9/27/2016	-2.4	1008.2	17.0	23.2	5.4
9/28/2016	-2.6	1005.9	18.3	26.4	1.8
9/29/2016	-2.9	1005.1	17.3	26.5	0.0
9/30/2016	-2.6	1003.3	16.7	26.2	0.0
10/1/2016	-2.7	1001.5	16.4	26.3	0.0
10/2/2016	-2.5	1000.7	16.0	26.0	0.0
10/3/2016	-2.3	999.5	15.6	26.0	0.0
10/4/2016	-2.2	998.0	15.5	26.0	0.0
10/5/2016	-2.3	1000.0	14.4	24.8	0.8
10/6/2016	-2.0	1004.0	14.4	26.0	0.0
10/7/2016	-1.9	1001.5	14.6	26.0	0.0
10/8/2016	-1.0	999.0	14.4	25.6	0.0
10/9/2016	-1.6	1001.8	14.5	25.9	0.0
10/10/2016	-1.5	1004.6	14.3	26.0	0.0
10/11/2016	-1.4	1008.3	14.1	26.0	0.0
10/12/2016	-1.1	1003.1	13.7	24.4	0.8
10/13/2016	-0.8	987.0	14.7	25.1	0.0
10/14/2016	-2.9	983.8	14.2	25.3	0.0
10/15/2016	-2.0	981.4	13.4	24.9	0.0
10/16/2016	-3.0	982.5	13.0	24.9	0.0
10/17/2016	-4.3	991.3	12.3	24.8	0.0
10/18/2016	-4.7	1005.0	11.6	25.0	0.0
10/19/2016	-3.5	1011.0	11.4	25.1	0.0
10/20/2016	-2.6	1004.1	11.4	25.0	0.0
10/21/2016	-2.5	1002.6	11.3	24.9	0.0
10/22/2016	-2.4	999.8	11.1	24.8	0.0

Table 4 - Automated Data Collection Summary - GW-9

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
10/23/2016	-2.5	997.7	10.8	24.6	0.0
10/24/2016	-2.5	991.8	10.7	24.6	0.0
10/25/2016	-4.2	1000.5	10.2	24.6	0.0
10/26/2016	-3.0	997.3	9.8	24.3	0.0
10/27/2016	-3.5	998.1	9.6	24.1	0.0
10/28/2016	-3.4	999.9	9.5	24.1	0.0
10/29/2016	-3.4	999.6	9.5	23.9	0.0
10/30/2016	-2.1	992.0	9.5	23.8	0.0
10/31/2016	-3.6	994.1	9.5	23.7	0.0
11/1/2016	-4.0	1000.4	9.1	23.6	0.0
11/2/2016	-3.8	1003.8	9.2	23.6	0.0
11/3/2016	-4.0	1010.1	9.2	23.7	0.0
11/4/2016	-2.5	1003.4	9.4	23.5	0.0
11/5/2016	-2.4	998.8	9.3	23.3	0.0
11/6/2016	-3.4	1002.8	9.2	23.2	0.0
11/7/2016	-3.3	1006.0	9.2	23.2	0.0
11/8/2016	-2.8	1005.1	9.7	23.2	0.0
11/9/2016	-3.1	1007.5	8.7	23.0	0.0
11/10/2016	-2.4	1004.7	7.5	23.2	0.0
11/11/2016	-2.0	1000.5	7.3	23.1	0.0
11/12/2016	-3.3	1002.7	7.3	23.1	0.0
11/13/2016	-2.5	1005.0	7.2	23.3	0.0
11/14/2016	-2.3	1002.4	7.1	23.1	0.0
11/15/2016	-2.1	996.5	7.2	23.0	0.0
11/16/2016	-3.2	1003.5	7.0	23.2	0.0
11/17/2016	-3.3	1007.9	7.0	23.3	0.0
11/18/2016	-0.9	1000.2	7.2	23.0	0.0
11/19/2016	-1.5	992.2	7.2	22.8	0.0
11/20/2016	-2.3	993.7	7.2	22.8	0.0
11/21/2016	-3.2	1001.6	7.0	22.9	0.0
11/22/2016	-2.0	999.6	7.2	22.9	0.0
11/23/2016	-2.9	1002.0	7.1	22.9	0.0
11/24/2016	-1.4	996.2	7.2	22.8	0.0
11/25/2016	-2.4	998.0	7.1	22.8	0.0
11/26/2016	-0.9	986.9	7.2	22.5	0.0
11/27/2016	-2.4	991.4	7.1	22.6	0.0
11/28/2016	-4.0	999.4	6.9	22.9	0.0
11/29/2016	-3.3	1005.1	6.0	19.8	2.3
11/30/2016	-4.2	1002.1	6.9	22.6	0.0
12/1/2016	-5.2	1011.8	6.9	23.0	0.0

Table 4 - Automated Data Collection Summary - GW-9

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
12/2/2016	-3.8	1009.9	6.8	22.9	0.0
12/3/2016	-3.9	1009.7	6.6	22.7	0.0
12/4/2016	-3.1	1004.5	6.6	22.6	0.0
12/5/2016	--	--	--	--	--
12/6/2016	-4.6	1008.4	6.2	22.4	0.0
12/7/2016	--	--	--	--	--
12/8/2016	--	1004.0	7.3	20.8	1.4
12/9/2016	--	--	--	--	--
12/10/2016	--	--	--	--	--
12/11/2016	--	--	--	--	--
GW-9 Flow Rate Adjusted to 15 scfm					
12/12/2016	-4.7	1007.9	5.1	16.5	4.1
12/13/2016	--	--	--	--	--
12/14/2016	--	--	--	--	--
12/15/2016	--	--	--	--	--
12/16/2016	--	--	--	--	--
12/17/2016	--	--	--	--	--
12/18/2016	--	--	--	--	--
12/19/2016	-4.7	1007.5	5.3	20.6	0.0
12/20/2016	-4.9	1009.5	5.0	20.9	0.0
12/21/2016	-3.8	1014.1	5.2	21.2	0.0
12/22/2016	-3.2	998.4	5.2	20.7	0.0
12/23/2016	--	--	--	--	--
12/24/2016	--	1000.5	5.7	20.3	0.1
12/25/2016	--	--	--	--	--
12/26/2016	--	--	--	--	--
12/27/2016	-4.5	1004.3	4.7	20.8	0.0
12/28/2016	-6.6	1015.9	4.7	20.7	0.1
12/29/2016	-5.4	1008.7	4.4	20.4	0.0
12/30/2016	-6.1	1012.0	4.4	20.4	0.0
12/31/2016	--	--	--	--	--
1/1/2017	--	--	--	--	--
1/2/2017	--	--	--	--	--
1/3/2017	--	--	--	--	--
1/4/2017	--	--	--	--	--
1/5/2017	--	--	--	--	--
1/6/2017	--	--	--	--	--
1/7/2017	--	999.2	3.7	15.5	4.7
1/8/2017	--	--	--	--	--
1/9/2017	--	--	--	--	--

Table 4 - Automated Data Collection Summary - GW-9

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
1/10/2017	--	--	--	--	--
1/11/2017	--	--	--	--	--
1/12/2017	-5.6	1012.5	2.9	12.6	6.1
1/13/2017	--	--	--	--	--
1/14/2017	-4.7	1014.3	3.6	16.8	1.8
1/15/2017	-5.1	1012.6	3.6	16.8	1.7
1/16/2017	-3.6	1006.8	3.8	17.7	0.6
1/17/2017	-3.0	993.3	3.8	17.9	0.3
1/18/2017	-2.9	981.5	3.8	18.0	0.0
1/19/2017	-4.9	985.8	3.5	18.2	0.0
1/20/2017	-3.5	975.8	3.5	17.9	0.0
1/21/2017	-5.7	983.0	3.3	17.4	0.1
1/22/2017	-5.6	987.3	3.4	17.7	0.0
1/23/2017	-6.5	996.8	3.3	17.3	2.3
1/24/2017	-7.2	1007.0	3.5	16.6	2.3
1/25/2017	-7.2	1011.8	3.7	18.6	0.0
1/26/2017	-7.6	1019.5	3.6	18.7	0.0
1/27/2017	-6.7	1023.7	3.4	18.2	0.4
1/28/2017	-5.6	1021.5	3.4	18.1	0.4
1/29/2017	-5.7	1017.2	3.3	17.9	0.3
1/30/2017	-5.2	1014.3	3.2	17.8	0.3
1/31/2017	-5.6	1011.8	3.3	17.7	0.5
2/1/2017	-5.0	1012.1	3.3	17.4	0.5
2/2/2017	-4.4	1006.7	3.3	17.6	0.2
2/3/2017	--	--	--	--	--
2/4/2017	-5.3	990.4	3.4	17.6	0.0
2/5/2017	--	987.4	3.9	17.8	0.6
2/6/2017	--	--	--	--	--
2/7/2017	--	--	--	--	--
2/8/2017	--	996.6	2.0	13.0	8.4
2/9/2017	-3.9	982.7	3.0	16.1	1.0
2/10/2017	-6.9	997.3	3.0	17.4	0.0
2/11/2017	-8.3	1017.4	3.2	18.4	0.0
2/12/2017	-5.4	1017.3	3.4	18.4	0.0
2/13/2017	-4.1	1010.8	3.2	18.2	0.0
2/14/2017	-3.4	1003.5	3.1	17.8	0.0
2/15/2017	-2.6	991.2	3.1	17.5	0.0
2/16/2017	-4.3	987.1	3.0	17.1	0.0
2/17/2017	-4.7	991.6	2.9	17.4	0.0
2/18/2017	-4.0	984.4	3.0	17.2	0.0

Table 4 - Automated Data Collection Summary - GW-9

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
2/19/2017	-4.9	985.8	2.9	17.2	0.0
2/20/2017	-5.9	990.1	2.9	17.4	0.0
2/21/2017	-6.6	999.6	2.9	17.7	0.0
2/22/2017	-6.3	1009.1	3.0	18.1	0.0
2/23/2017	-5.4	1010.4	3.3	18.2	0.1
2/24/2017	-5.1	1008.9	3.1	18.1	0.0
2/25/2017	-3.7	1007.8	3.2	18.0	0.0
2/26/2017	--	--	--	--	--
2/27/2017	-4.2	993.9	3.6	17.7	0.2
2/28/2017	-6.2	1004.0	3.1	17.8	0.0

Notes:

"--" Data point not collected due to freezing conditions

Table 5 - Automated Data Collection Summary - VTP-2D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
Baseline					
8/24/2016	0.0	1008.3	12.9	14.5	6.3
8/25/2016	0.0	1005.7	24.3	22.5	5.1
8/26/2016	0.1	1000.0	39.9	31.3	4.2
8/27/2016	-0.2	999.4	14.9	11.7	14.9
8/28/2016	-0.2	1005.4	0.0	0.0	20.4
8/29/2016	-0.1	1004.2	6.6	8.4	13.8
8/30/2016	-0.2	1003.9	9.2	11.4	11.8
8/31/2016	-0.2	1002.7	16.7	17.0	9.7
9/1/2016	-0.1	1003.1	7.8	8.5	14.5
9/2/2016	-0.2	1002.1	14.8	13.7	12.7
9/3/2016	-0.2	1003.5	2.9	4.3	16.7
9/4/2016	-0.3	1003.1	4.2	5.9	15.5
9/5/2016	-0.2	1003.8	4.5	6.7	14.4
9/6/2016	-0.2	1002.6	12.5	12.7	13.2
9/7/2016	-0.2	1007.7	0.0	0.0	20.4
9/8/2016	-0.2	1011.1	0.0	0.0	20.4
9/9/2016	-0.2	1013.2	2.8	3.5	16.0
9/10/2016	-0.1	1007.4	24.9	23.0	4.4
9/11/2016	-0.1	1008.0	6.5	6.4	15.5
9/12/2016	-0.1	1008.6	7.6	8.7	13.9
9/13/2016	-0.1	1004.4	33.5	29.1	4.2
Influence Test Startup - 9/14/16					
9/14/2016	-0.2	1004.9	10.6	8.8	16.0
9/15/2016	-0.2	1008.2	0.0	0.0	20.4
9/16/2016	-0.2	1004.9	1.5	1.9	17.7
9/17/2016	-0.2	1001.0	2.9	3.6	16.8
9/18/2016	-0.4	1005.3	0.0	0.0	20.4
9/19/2016	-0.3	1006.1	0.0	0.0	20.4
9/20/2016	-0.4	1007.5	0.0	0.0	20.3
9/21/2016	-0.2	1004.5	0.7	1.0	18.2
9/22/2016	-0.3	1004.3	0.0	0.0	20.3
9/23/2016	-0.3	1005.5	0.0	0.0	20.3
9/24/2016	-0.4	1014.6	0.0	0.0	20.3
9/25/2016	-0.2	1014.9	0.0	0.0	20.2
9/26/2016	-0.1	1006.5	8.8	10.9	8.6
9/27/2016	-0.3	1008.5	0.0	0.0	20.5
9/28/2016	-0.2	1006.2	0.0	0.0	20.4
9/29/2016	-0.3	1005.6	0.0	0.0	19.7
9/30/2016	-0.2	1003.6	0.0	0.2	18.9

Table 5 - Automated Data Collection Summary - VTP-2D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
10/1/2016	-0.3	1002.0	0.0	0.0	19.7
10/2/2016	-0.3	1001.2	0.0	0.0	19.6
10/3/2016	-0.2	999.8	0.0	0.0	19.7
10/4/2016	-0.2	998.3	0.0	0.0	19.7
10/5/2016	-0.4	1000.6	0.0	0.0	19.8
10/6/2016	-0.3	1004.3	1.2	2.3	16.5
10/7/2016	-0.4	1002.3	1.7	3.2	16.5
10/8/2016	-0.2	999.3	5.5	10.9	7.8
10/9/2016	-0.4	1002.5	0.0	0.0	19.4
10/10/2016	-0.4	1005.4	0.0	0.0	19.5
10/11/2016	-0.3	1008.8	0.0	0.0	19.5
Gas Clam Removed - PT2X Installed on 10/12/16					
10/12/2016	0.1	1003.6			
10/13/2016	1.0	988.1			
10/14/2016	-0.3	983.9			
10/15/2016	0.3	982.0			
10/16/2016	-0.4	983.0			
10/17/2016	-1.4	991.3			
10/18/2016	-1.7	1005.1			
10/19/2016	-0.9	1011.8			
10/20/2016	-0.2	1004.7			
10/21/2016	-0.1	1003.1			
10/22/2016	0.0	1000.4			
10/23/2016	-0.1	998.1			
10/24/2016	0.0	992.0			
10/25/2016	-1.2	1000.7			
10/26/2016	-0.3	997.7			
10/27/2016	-0.7	998.4			
10/28/2016	-0.7	1000.3			
10/29/2016	-0.6	999.9			
10/30/2016	0.4	992.9			
10/31/2016	-0.8	994.2			
11/1/2016	-1.2	1000.6			
11/2/2016	-1.0	1004.2			
11/3/2016	-1.2	1010.6			
11/4/2016	-0.1	1003.9			
11/5/2016	0.0	999.2			
11/6/2016	-0.9	1003.1			
11/7/2016	-0.8	1006.5			
11/8/2016	-0.4	1005.4			

Table 5 - Automated Data Collection Summary - VTP-2D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
11/9/2016	-0.8	1007.9			
11/10/2016	-0.1	1005.2			
11/11/2016	0.1	1001.1			
11/12/2016	-0.8	1002.5			
11/13/2016	-0.3	1006.0			
11/14/2016	-0.2	1003.1			
11/15/2016	0.1	996.8			
11/16/2016	-0.9	1003.9			
11/17/2016	-0.9	1008.3			
11/18/2016	0.5	1001.6			
11/19/2016	0.5	992.8			
11/20/2016	-0.2	993.9			
11/21/2016	-1.0	1001.6			
11/22/2016	0.0	1000.6			
11/23/2016	-0.7	1002.4			
11/24/2016	0.5	997.1			
11/25/2016	-0.4	998.7			
11/26/2016	0.9	987.6			
11/27/2016	-0.3	992.0			
11/28/2016	-1.5	999.1			
11/29/2016	-1.0	1006.4			
11/30/2016	-0.9	1002.2			
12/1/2016	-1.8	1012.1			
12/2/2016	-0.7	1010.8			
12/3/2016	-0.8	1010.5			
12/4/2016	-0.4	1005.0			
12/5/2016	-0.4	1005.3			
12/6/2016	-1.3	1008.5			
12/7/2016	-1.3	1015.9			
12/8/2016	0.4	1005.1			
12/9/2016	0.1	1000.8			
12/10/2016	-0.2	998.0			
12/11/2016	-0.8	1000.8			
GW-9 Flow Rate Adjusted to 15 scfm					
12/12/2016	-1.6	1007.9			
12/13/2016	-1.4	1012.1			
12/14/2016	0.0	1004.9			
12/15/2016	-0.3	999.7			
12/16/2016	-1.4	1006.2			
12/17/2016	-1.9	1016.6			

Table 5 - Automated Data Collection Summary - VTP-2D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
12/18/2016	-1.0	1018.6			
12/19/2016	0.0	1008.3			
12/20/2016	-1.2	1008.8			
12/21/2016	-0.9	1015.2			
12/22/2016	0.7	999.4			
12/23/2016	0.4	990.9			
12/24/2016	-1.4	1000.5			
12/25/2016	-1.5	1006.8			
12/26/2016	-0.8	1008.6			
12/27/2016	-0.8	1004.0			
12/28/2016	-2.0	1016.1			
12/29/2016	-0.6	1009.2			
12/30/2016	-1.4	1012.2			
12/31/2016	0.1	1004.5			
1/1/2017	0.1	993.6			
1/2/2017	-1.5	1002.3			
1/3/2017	-1.7	1011.5			
1/4/2017	-0.8	1011.7			
1/5/2017	-0.1	1012.4			
1/6/2017	0.1	1005.2			
1/7/2017	0.1	999.7			
1/8/2017	0.2	991.7			
1/9/2017	0.2	991.3			
1/10/2017	0.1	990.1			
1/11/2017	0.2	996.4			
1/12/2017	-0.9	1010.2			
1/13/2017	-1.5	1017.0			
1/14/2017	-0.5	1015.0			
1/15/2017	0.2	1013.0			
1/16/2017	0.1	1007.6			
1/17/2017	0.1	993.9			
1/18/2017	0.1	981.6			
1/19/2017	0.2	985.9			
1/20/2017	0.1	976.3			
1/21/2017	0.2	982.7			
1/22/2017	0.1	987.5			
1/23/2017	0.1	996.6			
1/24/2017	-0.4	1007.3			
1/25/2017	-0.3	1012.0			
1/26/2017	-0.5	1019.6			

Table 5 - Automated Data Collection Summary - VTP-2D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
1/27/2017	-0.3	1024.0			
1/28/2017	0.1	1022.0			
1/29/2017	0.1	1017.5			
1/30/2017	0.1	1014.9			
1/31/2017	0.1	1011.9			
2/1/2017	0.1	1012.8			
2/2/2017	0.1	1007.5			
2/3/2017	0.1	989.2			
2/4/2017	0.1	990.5			
2/5/2017	0.1	988.3			
2/6/2017	0.1	986.3			
2/7/2017	0.1	994.7			
2/8/2017	0.1	997.4			
2/9/2017	0.1	982.7			
2/10/2017	0.1	997.2			
2/11/2017	-1.1	1017.5			
2/12/2017	-0.2	1017.8			
2/13/2017	0.1	1011.3			
2/14/2017	0.1	1004.0			
2/15/2017	0.1	991.7			
2/16/2017	0.1	986.6			
2/17/2017	0.1	991.9			
2/18/2017	0.1	984.6			
2/19/2017	0.1	985.8			
2/20/2017	0.1	990.1			
2/21/2017	0.1	999.6			
2/22/2017	0.1	1009.5			
2/23/2017	0.1	1011.0			
2/24/2017	0.1	1009.1			
2/25/2017	0.1	1008.7			
2/26/2017	0.1	994.5			
2/27/2017	0.1	994.2			
2/28/2017	0.1	1004.1			

Notes:

"--" Data point not collected due to freezing conditions

Table 6 - Automated Data Collection Summary - VTP-3S

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
Baseline					
9/8/2016	-0.4	1012.2	0.1		20.3
9/9/2016	-0.2	1012.8	1.1		17.7
9/10/2016	0.4	1007.0	6.6		5.1
9/11/2016	-0.1	1007.3	5.9		8.9
9/12/2016	0.1	1008.0	3.9		12.0
9/13/2016	0.4	1003.8	8.1		4.3
Influence Test Startup - 9/14/16					
9/14/2016	-0.2	1004.1	6.4		9.0
9/15/2016	-0.6	1007.6	0.7		19.9
9/16/2016	0.0	1004.0	2.0		17.4
9/17/2016	-0.1	1000.1	4.5		13.6
9/18/2016	-0.6	1004.2	0.8		19.5
9/19/2016	-0.6	1005.4	0.4		20.3
9/20/2016	-0.3	1006.2	0.3		20.3
9/21/2016	-0.1	1003.7	2.5		14.2
9/22/2016	-0.5	1003.1	0.5		19.1
9/23/2016	-0.5	1003.9	0.0		20.5
9/24/2016	-1.2	1013.8	0.0		20.6
9/25/2016	-0.4	1014.6	0.1		19.8
9/26/2016	0.4	1006.0	4.0		1.0
9/27/2016	-0.4	1007.8	0.1		20.2
9/28/2016	0.0	1005.1	0.0		20.1
9/29/2016	-0.2	1004.4	0.0		20.5
9/30/2016	0.0	1002.4	0.3		17.3
10/1/2016	-0.2	1000.8	0.0		20.4
10/2/2016	0.0	999.9	0.0		20.3
10/3/2016	-0.2	998.7	0.0		20.0
10/4/2016	-0.1	997.3	0.0		20.3
10/5/2016	-0.6	999.3	0.4		10.1
10/6/2016	-0.3	1003.4	1.0		2.3
10/7/2016	-0.4	1000.9	1.1		2.4
10/8/2016	0.3	998.6	1.2		0.0
10/9/2016	-0.4	1001.3	1.0		2.0
10/10/2016	-0.5	1004.0	1.1		2.1
10/11/2016	-0.4	1007.5	1.2		2.7
Gas Clam Replaced with CO2 Measuring Unit					
10/12/2016	0.2	1002.6	1.5	12.6	0.8
10/13/2016	0.9	987.8	1.8	23.8	0.0
10/14/2016	-0.7	983.7	1.1	17.3	5.4

Table 6 - Automated Data Collection Summary - VTP-3S

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
10/15/2016	-0.1	981.8	1.2	20.5	1.6
10/16/2016	-0.9	982.6	1.0	21.0	1.2
10/17/2016	-2.1	991.1	0.2	6.2	13.9
10/18/2016	-2.6	1004.7	0.0	0.0	19.1
10/19/2016	-1.6	1011.3	0.6	9.3	10.6
10/20/2016	-0.7	1004.3	1.4	22.7	0.0
10/21/2016	-0.5	1002.7	1.4	22.8	0.0
10/22/2016	-0.5	1000.0	1.3	22.7	0.0
10/23/2016	-0.6	997.7	1.1	22.6	0.0
10/24/2016	-0.4	991.7	1.1	22.6	0.0
10/25/2016	-1.9	1000.4	0.2	8.0	11.5
10/26/2016	-0.8	997.3	0.9	21.8	0.0
10/27/2016	-1.2	998.1	0.8	21.6	0.0
10/28/2016	-1.2	999.8	0.8	20.4	0.7
10/29/2016	-1.2	999.6	0.8	20.7	0.6
10/30/2016	-0.1	992.4	1.0	21.8	0.0
10/31/2016	-1.4	994.0	0.6	18.0	2.7
11/1/2016	-1.9	1000.4	0.4	12.5	7.5
11/2/2016	-1.8	1003.9	0.6	15.0	5.4
11/3/2016	-1.9	1010.1	0.4	7.8	11.4
11/4/2016	-0.6	1003.5	1.1	21.4	0.0
11/5/2016	-0.4	998.8	1.2	21.3	0.0
11/6/2016	-1.4	1002.8	0.8	17.3	3.1
11/7/2016	-1.4	1006.1	0.8	16.2	4.2
11/8/2016	-1.0	1005.0	1.2	20.8	0.1
11/9/2016	-1.2	1007.4	0.6	11.5	8.6
Data Not Collected Between 11/10/2016 and 12/11/2016 Due to Malfunction					
GW-9 Flow Rate Adjusted to 15 scfm					
12/12/2016	-2.6	1008.2	0.8	17.2	2.7
12/13/2016	-2.4	1012.1	0.8	21.9	0.0
12/14/2016	--	1004.3	0.7	21.7	0.0
12/15/2016	-0.8	999.8	0.7	21.7	0.0
12/16/2016	-2.6	1007.0	0.6	21.9	0.0
12/17/2016	--	1017.5	0.6	22.2	0.0
12/18/2016	--	1018.5	0.7	22.2	0.0
12/19/2016	-0.7	1008.1	0.6	21.9	0.0
12/20/2016	-1.9	1009.8	0.5	22.0	0.0
12/21/2016	-0.6	1014.5	0.6	22.3	0.0
12/22/2016	0.4	999.0	0.5	21.7	0.0
12/23/2016	1.2	991.5	0.4	21.3	0.0

Table 6 - Automated Data Collection Summary - VTP-3S

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
12/24/2016	-2.2	1001.3	0.3	21.9	0.0
12/25/2016	-2.5	1007.4	0.4	22.1	0.0
12/26/2016	-0.5	1008.5	0.4	22.1	0.0
12/27/2016	-1.2	1004.8	0.4	21.6	0.0
12/28/2016	-2.7	1016.5	0.5	22.3	0.0
12/29/2016	-1.1	1009.2	0.5	21.5	0.0
12/30/2016	-2.4	1012.6	0.5	21.8	0.0
12/31/2016	--	1003.8	0.5	21.4	0.0
1/1/2017	-0.4	994.0	0.4	21.2	0.0
1/2/2017	-2.7	1003.3	0.3	21.4	0.0
1/3/2017	-2.5	1011.8	0.4	22.0	0.0
1/4/2017	-2.3	1012.3	0.4	21.4	0.0
1/5/2017	-1.1	1012.5	0.4	21.1	0.0
1/6/2017	-0.6	1005.5	0.3	20.8	0.1
1/7/2017	--	1000.0	0.3	21.0	0.0
1/8/2017	0.5	991.3	0.2	20.6	0.0
1/9/2017	-1.3	991.7	0.2	20.6	0.0
1/10/2017	-0.9	990.4	0.1	20.4	0.0
1/11/2017	--	997.7	0.1	21.1	0.0
1/12/2017	-1.9	1011.1	0.4	13.2	5.7
1/13/2017	-2.7	1017.4	0.5	21.4	0.0
1/14/2017	-1.2	1015.0	0.5	21.0	0.0
1/15/2017	-1.6	1013.2	0.5	21.1	0.0
1/16/2017	0.0	1007.0	0.4	21.0	0.0
1/17/2017	0.8	993.2	0.3	20.4	0.0
1/18/2017	0.8	981.7	0.2	20.1	0.0
1/19/2017	-1.3	986.3	0.2	20.3	0.0
1/20/2017	0.3	976.3	0.1	19.8	0.0
1/21/2017	-2.2	983.8	0.0	20.3	0.0
1/22/2017	-1.9	988.0	0.0	20.6	0.0
1/23/2017	-3.5	997.7	0.1	21.3	0.0
1/24/2017	-2.9	1007.8	0.4	21.9	0.0
1/25/2017	-3.2	1012.5	0.5	21.8	0.0
1/26/2017	-3.5	1020.1	0.5	22.2	0.0
1/27/2017	-2.9	1024.1	0.5	22.4	0.0
1/28/2017	-1.8	1021.8	0.5	22.1	0.0
1/29/2017	-1.5	1017.6	0.4	22.1	0.0
1/30/2017	-1.0	1014.5	0.4	21.9	0.0
1/31/2017	-1.2	1012.3	0.3	21.8	0.0
2/1/2017	-0.9	1012.6	0.2	21.7	0.0

Table 6 - Automated Data Collection Summary - VTP-3S

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
2/2/2017	-0.3	1007.1	0.2	21.7	0.0
2/3/2017	1.3	988.8	0.1	21.2	0.0
2/4/2017	-1.2	991.1	0.1	21.2	0.0
2/5/2017	-1.6	987.8	0.0	20.8	0.0
2/6/2017	-2.7	987.9	0.0	20.9	0.0
2/7/2017	-2.8	995.5	0.0	21.2	0.0
2/8/2017	-1.0	996.9	0.1	21.1	0.0
2/9/2017	0.0	983.0	0.1	18.8	0.7
2/10/2017	-3.8	997.9	0.1	20.7	0.0
2/11/2017	-5.5	1017.9	0.6	22.1	0.0
2/12/2017	-2.4	1017.8	0.7	22.0	0.0
2/13/2017	-0.9	1011.3	0.6	21.5	0.0
2/14/2017	-0.3	1004.0	0.6	21.2	0.0
2/15/2017	0.9	991.7	0.5	20.7	0.0
2/16/2017	-0.6	987.2	0.3	20.7	0.0
2/17/2017	-1.3	992.0	0.3	21.0	0.0
2/18/2017	-0.4	984.9	0.2	20.6	0.0
2/19/2017	-1.5	986.2	0.1	20.5	0.0
2/20/2017	-2.1	990.3	0.1	21.0	0.0
2/21/2017	-3.4	1000.0	0.2	21.6	0.0
2/22/2017	-3.5	1009.6	0.4	22.0	0.0
2/23/2017	-2.4	1011.0	0.5	22.2	0.0
2/24/2017	-2.0	1009.3	0.6	22.0	0.0
2/25/2017	-0.4	1008.6	0.6	22.0	0.0
2/26/2017	0.0	994.5	0.5	21.3	0.0
2/27/2017	-0.6	994.5	0.4	21.4	0.0
2/28/2017	-3.3	1004.7	0.4	22.1	0.0

Notes:

"--" Data point not collected due to freezing conditions

Table 7 - Automated Data Collection Summary - VTP-3D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
Baseline					
8/24/2016	-0.2	1008.5	10.2		10.9
8/25/2016	0.1	1005.4	11.5		9.3
8/26/2016	0.5	999.8	16.2		4.0
8/27/2016	-0.1	998.5	12.5		7.0
8/28/2016	-0.5	1005.0	0.5		18.6
8/29/2016	0.1	1004.0	6.1		14.0
8/30/2016	0.0	1003.3	6.7		13.6
8/31/2016	0.0	1002.0	9.5		11.2
9/1/2016	0.0	1002.8	7.5		12.9
9/2/2016	0.0	1001.6	11.1		10.0
9/3/2016	-0.1	1002.9	5.0		15.0
9/4/2016	0.0	1002.4	4.8		15.4
9/5/2016	0.0	1003.2	3.3		16.7
9/6/2016	0.0	1002.1	10.9		10.7
9/7/2016	-0.5	1007.4	2.2		17.1
9/8/2016	-0.6	1010.8	1.1		18.6
9/9/2016	-0.2	1013.2	2.7		18.1
9/10/2016	0.5	1007.1	17.2		7.2
9/11/2016	-0.1	1007.7	11.8		10.1
9/12/2016	0.0	1008.3	8.7		12.9
9/13/2016	0.4	1004.0	14.8		8.8
Influence Test Startup - 9/14/16					
9/14/2016	-0.3	1004.3	14.6		8.5
9/15/2016	-0.7	1008.0	1.3		18.5
9/16/2016	0.0	1004.3	3.3		17.3
9/17/2016	-0.1	1000.5	9.0		11.9
9/18/2016	-0.7	1004.6	1.6		18.0
9/19/2016	-0.7	1005.8	0.0		19.6
9/20/2016	-0.6	1007.1	0.0		19.8
9/21/2016	-0.1	1004.3	2.2		17.9
9/22/2016	-0.4	1003.9	2.5		17.1
9/23/2016	-0.5	1004.9	0.6		18.8
9/24/2016	-1.3	1014.3	0.0		19.8
9/25/2016	-0.4	1014.5	0.4		19.7
9/26/2016	0.3	1006.2	10.1		9.0
9/27/2016	-0.5	1008.1	4.7		14.0
9/28/2016	-0.2	1005.8	2.3		16.5
9/29/2016	-0.3	1005.1	1.6		16.6
9/30/2016	-0.1	1003.3	1.2		17.7

Table 7 - Automated Data Collection Summary - VTP-3D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
10/1/2016	0.0	1001.5	2.0		15.8
10/2/2016	0.0	1000.7	1.2		17.3
10/3/2016	-0.1	999.6	1.3		16.9
10/4/2016	0.0	998.0	1.8		15.9
10/5/2016	-0.5	1000.0	2.9		11.2
10/6/2016	-0.1	1003.5	4.9		3.7
10/7/2016	-0.5	1001.9	5.5		3.0
10/8/2016	0.5	998.7	7.7		0.3
10/9/2016	-0.4	1002.0	5.0		2.9
10/10/2016	-0.4	1005.0	3.5		4.3
10/11/2016	-0.4	1008.5	2.9		5.3
10/12/2016	0.5	1003.3	6.4		1.8
10/13/2016	1.6	987.9	8.0		0.0
10/14/2016	-0.3	983.6	6.9		0.8
10/15/2016	0.4	981.8	7.0		0.3
10/16/2016	-0.5	982.6	6.6		0.2
10/17/2016	-1.9	991.0	4.9		0.9
10/18/2016	-2.4	1004.7	2.6		2.7
10/19/2016	-1.3	1011.4	4.1		1.5
10/20/2016	-0.3	1004.3	6.3		0.0
10/21/2016	-0.1	1002.7	6.1		0.0
10/22/2016	-0.2	1000.1	5.8		0.0
10/23/2016	-0.3	997.9	5.3		0.0
10/24/2016	0.1	991.7	5.2		0.0
10/25/2016	-1.6	1000.2	3.8		1.5
10/26/2016	-0.4	997.4	4.5		0.0
10/27/2016	-1.0	998.2	4.3		0.0
10/28/2016	-1.0	1000.0	4.0		0.0
10/29/2016	-0.9	999.7	3.8		0.0
10/30/2016	0.5	992.6	3.9		0.0
10/31/2016	-1.0	993.9	3.5		0.0
11/1/2016	-1.7	1000.3	3.2		0.2
11/2/2016	-1.5	1003.8	3.2		0.1
11/3/2016	-1.7	1010.2	3.0		0.5
11/4/2016	-0.2	1003.6	3.3		0.0
11/5/2016	0.0	999.0	3.4		0.0
11/6/2016	-1.2	1002.8	3.1		0.0
11/7/2016	-1.1	1006.1	3.0		0.1
11/8/2016	-0.7	1005.3	3.1		0.0
11/9/2016	-1.0	1007.5	2.9		0.1

Table 7 - Automated Data Collection Summary - VTP-3D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
11/10/2016	-0.2	1004.7	2.8		0.0
11/11/2016	0.2	1000.3	2.7		0.0
11/12/2016	-1.1	1002.9	2.3		0.1
11/13/2016	-0.5	1005.3	2.3		0.2
11/14/2016	-0.2	1002.5	2.4		0.0
11/15/2016	0.1	996.9	2.4		0.0
11/16/2016	-1.1	1003.9	2.1		0.2
11/17/2016	-1.4	1008.3	2.0		0.3
11/18/2016	0.8	1000.8	2.3		0.0
11/19/2016	0.3	992.4	2.2		0.0
11/20/2016	-0.7	993.8	2.0		0.0
11/21/2016	-1.7	1001.5	1.6		0.1
11/22/2016	-0.3	1000.1	1.9		0.0
11/23/2016	-1.2	1002.3	1.9		0.0
11/24/2016	0.5	996.7	2.0		0.0
11/25/2016	-0.8	998.5	1.8		0.0
11/26/2016	1.0	987.4	1.9		0.0
11/27/2016	-0.5	991.8	1.6		0.0
11/28/2016	-2.0	999.4	1.4		0.3
11/29/2016	-1.3	1006.0	1.4		0.6
11/30/2016	-1.1	1002.2	1.8		0.0
12/1/2016	-2.3	1012.0	1.7		0.0
12/2/2016	-0.8	1010.3	1.9		0.0
12/3/2016	-1.6	1010.2	1.9		0.0
12/4/2016	-1.1	1005.0	1.8		0.0
12/5/2016	--	1005.3	1.8		0.0
12/6/2016	-3.1	1008.8	1.7		0.0
12/7/2016	-1.6	1016.1	1.9		0.8
12/8/2016	--	1005.0	1.7		0.0
12/9/2016	--	1001.0	1.6		0.0
12/10/2016	-0.4	998.2	1.5		0.0
12/11/2016	-1.2	1001.0	1.5		0.0
GW-9 Flow Rate Adjusted to 15 scfm					
12/12/2016	-2.3	1008.2	1.3		1.2
12/13/2016	-1.8	1012.3	1.4		0.0
12/14/2016	--	1004.5	1.3		0.0
12/15/2016	-0.8	1000.2	1.2		0.0
12/16/2016	--	1007.1	1.2		0.9
12/17/2016	--	1017.7	1.4		1.9
12/18/2016	--	1018.9	1.2		2.2

Table 7 - Automated Data Collection Summary - VTP-3D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
12/19/2016	-0.3	1008.2	1.1		0.0
12/20/2016	-1.6	1009.8	0.9		0.0
12/21/2016	0.3	1014.8	0.9		0.0
12/22/2016	1.2	999.2	0.8		0.0
12/23/2016	2.0	991.4	0.7		0.0
12/24/2016	-1.4	1001.0	0.6		0.0
12/25/2016	-1.7	1007.4	0.6		0.0
12/26/2016	0.8	1008.5	0.6		0.5
12/27/2016	-0.5	1004.5	0.5		0.0
12/28/2016	-1.9	1016.5	0.6		0.0
12/29/2016	-0.5	1009.1	0.6		0.0
12/30/2016	-1.6	1012.5	0.5		0.0
12/31/2016	--	1004.2	0.5		0.0
1/1/2017	--	994.0	0.4		0.0
1/2/2017	-1.2	1003.2	0.3		0.0
1/3/2017	--	1011.9	0.4		1.2
1/4/2017	-1.6	1012.3	0.4		0.7
1/5/2017	-0.4	1012.8	0.4		0.7
1/6/2017	0.4	1005.9	0.4		0.5
1/7/2017	--	1000.3	0.4		1.5
1/8/2017	--	991.5	0.3		0.8
1/9/2017	-1.0	991.8	0.2		0.0
1/10/2017	0.4	990.3	0.2		0.3
1/11/2017	--	997.6	0.2		2.3
1/12/2017	-2.7	1011.1	0.2		1.7
1/13/2017	--	1017.5	0.3		0.6
1/14/2017	-0.3	1015.2	0.3		0.0
1/15/2017	-0.8	1013.3	0.3		0.0
1/16/2017	0.8	1007.3	0.2		0.0
1/17/2017	1.5	993.6	0.1		0.0
1/18/2017	1.6	981.6	0.1		0.0
1/19/2017	-0.7	986.1	0.1		0.0
1/20/2017	0.6	976.4	0.1		0.0
1/21/2017	-1.5	983.5	0.0		0.0
1/22/2017	-1.1	987.8	0.0		0.0
1/23/2017	-2.8	997.5	0.0		0.0
1/24/2017	-2.6	1007.8	0.1		0.0
1/25/2017	-2.4	1012.3	0.2		0.0
1/26/2017	-2.9	1020.1	0.2		0.0
1/27/2017	-2.3	1024.2	0.3		0.0

Table 7 - Automated Data Collection Summary - VTP-3D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
1/28/2017	-1.1	1021.9	0.3		0.0
1/29/2017	-0.7	1017.5	0.3		0.0
1/30/2017	-0.2	1014.6	0.2		0.0
1/31/2017	-0.4	1012.1	0.2		0.0
2/1/2017	-0.1	1012.8	0.2		0.0
2/2/2017	0.6	1007.3	0.2		0.0
2/3/2017	--	989.0	0.1		0.0
2/4/2017	-0.3	990.8	0.1		0.0
2/5/2017	-0.7	988.1	0.0		0.0
2/6/2017	--	987.3	0.0		0.0
2/7/2017	-2.2	995.3	0.0		0.0
2/8/2017	--	997.2	0.1		0.0
2/9/2017	0.4	983.0	0.1		1.6
2/10/2017	-4.6	998.0	0.0		0.0
2/11/2017	-5.3	1018.0	0.1		0.0
2/12/2017	-1.9	1017.8	0.1		0.0
2/13/2017	-0.5	1011.2	0.1		0.0
2/14/2017	0.0	1003.8	0.1		0.0
2/15/2017	1.4	991.4	0.1		0.0
2/16/2017	-0.4	987.2	0.0		0.0
2/17/2017	-1.0	991.8	0.0		0.0
2/18/2017	-0.1	984.8	0.0		0.0
2/19/2017	-1.2	986.3	0.0		0.0
2/20/2017	-1.8	990.4	0.0		0.0
2/21/2017	-3.3	1000.2	0.1		0.0
2/22/2017	-3.1	1009.5	0.0		0.0
2/23/2017	-1.8	1011.0	0.1		0.0
2/24/2017	-1.7	1009.2	0.1		0.0
2/25/2017	0.2	1008.4	0.1		0.0
2/26/2017	0.4	994.5	0.0		0.0
2/27/2017	-0.1	994.5	0.1		0.0
2/28/2017	-3.0	1004.7	0.1		0.0

Notes:

"--" Data point not collected due to freezing conditions

Table 8 - Automated Data Collection Summary - VTP-4S

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
Baseline					
9/8/2016	-0.8	1013.3	0.8	1.4	0.0
9/9/2016	-0.4	1013.9	20.7	13.5	0.1
9/10/2016	0.0	1008.0	60.8	41.5	0.0
9/11/2016	-0.3	1008.6	34.2	24.4	0.0
9/12/2016	-0.1	1009.1	28.7	19.8	0.0
9/13/2016	0.0	1005.1	60.4	41.5	0.0
Influence Test Startup - 9/14/16					
9/14/2016	-0.9	1005.3	27.0	19.3	0.0
9/15/2016	-1.6	1008.9	0.0	0.0	0.0
9/16/2016	-1.0	1005.2	0.0	0.0	0.0
9/17/2016	-1.2	1001.5	0.0	0.0	0.0
9/18/2016	-1.6	1005.5	0.0	0.0	0.0
9/19/2016	-1.6	1006.7	0.0	0.0	0.0
9/20/2016	-1.4	1008.0	0.0	0.0	4.0
9/21/2016	-1.2	1005.3	0.8	0.9	4.7
9/22/2016	-1.5	1004.8	0.0	0.0	1.3
9/23/2016	-1.5	1005.7	0.0	0.0	0.0
9/24/2016	-1.9	1014.9	0.0	0.0	0.0
9/25/2016	-1.2	1015.6	0.0	0.0	2.2
9/26/2016	-0.6	1007.2	0.0	0.0	9.3
9/27/2016	-1.2	1008.8	0.0	0.0	6.9
9/28/2016	-1.0	1006.6	0.1	0.1	11.8
9/29/2016	-1.3	1006.1	0.0	0.0	7.1
9/30/2016	-1.1	1004.3	0.0	0.0	16.4
10/1/2016	-1.1	1002.4	0.0	0.0	2.4
10/2/2016	-1.1	1001.7	0.0	0.0	0.0
10/3/2016	-1.0	1000.5	0.0	0.0	0.0
10/4/2016	-0.9	999.0	0.0	0.0	0.0
10/5/2016	-1.2	1001.0	17.6	11.0	0.0
10/6/2016	-0.7	1004.8	39.0	24.8	0.0
10/7/2016	-1.1	1002.8	45.2	30.0	0.0
10/8/2016	-0.3	999.9	52.2	35.3	0.0
10/9/2016	-0.8	1002.8	55.6	37.5	0.0
10/10/2016	-0.9	1006.0	51.7	34.7	0.0
10/11/2016	-0.8	1009.3	37.5	24.8	9.0
10/12/2016	0.1	1003.2	40.5	26.5	8.2
Gas Clam Removed - PT2X Installed on 10/12/16					
10/13/2016	1.1	986.6			
10/14/2016	-1.4	984.8			

Table 8 - Automated Data Collection Summary - VTP-4S

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
10/15/2016	0.0	981.5			
10/16/2016	-1.1	982.9			
10/17/2016	-2.8	992.7			
10/18/2016	-3.1	1006.3			
10/19/2016	-1.4	1011.3			
10/20/2016	-0.8	1004.7			
10/21/2016	-0.6	1002.8			
10/22/2016	-0.5	1000.0			
10/23/2016	-0.5	997.7			
10/24/2016	-0.6	992.3			
10/25/2016	-2.1	1001.2			
10/26/2016	-0.8	997.4			
10/27/2016	-1.4	998.5			
10/28/2016	-1.2	1000.2			
10/29/2016	-1.3	1000.0			
10/30/2016	0.3	992.0			
10/31/2016	-1.7	994.9			
11/1/2016	-2.0	1001.2			
11/2/2016	-1.8	1004.6			
11/3/2016	-1.7	1010.3			
11/4/2016	-0.4	1003.5			
11/5/2016	-0.4	999.0			
11/6/2016	-1.7	1003.6			
11/7/2016	-1.3	1006.5			
11/8/2016	-0.9	1005.4			
11/9/2016	-1.5	1007.6			
11/10/2016	-2.5	1009.0			
11/11/2016	-2.0	1005.2			
11/12/2016	-0.7	1001.1			
11/13/2016	0.7	1002.5			
11/14/2016	-1.9	1006.0			
11/15/2016	-2.8	1003.1			
11/16/2016	1.5	996.8			
11/17/2016	0.4	1003.9			
Gas Clam Installed on 11/18/16					
11/18/2016	-0.3	1002.0	52.1	31.1	2.1
11/19/2016	-0.3	993.5	51.9	33.1	1.8
11/20/2016	-0.7	994.7	1.5	1.2	18.8
11/21/2016	-1.1	1002.5	0.0	0.0	19.4
11/22/2016	-0.4	1000.9	3.4	4.0	13.5

Table 8 - Automated Data Collection Summary - VTP-4S

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
11/23/2016	-1.3	1003.1	13.6	13.3	1.3
11/24/2016	0.1	997.4	22.1	18.1	0.1
11/25/2016	-0.9	999.4	11.8	9.9	11.1
11/26/2016	0.1	988.2	31.6	24.3	4.2
11/27/2016	-0.7	992.7	3.5	3.7	16.6
11/28/2016	-1.4	1000.4	0.0	0.0	19.2
11/29/2016	-0.5	1006.8	0.3	0.5	18.3
11/30/2016	-1.1	1003.1	1.0	0.8	16.9
12/1/2016	-1.6	1013.0	0.0	0.0	19.3
12/2/2016	-0.7	1011.1	0.0	0.0	19.3
12/3/2016	-0.8	1010.8	0.2	0.1	18.7
12/4/2016	-0.1	1005.7	1.4	1.2	14.7
12/5/2016	--	--	--	--	--
12/6/2016	--	--	--	--	--
12/7/2016	--	--	--	--	--
12/8/2016	--	1005.8	0.5	1.5	17.9
12/9/2016	--	--	--	--	--
12/10/2016	--	--	--	--	--
12/11/2016	--	--	--	--	--
GW-9 Flow Rate Adjusted to 15 scfm					
12/12/2016	-1.1	1009.1	0.0	0.0	19.2
12/13/2016	-0.8	1013.0	0.0	0.0	19.0
12/14/2016	--	1005.5	0.0	0.1	21.7
12/15/2016	--	--	--	--	--
12/16/2016	--	--	--	--	--
12/17/2016	--	--	--	--	--
12/18/2016	--	--	--	--	--
12/19/2016	-0.7	1009.0	0.6	0.6	17.5
12/20/2016	0.1	1010.1	1.0	1.4	16.3
12/21/2016	0.0	1015.9	0.0	0.0	19.5
12/22/2016	-0.4	1000.2	0.0	0.0	19.2
12/23/2016	-0.3	992.1	0.0	0.0	18.9
12/24/2016	-0.2	1001.7	0.0	0.0	19.1
12/25/2016	-0.3	1008.0	0.0	0.0	19.5
12/26/2016	-0.4	1009.4	0.0	0.0	19.1
12/27/2016	-0.3	1005.3	0.0	0.0	19.2
12/28/2016	-1.0	1017.0	0.0	0.0	19.1
12/29/2016	-0.7	1009.9	0.0	0.0	19.0
12/30/2016	-1.4	1013.1	0.0	0.0	19.0
12/31/2016	--	1005.0	0.0	0.0	19.7

Table 8 - Automated Data Collection Summary - VTP-4S

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
1/1/2017	--	994.7	0.2	0.0	17.5
1/2/2017	--	1003.7	0.2	0.0	19.6
1/3/2017	--	1012.6	0.1	0.0	16.3
1/4/2017	--	1013.0	0.1	0.0	15.6
1/5/2017	--	1013.4	0.1	0.0	15.5
1/6/2017	--	1006.5	0.1	0.0	16.4
1/7/2017	--	1001.0	0.0	0.0	16.8
1/8/2017	--	992.6	0.1	0.0	18.4
1/9/2017	--	992.6	0.2	0.0	19.7
1/10/2017	0.8	991.3	0.2	0.0	20.0
1/11/2017	--	--	--	--	--
1/12/2017	-1.0	1013.7	0.1	0.2	19.0
1/13/2017	--	1018.2	0.0	0.0	19.8
1/14/2017	-0.5	1015.9	0.0	0.0	19.4
1/15/2017	-0.4	1013.9	0.0	0.0	19.3
1/16/2017	-0.2	1008.0	7.9	7.1	13.8
1/17/2017	0.2	994.4	22.8	19.9	2.8
1/18/2017	0.1	982.7	7.1	14.0	0.6
1/19/2017	-1.2	987.0	0.1	0.2	18.4
1/20/2017	-0.4	977.3	2.5	6.4	8.5
1/21/2017	-1.2	984.5	0.0	0.0	19.3
1/22/2017	-1.2	988.8	0.0	0.0	19.2
1/23/2017	-1.4	998.4	0.0	0.0	19.3
1/24/2017	-1.3	1008.6	0.0	0.0	19.0
1/25/2017	-1.7	1013.2	0.0	0.0	19.1
1/26/2017	-1.5	1020.8	0.0	0.0	19.1
1/27/2017	-1.0	1024.9	0.0	0.0	19.2
1/28/2017	-0.7	1022.7	0.0	0.0	19.1
1/29/2017	-0.6	1018.3	0.0	0.0	19.1
1/30/2017	-0.5	1015.5	0.0	0.0	19.2
1/31/2017	-0.5	1013.0	0.0	0.0	19.1
2/1/2017	-0.5	1013.7	0.0	0.0	19.4
2/2/2017	-0.4	1008.1	0.0	0.0	19.2
2/3/2017	--	--	--	--	--
2/4/2017	-1.5	991.8	0.2	0.5	17.1
2/5/2017	-1.7	989.1	0.0	0.0	18.9
2/6/2017	--	988.5	1.6	0.9	17.1
2/7/2017	--	--	--	--	--
2/8/2017	--	--	--	--	--
2/9/2017	-0.7	983.9	0.5	2.2	14.1

Table 8 - Automated Data Collection Summary - VTP-4S

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
2/10/2017	-1.9	998.9	0.0	0.0	19.3
2/11/2017	-1.8	1018.8	0.0	0.0	19.3
2/12/2017	-0.7	1018.8	0.0	0.0	19.2
2/13/2017	-0.5	1012.1	0.0	0.0	19.2
2/14/2017	-0.3	1004.7	1.6	1.3	17.0
2/15/2017	0.2	992.4	2.0	8.1	2.0
2/16/2017	-0.5	988.0	1.0	4.5	12.8
2/17/2017	-0.7	992.8	0.0	0.0	19.5
2/18/2017	-0.7	985.8	0.0	0.0	19.2
2/19/2017	-1.5	987.0	0.0	0.0	19.2
2/20/2017	-1.9	991.3	0.0	0.0	19.2
2/21/2017	-2.8	1001.0	0.0	0.0	19.3
2/22/2017	-2.4	1010.5	0.0	0.0	19.1
2/23/2017	-1.5	1012.0	0.0	0.0	19.4
2/24/2017	-1.5	1010.2	0.0	0.0	19.4
2/25/2017	-0.4	1009.3	0.2	0.8	16.5
2/26/2017	-0.6	995.4	0.6	3.4	11.0
2/27/2017	-1.1	995.5	0.0	0.1	18.4
2/28/2017	-2.2	1005.5	0.0	0.0	19.3

Notes:

"--" Data point not collected due to freezing conditions

Table 9 - Automated Data Collection Summary - VTP-4D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
Baseline					
8/24/2016	0.2	1008.1	1.3		7.6
8/25/2016	0.4	1005.0	1.4		6.2
8/26/2016	0.4	999.5	1.7		4.1
8/27/2016	-0.2	998.1	1.1		14.0
8/28/2016	-0.5	1004.5	0.0		20.4
8/29/2016	0.0	1003.4	0.7		13.4
8/30/2016	-0.1	1003.0	0.9		12.8
8/31/2016	-0.2	1001.8	1.2		11.2
9/1/2016	0.0	1002.1	0.6		15.3
9/2/2016	-0.3	1001.3	0.7		15.4
9/3/2016	-0.2	1002.7	0.4		16.5
9/4/2016	-0.3	1002.2	0.4		16.6
9/5/2016	-0.2	1002.8	0.6		15.1
9/6/2016	-0.3	1001.8	0.9		12.8
9/7/2016	-0.6	1006.9	0.0		20.5
9/8/2016	-0.8	1010.5	0.0		20.3
9/9/2016	-0.3	1012.5	0.4		15.2
9/10/2016	0.3	1006.6	1.3		4.1
9/11/2016	-0.3	1007.2	0.3		17.9
9/12/2016	-0.1	1007.6	0.6		14.6
9/13/2016	0.3	1003.5	1.8		4.2
Influence Test Startup - 9/14/16					
9/14/2016	-0.4	1004.1	1.0		14.8
9/15/2016	-0.5	1007.4	0.0		20.6
9/16/2016	0.1	1003.8	0.4		12.4
9/17/2016	-0.1	1000.1	0.4		12.6
9/18/2016	-0.8	1004.3	0.0		20.4
9/19/2016	-0.6	1005.3	0.0		20.4
9/20/2016	-0.5	1006.6	0.0		20.4
9/21/2016	0.1	1003.6	0.2		12.7
9/22/2016	-0.5	1003.3	0.1		15.6
9/23/2016	-0.4	920.2	0.1		16.3
9/24/2016	-0.9	1014.5	0.0		19.8
9/25/2016	-0.4	1014.2	0.1		15.3
9/26/2016	0.4	1005.8	0.2		4.1
9/27/2016	-0.4	1007.5	0.2		16.0
9/28/2016	-0.1	1005.4	0.1		11.4
9/29/2016	-0.3	1004.7	0.0		20.1
9/30/2016	0.0	1002.8	0.1		12.0

Table 9 - Automated Data Collection Summary - VTP-4D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
10/1/2016	-0.2	1001.0	0.0		15.6
10/2/2016	-0.2	1000.3	0.0		15.4
10/3/2016	-0.1	999.0	0.0		13.7
10/4/2016	-0.2	997.5	0.0		14.0
10/5/2016	-0.6	999.5	0.2		17.4
10/6/2016	-0.3	1003.4	0.0		12.0
10/7/2016	-0.5	1001.1	0.4		9.8
10/8/2016	0.3	998.5	0.1		1.4
10/9/2016	-0.6	1001.5	1.5		1.7
10/10/2016	-0.5	1004.4	2.2		4.7
10/11/2016	-0.5	1007.9	1.9		5.4
10/12/2016	0.3	1003.0	1.2		5.3
Gas Clam Removed - PT2X Installed on 10/12/16					
10/13/2016	1.5	987.3			
10/14/2016	-0.8	984.4			
10/15/2016	0.3	981.7			
10/16/2016	-0.7	982.9			
10/17/2016	-2.2	992.0			
10/18/2016	-2.6	1005.7			
10/19/2016	-1.4	1011.6			
10/20/2016	-0.5	1004.7			
10/21/2016	-0.3	1003.0			
10/22/2016	-0.3	1000.2			
10/23/2016	-0.4	997.9			
10/24/2016	-0.3	992.1			
10/25/2016	-1.8	1001.0			
10/26/2016	-0.5	997.5			
10/27/2016	-1.1	998.4			
10/28/2016	-1.1	1000.2			
10/29/2016	-1.1	1000.0			
10/30/2016	0.3	992.4			
10/31/2016	-1.3	994.6			
11/1/2016	-1.8	1000.9			
11/2/2016	-1.6	1004.4			
11/3/2016	-1.7	1010.5			
11/4/2016	-0.3	1003.7			
11/5/2016	-0.2	999.1			
11/6/2016	-1.5	1003.4			
11/7/2016	-1.3	1006.5			
11/8/2016	-0.8	1005.4			

Table 9 - Automated Data Collection Summary - VTP-4D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
11/9/2016	-1.2	1008.0			
11/10/2016	-0.4	1005.1			
11/11/2016	0.0	1000.8			
11/12/2016	-1.5	1003.0			
11/13/2016	-0.6	1005.6			
11/14/2016	-0.5	1002.9			
11/15/2016	-0.2	997.0			
11/16/2016	-1.4	1004.1			
11/17/2016	-1.4	1008.4			
11/18/2016	0.5	1001.0			
11/19/2016	0.3	992.7			
11/20/2016	-0.6	994.2			
11/21/2016	-1.5	1001.9			
11/22/2016	-0.2	1000.3			
11/23/2016	-1.2	1002.6			
11/24/2016	0.4	996.7			
11/25/2016	-0.8	998.6			
11/26/2016	0.8	987.4			
11/27/2016	-0.6	991.9			
11/28/2016	-2.4	999.8			
11/29/2016	-1.3	1006.0			
11/30/2016	-1.4	1002.6			
12/1/2016	-2.5	1012.4			
12/2/2016	-1.0	1010.5			
12/3/2016	-1.1	1010.3			
12/4/2016	-0.7	1005.1			
12/5/2016	-0.7	1005.2			
12/6/2016	-1.9	1009.0			
12/7/2016	-1.8	1015.8			
12/8/2016	0.4	1004.7			
12/9/2016	-0.1	1000.6			
12/10/2016	-0.5	998.1			
12/11/2016	-1.1	1001.0			
GW-9 Flow Rate Adjusted to 15 scfm					
12/12/2016	-2.2	1008.3			
12/13/2016	-1.7	1012.1			
12/14/2016	0.1	1004.3			
12/15/2016	-0.6	999.8			
12/16/2016	-2.0	1006.7			
12/17/2016	-2.5	1016.9			

Table 9 - Automated Data Collection Summary - VTP-4D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
12/18/2016	-1.1	1018.2			
12/19/2016	0.1	1007.9			
12/20/2016	-1.7	1009.6			
12/21/2016	-0.9	1014.6			
12/22/2016	1.0	998.9			
12/23/2016	0.3	991.0			
12/24/2016	-1.8	1000.8			
12/25/2016	-2.0	1007.1			
12/26/2016	-1.0	1008.2			
12/27/2016	-1.2	1004.5			
12/28/2016	-2.5	1016.2			
12/29/2016	-0.6	1009.0			
12/30/2016	-1.7	1012.4			
12/31/2016	0.5	1003.8			
1/1/2017	0.0	993.7			
1/2/2017	-2.1	1002.8			
1/3/2017	-2.2	1011.5			
1/4/2017	-1.7	1011.8			
1/5/2017	-1.1	1012.1			
1/6/2017	-0.3	1005.0			
1/7/2017	-0.2	999.6			
1/8/2017	0.8	991.1			
1/9/2017	-0.9	991.4			
1/10/2017	-0.4	989.9			
1/11/2017	-2.2	997.0			
1/12/2017	-2.9	1010.6			
1/13/2017	-2.3	1017.1			
1/14/2017	-1.0	1014.8			
1/15/2017	-1.1	1013.0			
1/16/2017	0.1	1007.1			
1/17/2017	1.2	993.3			
1/18/2017	1.2	981.4			
1/19/2017	-0.9	985.9			
1/20/2017	0.9	976.0			
1/21/2017	-1.8	983.3			
1/22/2017	-1.4	987.5			
1/23/2017	-2.8	997.2			
1/24/2017	-2.8	1007.5			
1/25/2017	-2.5	1012.2			
1/26/2017	-3.0	1019.9			

Table 9 - Automated Data Collection Summary - VTP-4D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)	Average Daily CH4 (%vol)	Average Daily CO2 (%vol)	Average Daily O2 (%vol)
1/27/2017	-2.3	1024.0			
1/28/2017	-1.3	1021.8			
1/29/2017	-0.9	1017.5			
1/30/2017	-0.5	1014.6			
1/31/2017	-0.9	1012.1			
2/1/2017	-0.9	1012.6			
2/2/2017	-0.1	1007.1			
2/3/2017	1.8	988.6			
2/4/2017	-0.8	990.7			
2/5/2017	0.3	987.7			
2/6/2017	-1.5	987.1			
2/7/2017	-2.0	995.0			
2/8/2017	-0.8	996.8			
2/9/2017	0.4	982.8			
2/10/2017	-3.3	997.9			
2/11/2017	-4.7	1018.0			
2/12/2017	-2.1	1017.6			
2/13/2017	-0.7	1011.0			
2/14/2017	0.1	1003.6			
2/15/2017	1.3	991.1			
2/16/2017	-0.3	987.1			
2/17/2017	-0.7	991.6			
2/18/2017	0.0	984.5			
2/19/2017	-1.0	986.1			
2/20/2017	-1.5	990.2			
2/21/2017	-2.9	1000.2			
2/22/2017	-2.7	1009.6			
2/23/2017	-1.8	1010.9			
2/24/2017	-1.3	1009.2			
2/25/2017	-0.6	1008.2			
2/26/2017	0.6	994.3			
2/27/2017	-0.4	994.3			
2/28/2017	-2.5	1004.7			

Notes:

"--" Data point not collected due to freezing conditions

Table 10 - Automated Data Collection Summary - VTP-5D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

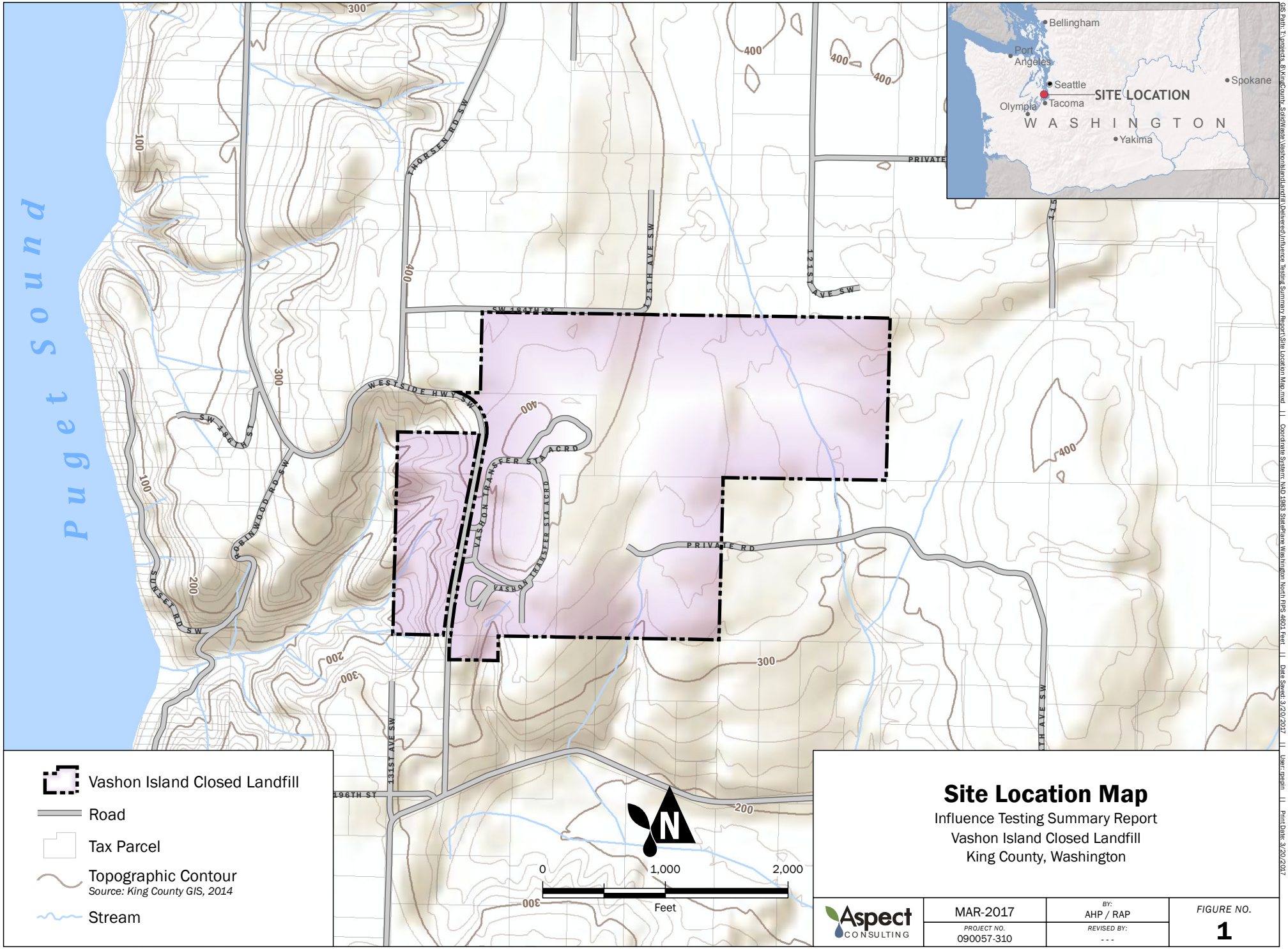
Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)
PT2X Transducer Installed 2/9/2017		
2/9/2017	-0.9	984.6
2/10/2017	-2.9	997.9
2/11/2017	-4.1	1018.0
2/12/2017	-1.9	1017.6
2/13/2017	-0.6	1011.0
2/14/2017	0.0	1003.6
2/15/2017	1.1	991.1
2/16/2017	-0.3	987.1
2/17/2017	-0.6	991.6
2/18/2017	0.0	984.5
2/19/2017	-0.9	986.1
2/20/2017	-1.3	990.2
2/21/2017	-2.5	1000.2
2/22/2017	-2.3	1009.6
2/23/2017	-1.5	1010.9
2/24/2017	-1.1	1009.2
2/25/2017	-0.5	1008.2
2/26/2017	0.6	994.3
2/27/2017	-0.3	994.3
2/28/2017	-2.1	1004.7

Table 11 - Automated Data Collection Summary - VTP-6D

Project No. 090057 Task 310.1.6.4, Vashon Island Landfill, King County, WA

Date	Average Daily Static Pressure (inwc)	Average Daily Barometric Pressure (inHg)
PT2X Transducer Installed 2/9/2017		
2/9/2017	0.1	984.6
2/10/2017	-0.6	997.9
2/11/2017	-0.9	1018.0
2/12/2017	-0.1	1017.6
2/13/2017	0.3	1011.0
2/14/2017	0.5	1003.6
2/15/2017	1.1	991.1
2/16/2017	0.4	987.1
2/17/2017	0.3	991.6
2/18/2017	0.5	984.5
2/19/2017	0.2	986.1
2/20/2017	0.0	990.2
2/21/2017	-0.4	1000.2
2/22/2017	-0.3	1009.6
2/23/2017	0.0	1010.9
2/24/2017	0.2	1009.2
2/25/2017	0.3	1008.2
2/26/2017	0.7	994.3
2/27/2017	0.4	994.3
2/28/2017	-0.1	1004.7

Figures



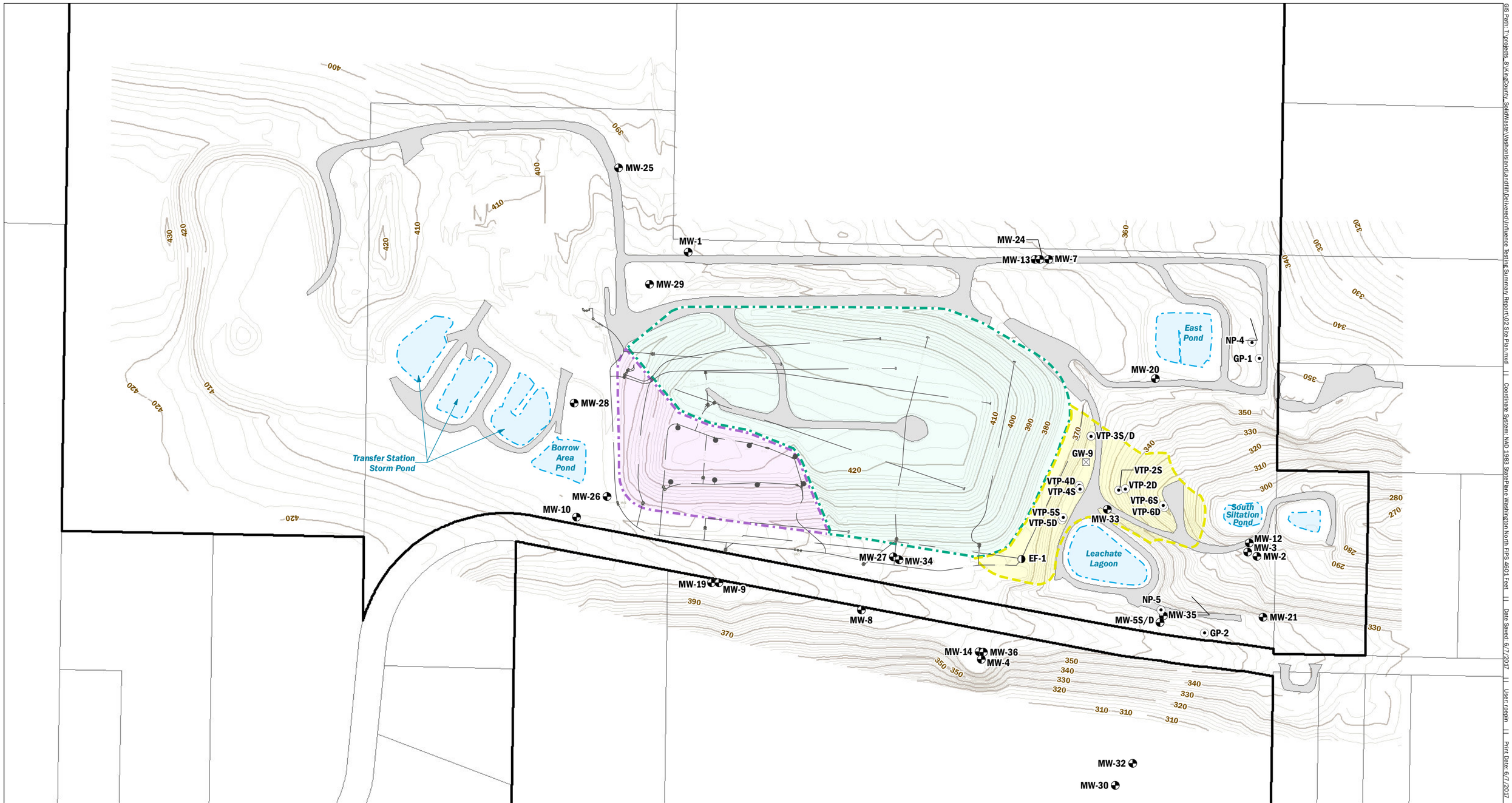
Site Location Map

Influence Testing Summary Report
Vashon Island Closed Landfill
King County, Washington

Aspect CONSULTING

MAR-2017	BY: AHP / RAP	FIGURE NO. 1
PROJECT NO. 090057-310	REVISED BY: ---	

Sources: Esri, USGS, NOAA



Exploration

- Gas Probe
- LFG Extraction Well
- Monitoring Well
- LFG Trench Riser

- 1988 Final Cover
- 2001 Final Cover
- Estimated Extent of South Slope Refuse *Golder, 1987*

- Landfill Gas System *Locations Approximate*
- Site Boundary
- Pond
- Road
- Tax Parcel

N

0 200 400

Feet

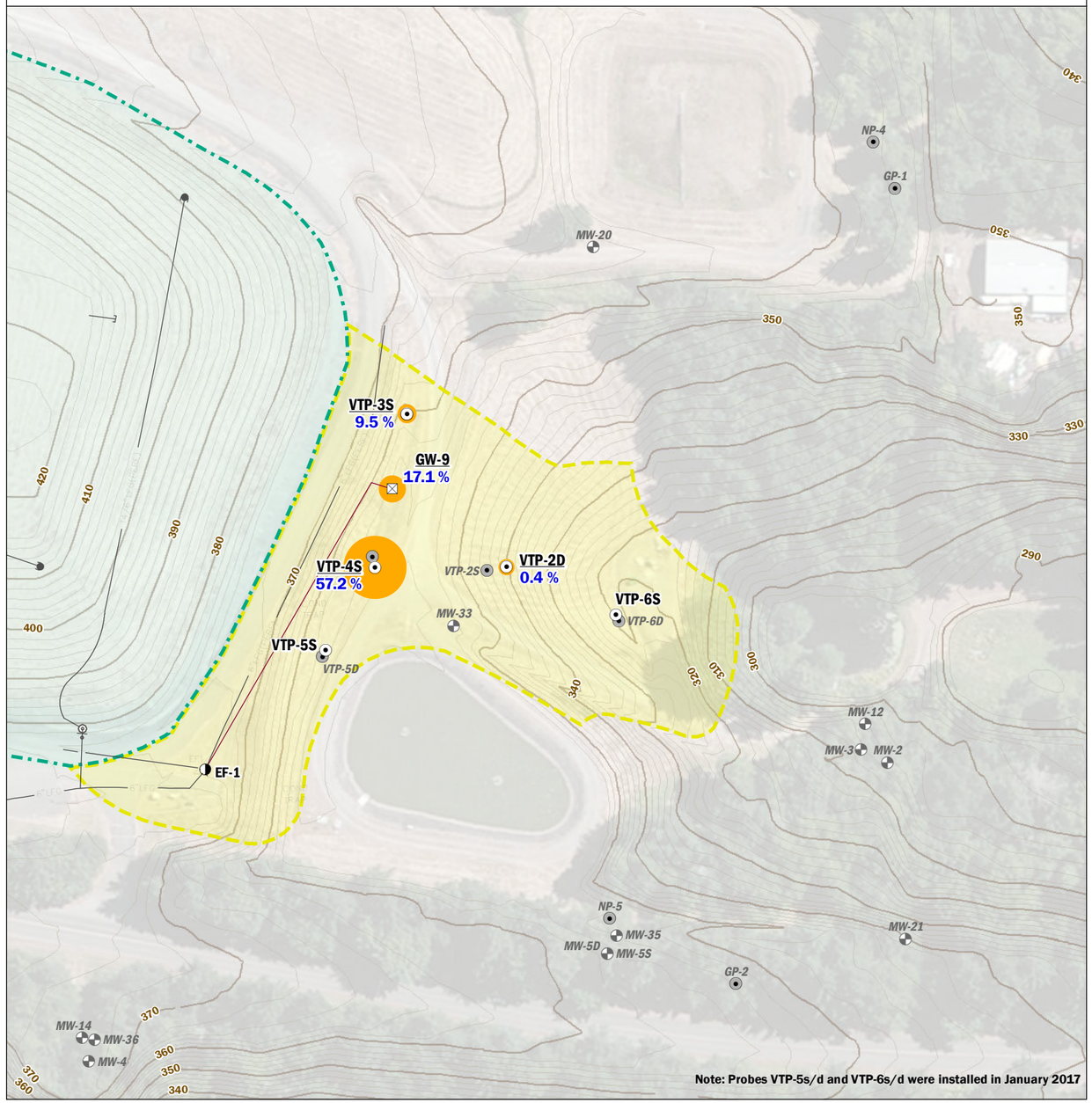
Site Plan

Influence Testing Summary Report
Vashon Island Closed Landfill
King County, Washington

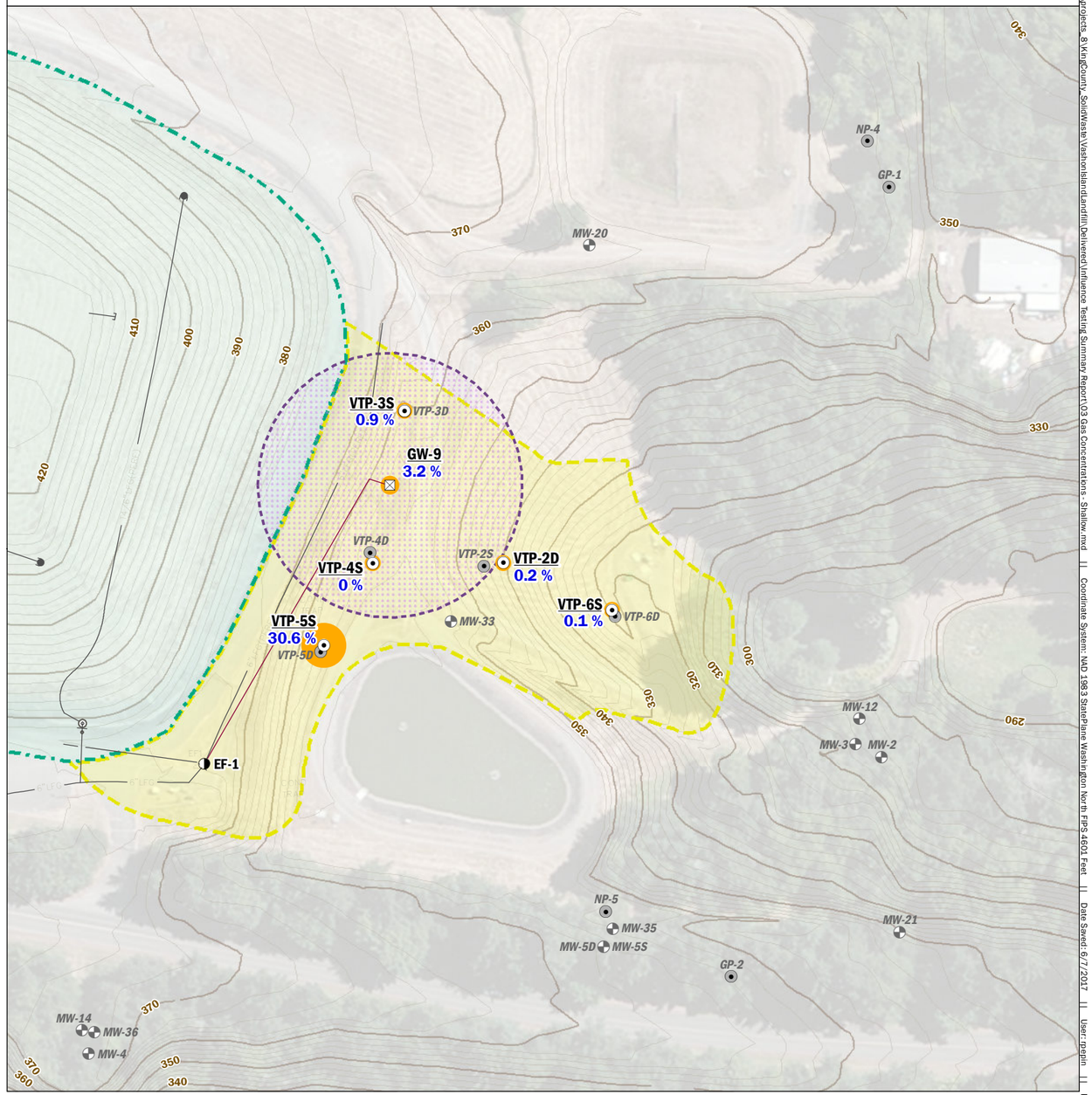
Aspect Consulting	JUN-2017	BY: ELG / RAP	FIGURE NO. 2
	PROJECT NO. 090057-310	REVISED BY: ---	

GIS Path: T:\projects_8\KingCounty_SolidWaste\VashonIslandLandfill\Delivered\Influence Testing Summary Report\02 Site Plan.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 6/7/2017 || User: rpepin || Print Date: 6/7/2017

September 2016



March 2017



Methane Concentration *(Shown as percentage)*

- < 1%
- 1 - 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- 40 - 50%
- 50 - 60%

Explorations

Explorations not sampled shown in gray

- Gas Probe
- LFG Extraction Well
- Monitoring Well
- LFG Trench Riser

- GW-9 Radius of Influence
  Estimated at 100' radius
- 2001 Final Cover
- Estimated Extent of South Slope Refuse
  Golder, 1987

- Landfill Gas System
  Locations Approximate
- Conveyance Line

0 100 200
Feet

Influence Test Methane Concentrations - Shallow Probes

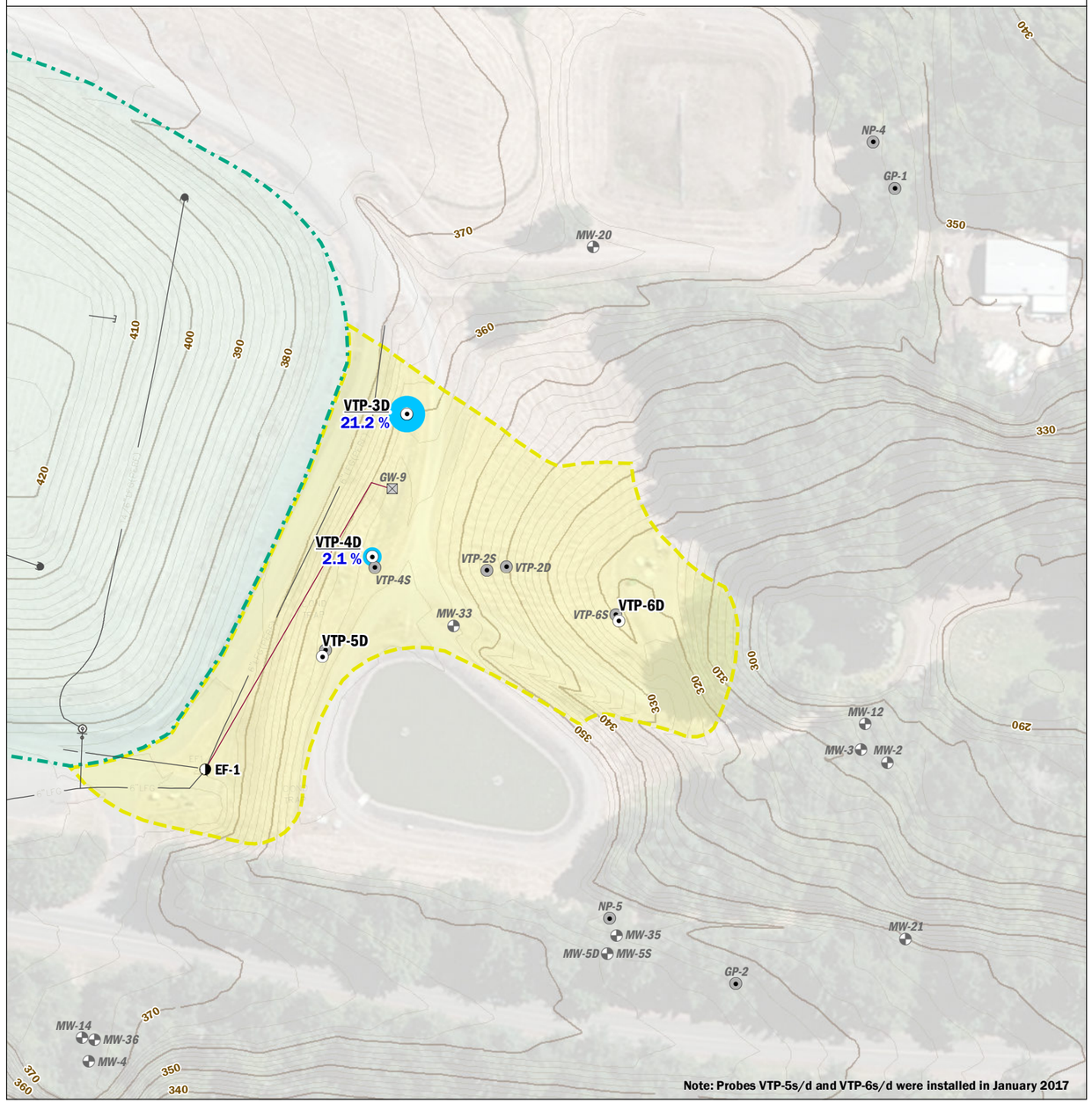
Influence Testing Summary Report
Vashon Island Closed Landfill
King County, Washington

Aspect Consulting	JUN-2017	BY: ELG / RAP	FIGURE NO. 3
	PROJECT NO. 090057-310	REVISED BY: ---	

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

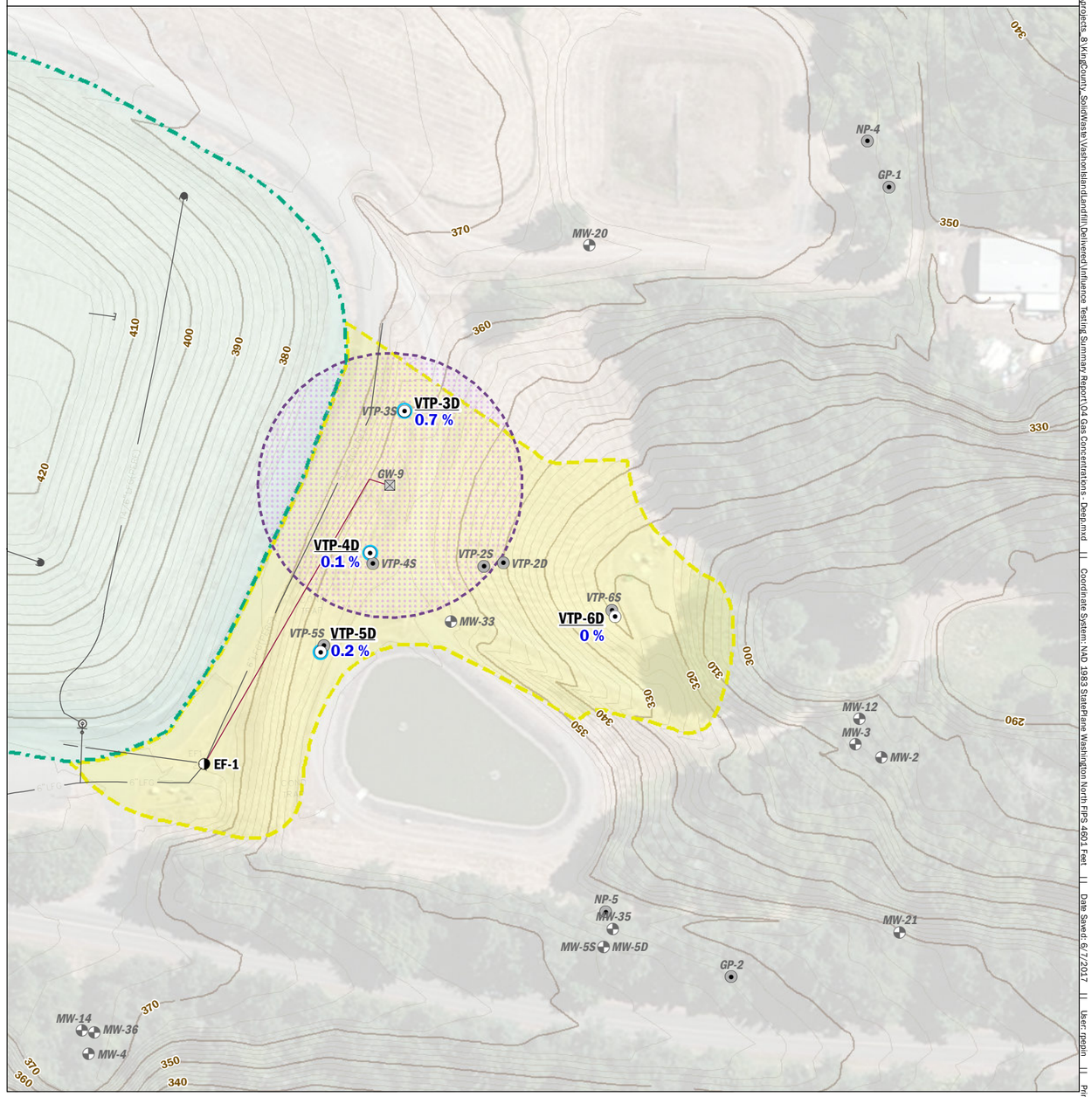
GIS Path: T:\projects_8\KingCounty_SolidWaste\VashonIslandLandfill\Deliverce\Influence Testing Summary Report\03 Gas Concentrations - Shallow.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 6/7/2017 || User: rpelin || Print Date: 6/7/2017

September 2016



Note: Probes VTP-5s/d and VTP-6s/d were installed in January 2017

March 2017



Methane Concentration
Shown as percentage

- < 1%
- 1 - 10%
- 10 - 20%
- 20 - 30%

Explorations
Explorations not sampled shown in gray

- Gas Probe
- LFG Extraction Well
- Monitoring Well
- LFG Trench Riser

- GW-9 Radius of Influence
  Estimated at 100' radius
- 2001 Final Cover
- Estimated Extent of South Slope Refuse
  Golder, 1987

- Landfill Gas System
  Locations Approximate
- Conveyance Line

N

0 100 200
Feet

Influence Test Methane Concentrations - Deep Probes

Influence Testing Summary Report
Vashon Island Closed Landfill
King County, Washington

Aspect Consulting	JUN-2017	BY: ELG / RAP	FIGURE NO. 4
	PROJECT NO. 090057-310	REVISED BY: ---	

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\KingCounty_SolidWaste\VashonIslandLandfill\Deliverset\Influence Testing Summary Report\04 Gas Concentrations - Deep.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 6/7/2017 || User: mepin || Print Date: 6/7/2017

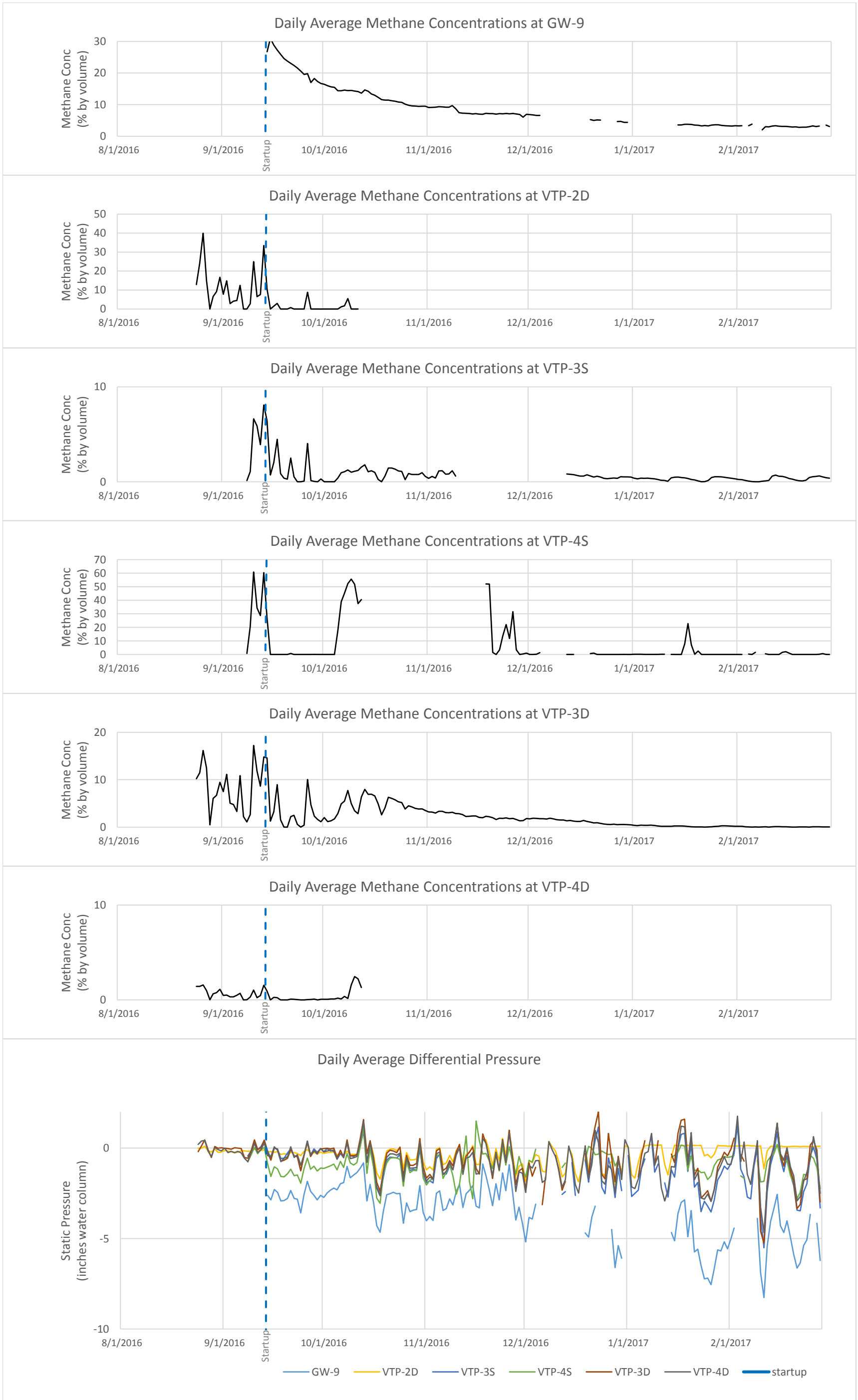


Figure 5
Influence Test Daily Average Data Summary
Influence Testing Summary Report
Vashon Island Closed Landfill

Aspect Consulting
June 2017
V:\090057 Closed Landfill E00102E08\Deliverables\Vashon\Task 310\310.1.6.4 Influence Testing\LFG Influence Testing Summary Report\attachments\Figures\Fig 5-6

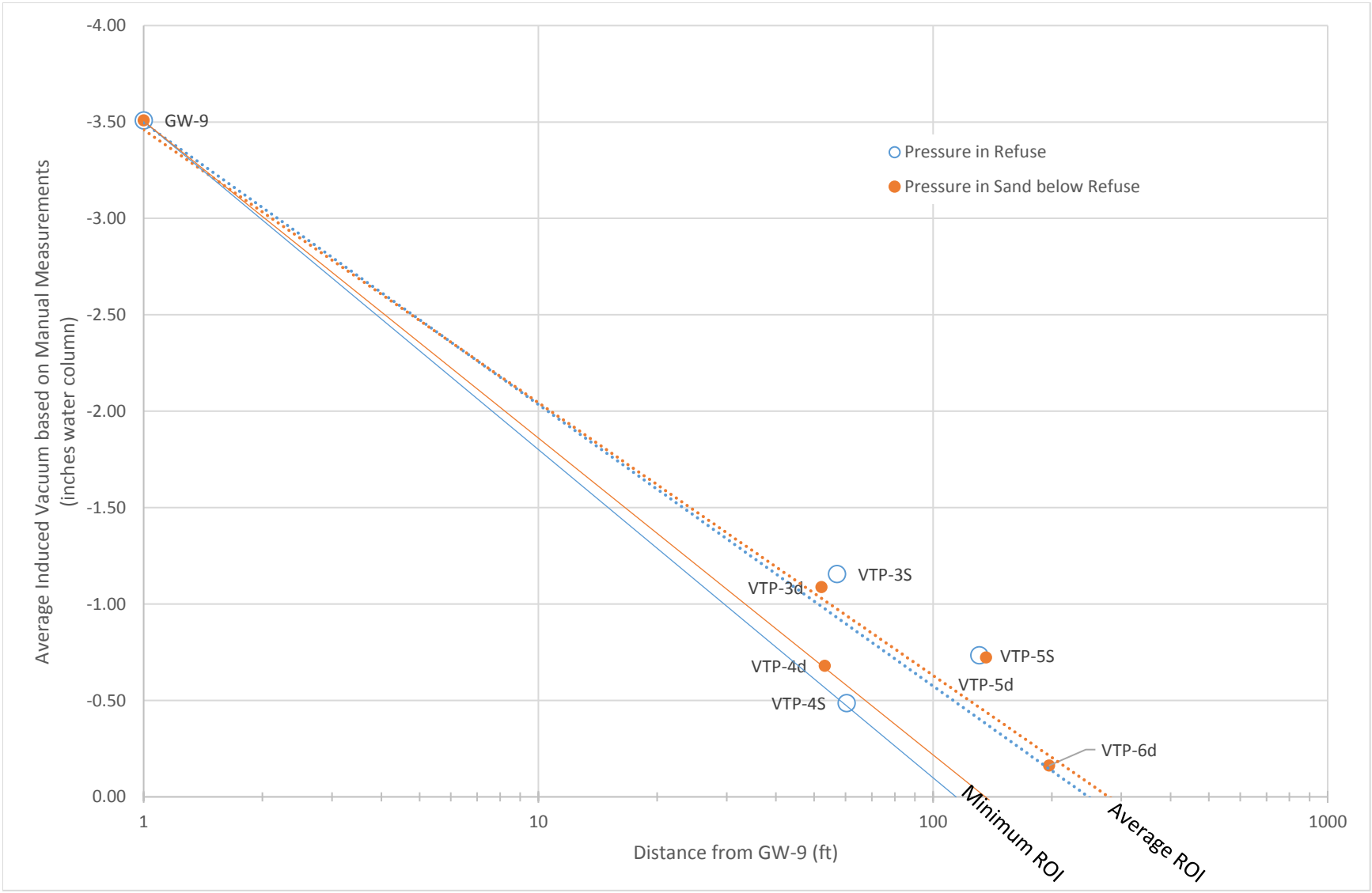
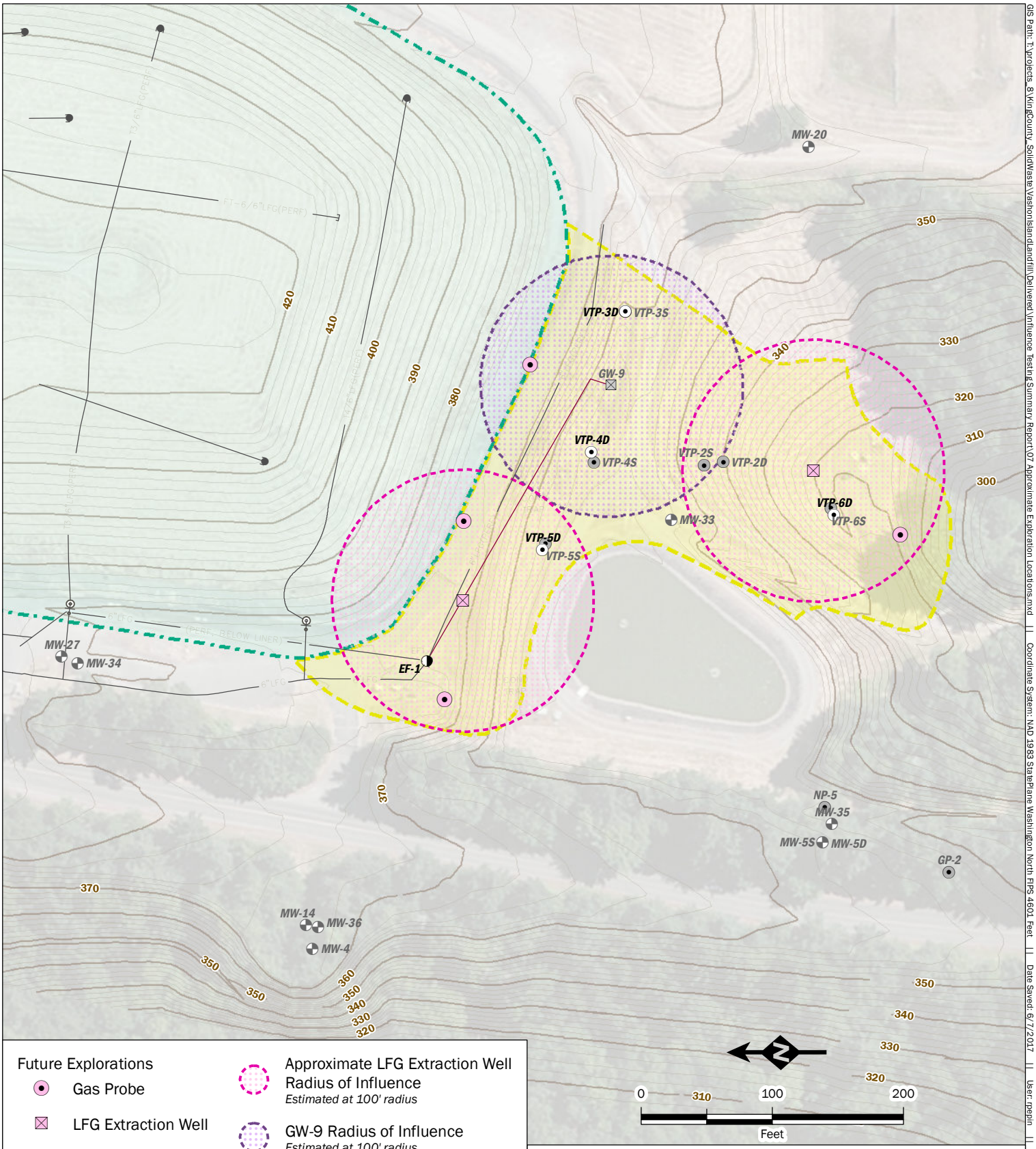


Figure 6
Radius of Influence
Influence Testing Summary Report
Vashon Island Closed Landfill



Future Explorations
- Gas Probe
- LFG Extraction Well

Existing Explorations
Shallow Zone shown in Grey
- Gas Probe
- LFG Extraction Well
- Monitoring Well
- Landfill Gas System
  Locations Approximate

- Approximate LFG Extraction Well Radius of Influence
  Estimated at 100' radius
- GW-9 Radius of Influence
  Estimated at 100' radius
- 2001 Final Cover
- Estimated Extent of South Slope Refuse
  Golder, 1987
- Conveyance Line

Approximate Locations Of Future Gas Probes and Extraction Wells

Influence Testing Summary Report
Vashon Island Closed Landfill
King County, Washington

Aspect Consulting	JUN-2017	BY: ELG / RAP / KES	FIGURE NO. 7
	PROJECT NO. 090057-310	REVISED BY: ---	

GIS Path: T:\projects_8\KingCounty_SolidWaste\VashonIslandLandfill\Delivered\Influence Testing Summary Report\07 Approximate Exploration Locations.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 6/7/2017 || User: rpepin || Print Date: 6/7/2017

Appendix A

Daily Field Reports

DAILY REPORT

350 Madison Avenue North
Bainbridge Island, Washington 98110
(206) 780-9370

401 Second Avenue S, Suite 201
Seattle, Washington 98104
(206) 328-7443

DATE: 8/24/2016	**PROJECT NO.** 090057	**WEATHER:** 80S SUNNY
PROJECT NAME: King County Closed Landfills – Vashon Island and Cedar Falls Landfills	**CLIENT: KING COUNTY SOLID WASTE DIVISION**	
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000	**PROJECT LOCATION: VASHON ISLAND**	

THE FOLLOWING WAS NOTED:

12:30 - Aspect (Eric Geissinger) onsite at Vashon Island Closed Landfill
12:30-16:00 – Assemble and install GasClam housings, pre-purge monitoring points and collect GEM2000 measurements.
16:00 – Aspect (Eric Geissinger) offsite at Vashon Island Closed Landfill

Gasclams were installed and connected to VTP-2D, VTP-3D, and VTP-4D. A Gasclam was placed in a stand next to GW-9 for future connection.

– Installation data summarized below:

Probe ID	GasClam Serial Number	Measured Total Depth (ft BTOC)	Measured Water Level (ft BTOC)	Screen Length (ft)	Approximate Intake Depth (ft BTOC)	Methane Range
VTP-2D	399	27.5	26.79	2.9	18	Hi
VTP-3D	328	41.7	Dry	2.5	37	Hi/Lo
VTP-4D	336	57.4	Dry	2.5	52	Hi/Lo
GW-9	397	--	--		--	Hi

Manual LFG measurements were collected at VTP-2D, VTP 3S/D, and VTP-4S/D with a GEM 2000. Barometric pressure was decreasing between 9am and 7pm according to local weather station info (KWAVASHO13).

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-2D	29.77	0.03	3000	2.0	3.4	15.0	3
VTP-3S	29.77	0.16	3000	4.2	7.1	7.6	3
VTP-3D	29.77	-0.14	3000	12.0	10.8	5.4	2
VTP-4S	29.77	0.20	3000	58.4	37.0	0.1	2
VTP-4D	29.77	0.22	3000	1.3	13.9	0.5	2

COPIES TO: File, KCSWD	**Aspect Consulting PROJECT MANAGER:** John Strunk, Sr. Associate

 FIELD REP.: Eric Geissinger, Project Engineer

DAILY REPORT

350 Madison Avenue North
Bainbridge Island, Washington 98110
(206) 780-9370

401 Second Avenue S, Suite 201
Seattle, Washington 98104
(206) 328-7443

DATE: 9/8/2016	**PROJECT NO.** 090057	**WEATHER:** 70S SUNNY
PROJECT NAME: King County Closed Landfills – Vashon Island and Cedar Falls Landfills	**CLIENT: KING COUNTY SOLID WASTE DIVISION**	
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000	**PROJECT LOCATION: VASHON ISLAND**	

THE FOLLOWING WAS NOTED:

11:45 - Aspect (Eric Geissinger) onsite at Vashon Island Closed Landfill
12:30-15:00 – Assemble and install GasClam housings, pre-purge monitoring points and collect GEM2000 measurements.
15:00 – Aspect (Eric Geissinger) offsite at Vashon Island Closed Landfill

NOTE: King County maintenance crew was on-site installing pipe and connections to GW-9. Flo-Wing and valve installed at the top of the hill near GW-1. They will return Monday, 9/12/16 to finish the connection.

GasClams were installed and connected to VTP-3S and VTP-4S. A GasClam remains in a stand next to GW-9 for future connection once the pipework is finished.

– Installation data summarized below:

Probe ID	GasClam Serial Number	Measured Total Depth (ft BTOC)	Measured Water Level (ft BTOC)	Screen Length (ft)	Approximate Intake Depth (ft BTOC)	Methane Range
VTP-3S	374	30.25	Dry	2.5	25	Hi/Lo
VTP-4S	375	28.20	Dry	2.5	23	Hi

Manual LFG measurements were collected at VTP-2D, VTP 3S/D, and VTP-4S/D with a GEM 2000. Barometric pressure was increasing between 8am and 4pm according to local weather station info (KWAVASHO13), consistent with negative probe relative pressure observations.

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-2D	29.79	-0.11	3000	0	0	20.4	2
VTP-3S	29.79	-0.58	3000	0.9	3.4	16.8	3
VTP-3D	29.79	-0.66	3000	19.1	15.8	5.3	2
VTP-4S	29.79	-0.49	3000	29.5	25.0	6.8	3
VTP-4D	29.79	-0.60	3000	0.7	4.9	13.1	2

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 FIELD REP.: Eric Geissinger, Project Engineer

DAILY REPORT

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DATE: 9/14/2016	**PROJECT NO.** 090057	**WEATHER:** 70S SUNNY
PROJECT NAME: King County Closed Landfills – Vashon Island and Cedar Falls Landfills	**CLIENT: KING COUNTY SOLID WASTE DIVISION**	
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000	**PROJECT LOCATION: VASHON ISLAND**	

THE FOLLOWING WAS NOTED:

9:00 - Aspect (Eric Geissinger) onsite at Vashon Island Closed Landfill.

9:10 – Herrera (Tyson Wright) onsite at Vashon Island Closed Landfill.

Upon arrival, GW-9 conveyance line was found disconnected immediately upstream of valve and flow meter near connection to EF-1. Disconnection appeared to be due to thermal expansion/contraction of HDPE pipe and lack of support or flexible tubing at connection point.

9:15-11:00 Aspect and Herrera left site briefly to obtain repair materials from local hardware store and returned to the site. GW-9 conveyance pipe was modified at the connection point with approximately 5' of 2-inch, flexible, non-collapsible hose and a Fernco coupling at either end to allow thermal expansion/contraction movement of HDPE pipe.

11:00-13:30 – Download Gasclam data, purge monitoring points and collect GEM2000 measurements. After collecting probe measurements, GW-9 was turned on and the flow rate was set at approximately 10scfm.

Bump Test Results:

Probe ID	GasClam Serial Number	CH4 Sensor Range	Low CH4 Bump Test (%)	High CH4 Bump Test (%)	O2 Bump Test (%)	CO2 Bump Test (%)	Filter Replaced? (y/n)	Batteries Replaced? (y/n)
VTP-2D	399	High	--	58.0	--	40.8	Yes	Yes
VTP-3S	374	High/Low	2.58	58.1	17.1	--	Yes	Yes
VTP-3D	328	High/Low	2.42	62.3	17.9	--	Yes	Yes
VTP-4S	375	High	--	58.7	--	40.9	Yes	Yes
VTP-4D	336	High/Low	2.26	--	17.9	--	Yes	Yes
GW-9	397	High	--	61.9	--	37.9	Yes	Yes

*Low range sensor is tested with 18%:2.5% O2:CH4 calibration gas.
**High range sensor is tested with 60%:40% CH4:CO2 calibration gas.

The GW-9 GasClam was connected to the sample ports installed by King County over the last week.

Manual LFG measurements were collected at VTP-2S/D, VTP 3S/D, VTP-4S/D, and GW-9 with a GEM 2000.

– Purge data summarized below:

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PROJECT NO.: 090057	PROJECT NAME: King County Closed Landfills – Cedar Falls Landfill	DATE: Error! Reference source not found.

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-2D	29.53	0.00	3000	0.4	1.2	19.5	3
VTP-3S	29.53	-0.51	3000	9.5	16.4	4.3	3
VTP-3D	29.53	-0.38	3000	21.2	21.8	1.3	3
VTP-4S	29.53	0.00	3000	57.2	36.8	0.5	3
VTP-4D	29.53	-0.37	3000	2.1	10.2	6.2	3
GW-9	29.53	-2.8	N/A	17.1	19.3	1	N/A

13:30 – Herrera (Tyson Wright) offsite at Vashon Island Closed Landfill.

14:00 – Aspect (Eric Geissinger) offsite at Vashon Island Closed Landfill.

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DATE: 9/21/2016	**PROJECT NO.** 090057	**WEATHER:** 60S SUNNY
PROJECT NAME: King County Closed Landfills – Vashon Island and Cedar Falls Landfills	**CLIENT: KING COUNTY SOLID WASTE DIVISION**	
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000	**PROJECT LOCATION: VASHON ISLAND**	

THE FOLLOWING WAS NOTED:

9:00 - Aspect (Eric Geissinger) onsite at Vashon Island Closed Landfill.

9:05 – Herrera (Tyson Wright) onsite at Vashon Island Closed Landfill.

Aspect noted that GW-9 conveyance line was secured with steel cable wrapped around pipe and attached to each stake along the length of conveyance line. Additionally, a pile of gravel was placed on the uphill end of pipe near the connection point to the system.

9:15-10:30 – Aspect downloaded and reviewed Gasclam data while Herrera purged monitoring points and collected GEM2000 measurements. After collecting probe measurements, both Aspect and Herrera measured flow rate and gas composition at GW-9 and no adjustments were necessary. Upon comparison between Gasclam measurements and GEM2000 measurements of the probes, it appeared that there may be some short circuiting of ambient air into the probes.

Manual LFG measurements were collected at VTP-2S/D, VTP 3S/D, VTP-4S/D, and GW-9 with a GEM 2000.

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-2D	29.59	-0.08	3000	0	0	20.7	3
VTP-3S	29.59	-0.42	3000	8.2	22	0	3
VTP-3D	29.59	-0.41	3000	16.1	22.7	0	3
VTP-4S	29.59	-0.99	3000	61	37.5	0.3	3
VTP-4D	29.59	-0.27	3000	0.5	14.1	1.9	3
GW-9	29.59	-2.8	N/A	21.5	25.5	52.7	N/A

10:45 – Herrera (Tyson Wright) offsite at Vashon Island Closed Landfill

10:45-11:45 Aspect left site briefly to obtain repair materials from local hardware store and returned to the site. Sealant tape was used to provide additional protection against leakage at the slip caps on each probe connection.

11:45 – Aspect (Eric Geissinger) offsite at Vashon Island Closed Landfill.

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DATE: 9/28/2016	**PROJECT NO.** 090057	**WEATHER:** 60S SUNNY
PROJECT NAME: King County Closed Landfills – Vashon Island and Cedar Falls Landfills		**CLIENT: KING COUNTY SOLID WASTE DIVISION**
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000		**PROJECT LOCATION: VASHON ISLAND**

THE FOLLOWING WAS NOTED:

9:00 - Aspect (Eric Geissinger) onsite at Vashon Island Closed Landfill.

9:05 – Herrera (Tyson Wright) onsite at Vashon Island Closed Landfill.

Kris McArthur from King County on site overseeing contractors laying asphalt. Kris indicated that the extraction system was shut down around noon on 9/27 to swap out carbon vessels.

9:15-10:30 – Aspect downloaded and reviewed Gasclam data while Herrera purged monitoring points and collected GEM2000 measurements. After collecting probe measurements, both Aspect and Herrera measured flow rate and gas composition at GW-9 and no adjustments were necessary. Flow remains between 8 and 12 scfm.

Manual LFG measurements were collected at VTP-2S/D, VTP 3S/D, VTP-4S/D, and GW-9 with a GEM 2000.

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-2D	29.63	-0.09	3000	0	0	20.2	3
VTP-3S	29.63	-0.39	3000	3.0	21.3	0	3
VTP-3D	29.63	-0.43	3000	11.6	22.5	0	3
VTP-4S	29.63	-1.01	3000	48.2	32.3	3.2	3
VTP-4D	29.63	-0.37	3000	0.3	15.1	0.2	3
GW-9	29.63	-2.47	N/A	16.9	24.4	0	N/A

10:45 – Herrera (Tyson Wright) offsite at Vashon Island Closed Landfill

10:45-13:45 Aspect calibrated GasClam oxygen sensors at 2D, 3D, 4S, 4D, and GW-9. GasClam sensors are now within acceptable tolerance.

14:00 – Aspect (Eric Geissinger) offsite at Vashon Island Closed Landfill.

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Page 1 of 1	**FIELD REP.:** Eric Geissinger, Project Engineer

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DATE: 10/5/2016	**PROJECT NO.** 090057	**WEATHER:** 50S LIGHT RAIN
PROJECT NAME: King County Closed Landfills – Vashon Island and Cedar Falls Landfills	**CLIENT: KING COUNTY SOLID WASTE DIVISION**	
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000	**PROJECT LOCATION: VASHON ISLAND**	

THE FOLLOWING WAS NOTED:

9:00 - Aspect (Delia Massey) onsite at Vashon Island Closed Landfill.

9:15 – Herrera (Tyson Wright) onsite at Vashon Island Closed Landfill.

9:15-10:30 – Aspect downloaded and reviewed Gasclam data while Herrera purged monitoring points and collected GEM2000 measurements. Once the monitoring points were purged and the data had been downloaded, Aspect added tubing to extend the drop tubes to mid screen at all probes. After collecting probe measurements, Herrera measured flow rate and gas composition at GW-9 and no adjustments were necessary. Flow remains between 8 and 12 scfm.

Manual LFG measurements were collected at VTP-2S/D, VTP 3S/D, VTP-4S/D, and GW-9 with a GEM 2000.

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-2D	29.37	-0.15	3000	0	0	20.6	3
VTP-3S	29.37	-0.50	3000	1.3	18.4	2.5	3
VTP-3D	29.37	-0.63	3000	8.3	22.9	0	3
VTP-4S	29.39	-0.77	3000	54	36.9	0.8	3
VTP-4D	29.37	-0.52	3000	0.3	12.9	2.9	3
GW-9	29.37	-2.05	N/A	15.7	25	0	N/A

10:45 – Herrera (Tyson Wright) offsite at Vashon Island Closed Landfill

11:15 – Aspect (Eric Geissinger) offsite at Vashon Island Closed Landfill.

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FIELD REP.: Delia Massey, Staff Engineer

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DATE: 10/12/2016	**PROJECT NO.** 090057	**WEATHER:** 50S SUNNY
PROJECT NAME: King County Closed Landfills – Vashon Island and Cedar Falls Landfills		**CLIENT: KING COUNTY SOLID WASTE DIVISION**
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000		**PROJECT LOCATION: VASHON ISLAND**

THE FOLLOWING WAS NOTED:

9:45 - Aspect (Eric Geissinger) onsite at Vashon Island Closed Landfill.

9:45-13:45 – Aspect downloaded and reviewed Gasclam data before purging monitoring points and collecting GEM2000 measurements. GasClam equipment locations were changed as follows:

- Moved Gasclam at VTP-2D to VTP-3S.
- Removed GasClams at VTP-3S and VTP-4S for routine maintenance and repair as necessary.
- Removed GasClam at VTP-4D for use at Cedar Falls Closed Landfill.

Moisture filters and batteries were replaced on Clams that remained at VILF. GasClams were bump-tested to verify calibration, no abnormalities were noted. One stand was removed for transport to Cedar Falls Closed Landfill, two additional stands will be removed during next months download.

PT2X pressure transducers were installed at VTP-2D, VTP-4S, and VTP-4D. Additionally, a barometric pressure sensor was installed in the GasClam housing at GW-9.

Manual LFG measurements were collected at VTP-2D, VTP 3S/D, VTP-4S/D, and GW-9 with a GEM 2000. Barometric pressure was decreasing between 9am and 4pm while Aspect was on site according to local weather station info (KWAVASHO13), consistent with positive probe relative pressure observations. Odor was observed at VTP-4S casing.

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-2D	29.55	0.05	3000	5.9	11.6	3.4	2
VTP-3S	29.55	0.29	3000	2.0	20.5	0	2
VTP-3D	29.55	0.39	3000	7.3	21.5	0	2
VTP-4S	29.55	0.25	3000	56.0	37.0	0	2
VTP-4D	29.55	0.58	3000	0.2	14.2	0	2
GW-9	29.55	-1.29	N/A	13.7	23.6	0	N/A

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 FIELD REP.: Eric Geissinger, Project Engineer

PROJECT NO.: 090057	**PROJECT NAME:** King County Closed Landfills – Cedar Falls Landfill	**DATE: Error! Reference source not found.**

13:45-15:30 Aspect briefly left site to pick up supplies for re-sloping GW-9 conveyance piping. Upon return, GW-9 pipe was raised approximately 10 inches in order to create the required slope and alleviate trapped condensate in the pipe. Once the proper slope was obtained, gurgling and sloshing ceased. After repair, Aspect attempted to measured flow rate at the GW-9 Flo-Wing device but was unable to due to equipment malfunction. Flow measurement prior to repair was between 8 and 12 scfm.

15:30 – Aspect (Eric Geissinger) offsite at Vashon Island Closed Landfill.

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DATE: 11/09/2016	**PROJECT NO.** 090057	**WEATHER:** 60S PARTLY CLOUDY
PROJECT NAME: King County Closed Landfills – Vashon Island Landfill		**CLIENT: KING COUNTY SOLID WASTE DIVISION**
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000		**PROJECT LOCATION: VASHON ISLAND**

THE FOLLOWING WAS NOTED:

11:30 - Aspect (Delia Massey) onsite at Vashon Island Closed Landfill.

11:30-11:50 – Aspect downloaded PT2X pressure transducer data at VTP-2D, VTP-4S, VTP-4D, and barometric pressure sensor data at GW-9.

11:50-16:20 – Aspect downloaded and reviewed Gasclam data before purging all monitoring points and collecting GEM2000 measurements. Moisture filters and batteries were replaced on all GasClams. GasClams were bump-tested to verify calibration, no abnormalities were noted. One stand was removed for transport to Cedar Falls Closed Landfill.

Manual LFG measurements were collected at VTP-2D, VTP 3S/D, VTP-4S/D, and GW-9 with a GEM 2000. Barometric pressure was steady between 11am and 4pm while Aspect was on site according to local weather station info (KWAVASHO13).

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-2D	29.80	-0.34	3000	10.4	21.5	4.0	3
VTP-3S	29.80	-0.39	3000	1.0	10.8	7.5	3
VTP-3D	29.79	-0.41	3000	3.0	17.7	0	2
VTP-4S	29.80	-0.28	3000	27.3	22.4	8.6	6
VTP-4D	29.80	-0.26	3000	0.5	0.8	19.7	2
GW-9	29.81	-1.28	N/A	8.0	21.6	0	N/A

16:20 – Aspect (Delia Massey) offsite at Vashon Island Closed Landfill.

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DATE: 11/18/2016	**PROJECT NO.** 090057	**WEATHER:** 40S CLOUDY
PROJECT NAME: King County Closed Landfills – Vashon Island and Cedar Falls Landfill	**CLIENT: KING COUNTY SOLID WASTE DIVISION**	
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000	**PROJECT LOCATION: VASHON ISLAND**	

THE FOLLOWING WAS NOTED:

09:55 - Aspect (Delia Massey) onsite at Vashon Island Closed Landfill.

09:55-11:20 – Aspect installed GasClam #375 (high range CH4 sensor) at VTP-4S, and confirmed that sensors were working properly by conducting bump tests with ambient air and calibration gas. Tubing was extended to 26 feet into the gas probe to sample from mid-screen. GasClam battery and moisture filter were replaced.

11:20-12:20 – Aspect downloaded PT2X data at VTP-4S and removed the pressure transducer. Aspect downloaded and reviewed data at VTP-3D/3S and GW-9. GW-9 had overnight pump errors due to dropping temperatures. VTP-3S had filter errors that were not addressed.

12:20 – Aspect (Delia Massey) offsite at Vashon Island Closed Landfill.

14:05 – Aspect (Delia Massey) onsite at Cedar Falls Closed Landfill.

14:05-15:20 Aspect installed GasClam #374 (high and low range CH4 sensors) at GP-32S, and confirmed that sensors were working properly by conducting bump tests with ambient air and calibration gas. The low-range methane sensor on the GasClam at GP-32S was not calibrated correctly. Aspect re-calibrated the low-range methane sensor three times until it was in the recommended range and passed the bump test. Tubing was extended to 23 feet into the gas probe to sample from mid-screen. GasClam battery and moisture filter were replaced.

15:20-16:15 Aspect downloaded and reviewed data from GP-32D. The GasClam at GP-32D had continuing moisture filter errors, although there were no kinks in the moisture filter tubing. Additionally, the oxygen sensor was not functioning properly. Aspect re-calibrated the oxygen sensor multiple times but was unable to resolve the issue. The Tygon tubing for the in/out openings was replaced, and the moisture filter and battery was replaced. The filter error seemed to be resolved after this troubleshooting.

16:15 – Aspect offsite.

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DATE: 12/12/2016	**PROJECT NO.** 090057	**WEATHER:** 40S PARTLY CLOUDY
PROJECT NAME: King County Closed Landfills – Vashon Island Landfill	**CLIENT: KING COUNTY SOLID WASTE DIVISION**	
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000	**PROJECT LOCATION: VASHON ISLAND**	

THE FOLLOWING WAS NOTED:

11:00 - Aspect (Delia Massey) onsite at Vashon Island Closed Landfill.

11:00-14:00 – Aspect downloaded and reviewed Gasclam data after purging all monitoring points and collecting GEM2000 measurements at VTP-4S, GW-9, and VTP-3S/D. Due to the cold weather, all GasClams had pump errors and filters errors during periods of low ambient temperature. VTP-3S had filter errors, although the filter tubing was not kinked. Replacing the filter seemed to resolve this issue. Moisture filters and batteries were replaced on all GasClams. GasClams were bump-tested to verify calibration, no abnormalities were noted.

Barometric pressure was slightly increasing between 11am and 2pm while Aspect was on site according to local weather station info (KWAVASHO13).

Probe ID	Measured Total Depth (ft BTOC)	Measured Water Level (ft BTOC)	Screen Length (ft)	Approximate Intake Depth (ft BTOC)	Methane Range
VTP-3S	30.3	Dry	2.5	28.5	Hi
VTP-3D	41.7	Dry	2.5	39.5	Hi/Lo
VTP-4S	28.2	Dry	2.5	26.5	Hi
GW-9	--	Dry	NA	--	Hi

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-3S	29.72	-3.01	3000	0.9	21.1	0	2
VTP-3D	29.72	-2.42	3000	1.6	18.6	0	2
VTP-4S	29.69	-0.06	3000	12.3	17.1	2.4	6
GW-9	29.72	-4.7	N/A	5.8	23.1	0	N/A

14:00-14:25 – Aspect adjusted the extraction rate at the GW-9 Flo-Wing device. The flow was changed from about 8-12 scfm (differential pressure of 0.124 inH2O) to 15 scfm (differential pressure of 0.293 inH2O), as measured by the GEM2000.

14:25 – Aspect (Delia Massey) offsite at Vashon Island Closed Landfill.

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DATE: 01/12/2017	**PROJECT NO.** 090057	**WEATHER:** 30S SUNNY
PROJECT NAME: King County Closed Landfills – Vashon Island Landfill	**CLIENT: KING COUNTY SOLID WASTE DIVISION**	
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000	**PROJECT LOCATION: VASHON ISLAND**	

THE FOLLOWING WAS NOTED:

09:00 - Aspect (Delia Massey) onsite at Vashon Island Closed Landfill.

09:00-14:00 – Aspect purged all monitoring points including the new probes at VTP-5S/D and VTP-6S/D, and collected GEM2000 measurements. Aspect downloaded and reviewed Gasclam data at VTP-4S, GW-9, and VTP-3S/D. Due to the cold weather, all GasClams had pump errors and filters errors during periods of low ambient temperature. Moisture filters and batteries were replaced on all GasClams. GasClams were bump-tested to verify calibration, no abnormalities were noted.

Barometric pressure was slightly increasing between 11am and 2pm while Aspect was on site according to local weather station info (KWAVASHO13).

Probe ID	Measured Total Depth (ft BTOC)	Measured Water Level (ft BTOC)	Screen Length (ft)	Approximate Intake Depth (ft BTOC)	Methane Range
VTP-3S	30.3	Dry	2.5	28.5	Hi
VTP-3D	41.7	Dry	2.5	39.5	Hi/Lo
VTP-4S	28.2	Dry	2.5	26.5	Hi
GW-9	--	--	NA	--	Hi

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-3S	29.79	-2.84	3000	0.7	18.6	0	2
VTP-3D	29.79	-2.93	3000	0.6	13.7	0	2
VTP-4S	29.79	-0.83	3000	0	0	20.4	3
GW-9	29.72	-4.7	N/A	5.8	23.1	0	N/A

14:00-14:10 – Aspect measured the extraction rate at the GW-9 Flo-Wing device. The flow was at 15 scfm (differential pressure of 0.293 inH2O), as measured by the Infiltec micromanometer.

14:10 – Aspect (Delia Massey) offsite at Vashon Island Closed Landfill.

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DATE: 02/09/2017	**PROJECT NO.** 090057	**WEATHER:** 50S RAIN
PROJECT NAME: King County Closed Landfills – Vashon Island Landfill	**CLIENT: KING COUNTY SOLID WASTE DIVISION**	
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000	**PROJECT LOCATION: VASHON ISLAND**	

THE FOLLOWING WAS NOTED:

09:50 - Aspect (Delia Massey) onsite at Vashon Island Closed Landfill.

09:50-14:00 – Aspect purged all monitoring points and collected GEM2000 measurements. Aspect downloaded and reviewed Gasclam data at VTP-4S, GW-9, and VTP-3S/D. Due to the cold weather, all GasClams had pump errors and filters errors during periods of low ambient temperature. Moisture filters and batteries were replaced on all GasClams. GasClams were bump-tested to verify calibration, and it was noted that the oxygen sensor on VPT-3S was not functioning properly. The oxygen sensor did not respond to calibration attempts.

PT2X pressure transducers were installed at VTP-5D and -6D.

Barometric pressure was slightly increasing between 10am and 3pm while Aspect was on site according to local weather station info (KWAVASHO13).

Probe ID	Measured Total Depth (ft BTOC)	Measured Water Level (ft BTOC)	Screen Length (ft)	Approximate Intake Depth (ft BTOC)	Methane Range
VTP-2D	27.5	24.95	2.5		
VTP-3S	30.3	Dry	2.5	28.5	Hi
VTP-3D	41.7	Dry	2.5	39.5	Hi/Lo
VTP-4S	28.2	27.68	2.5	26.5	Hi
VTP-4D	57.4	Dry	2.5		
VTP-5S	29.25	Dry	2.5		
VTP-5D	20.6	20.24	2.5		
VTP-6S	12.9	9.35	2.5		
VTP-6D	22.45	Dry	2.5		
GW-9	--	--	NA	--	Hi

COPIES TO: File, KCSWD	**Aspect Consulting PROJECT MANAGER:** John Strunk, Sr. Associate

 FIELD REP.: Delia Massey, Staff Engineer

PROJECT NO.: 090057	PROJECT NAME: King County Closed Landfills – Vashon Island Landfill	DATE: 02/09/2017

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-2D	28.82	0	3000	0.2	0.2	19.7	3
VTP-3S	28.88	0.3	3000	0.4	18.4	0	2
VTP-3D	28.88	0.26	3000	0.5	12.2	0	2
VTP-4S	28.83	0.74	3000	1.5	6.8	5.2	3
VTP-4D	28.83	1.32	3000	0	8.8	8.1	0
VTP-5S	28.83	-0.02	3000	56.8	27.3	1.1	3
VTP-5D	28.82	1.49	3000	16	11.7	0	3
VTP-6S	28.82	0.01	3000	0	0	20.4	3
VTP-6D	28.82	0.82	3000	0	6.7	11.9	3
GW-9	28.89	-3.75	N/A	3.2	17.5	0	N/A

15:25-15:35 – Aspect measured the extraction rate at the GW-9 Flo-Wing device. The flow was at 15 scfm (differential pressure of 0.298 inH2O), as measured by the Infiltec micromanometer.

15:35 – Aspect (Delia Massey) offsite at Vashon Island Closed Landfill.

DAILY REPORT

350 Madison Avenue North
Bainbridge Island, Washington 98110
(206) 780-9370

401 Second Avenue S, Suite 201
Seattle, Washington 98104
(206) 328-7443

DATE: 03/01/2017	**PROJECT NO.** 090057	**WEATHER:** 40S RAIN
PROJECT NAME: King County Closed Landfills – Vashon Island Landfill	**CLIENT: KING COUNTY SOLID WASTE DIVISION**	
EQUIPMENT USED: GASCLAM, LAPTOP, GEM 2000	**PROJECT LOCATION: VASHON ISLAND**	

THE FOLLOWING WAS NOTED:

09:00 - Aspect (Delia Massey) onsite at Vashon Island Closed Landfill.

09:00-14:00 – Aspect purged all monitoring points and collected GEM2000 measurements. Aspect downloaded and reviewed Gasclam data at VTP-4S, GW-9, and VTP-3S/D. Due to the cold weather, all GasClams had pump errors and filters errors during periods of low ambient temperature. Moisture filters and batteries were replaced on all GasClams. GasClams were bump-tested to verify calibration, and it was noted that the oxygen sensor on VPT-3S was not functioning properly.

All PT2X pressure transducers and GasClams were removed offsite.

Barometric pressure was slightly increasing between 9am and 2pm while Aspect was on site according to local weather station info (KWAVASHO13).

– Water level data summarized below:

Probe ID	Measured Total Depth (ft BTOC)	Measured Water Level (ft BTOC)	Screen Length (ft)	Approximate Intake Depth (ft BTOC)	Methane Range
VTP-2D	27.5	25.56	2.5		
VTP-3S	30.3	Dry	2.5	28.5	Hi
VTP-3D	41.7	Dry	2.5	39.5	Hi/Lo
VTP-4S	28.2	27.89	2.5	26.5	Hi
VTP-4D	57.4	Dry	2.5		
VTP-5S	29.25	Dry	2.5		
VTP-5D	20.6	Dry	2.5		
VTP-6S	12.9	9.87	2.5		
VTP-6D	22.45	Dry	2.5		
GW-9	--	--	NA	--	Hi

COPIES TO: File, KCSWD	**Aspect Consulting PROJECT MANAGER:** John Strunk, Sr. Associate

 FIELD REP.: Delia Massey, Staff Engineer

PROJECT NO.: 090057	PROJECT NAME: King County Closed Landfills – Vashon Island Landfill	DATE: 03/01/2017

– Purge data summarized below:

Probe ID	Barometric Pressure (in Hg)	Probe Relative Pressure	Purge Rate (cc/min)	Stabilized CH4 (%vol)	Stabilized CO2 (%vol)	Stabilized O2 (%vol)	Casing Volumes Purged
VTP-2D	29.93	0.02	3000	0.2	0.2	20.1	3
VTP-3S	29.97	-3.45	3000	0.9	20.8	0	2
VTP-3D	29.97	-3.21	3000	0.7	14.1	0	2
VTP-4S	29.93	-1.43	3000	0	0	20.3	3
VTP-4D	29.93	-3.06	3000	0.1	0.5	20.1	3
VTP-5S	29.93	-2.87	3000	30.6	22	6.3	5
VTP-5D	29.93	-2.89	3000	0.2	9.8	4.6	3
VTP-6S	29.96	0	3000	0.1	0	19.9	3
VTP-6D	29.96	-0.94	3000	0	2.3	18.4	3
GW-9	29.96	-6.71	N/A	3.2	18.5	0	N/A

14:00-14:20 – Aspect measured the extraction rate at the GW-9 Flo-Wing device. The flow was at 15 scfm (differential pressure of 0.298 inH2O), as measured by the Infiltec micromanometer.

14:20 – Aspect (Delia Massey) offsite at Vashon Island Closed Landfill.